

Prep Standard - Chemical Standard Summary

Order ID : P4258

Test : EPH

Prepbatch ID : PB164054,

Sequence ID/Qc Batch ID: FC101124AL,FD101124AR,

Standard ID :

EP2538,EP2543,PP23429,PP23430,PP23519,PP23520,PP23521,PP23522,PP23523,PP23534,PP23538,PP23539,PP23644,PP23645,PP23646,PP23647,PP23648,PP23649,PP23650,PP23704,PP23706,PP23712,

Chemical ID :

E2865,E3551,E3743,E3768,E3788,E3789,E3793,E3794,E3816,E3817,P10259,P11137,P11263,P12362,P12885,P12972,P13004,P13005,P13017,P13018,P13019,P13020,P13022,P13044,P13045,P13047,P13048,P13094,P13096,P13142,P13258,P13259,P13278,P13424,P13430,P13431,P13432,P13433,P13434,P13435,P13436,P13442,P13444,P13447,P13448,P13451,P13452,P13453,P13454,P13455,P13456,P9826,V11252,V14143,W3112,

Extractions STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|----------------------------|------------------------|------------------|------------------------|--------------------|----------------|------------------|--------------------------------|
| 3868 | METHELENE CHLORIDE+ACETONE | EP2538 | 09/17/2024 | 03/11/2025 | Rajesh Parikh | None | None | RUPESHKUMAR SHAH 09/17/2024 |

FROM 8000.00000ml of E3793 + 8000.00000ml of E3794 = Final Quantity: 1600.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|----------------------|------------------------|------------------|------------------------|--------------------|----------------------------------|------------------|-----------------------------|
| 3923 | Baked Sodium Sulfate | EP2543 | 10/04/2024 | 01/03/2025 | RUPESHKUMAR SHAH | Extraction_SC ALE_2 (EX-SC-2) | None | Rajesh Parikh 10/04/2024 |

FROM 4000.00000gram of E3551 = Final Quantity: 4000.000 gram

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 782 | 100 PPM Aromatic HC Working STD | PP23429 | 05/21/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| 05/24/2024 | | | | | | | | |

FROM 0.25000ml of P13004 + 0.62500ml of P13259 + 1.25000ml of P10259 + 22.87500ml of E3743 = Final Quantity: 25.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|--|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 2945 | 100 PPM Aromatic HC Working STD (Absolute) | PP23430 | 05/21/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| 05/24/2024 | | | | | | | | |

FROM 0.25000ml of P13005 + 0.62500ml of P13258 + 1.25000ml of P11137 + 22.87500ml of E3743 = Final Quantity: 25.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 787 | 50 PPM Aromatic HC STD | PP23519 | 07/15/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/16/2024 |

FROM 0.50000ml of E3768 + 0.50000ml of PP23429 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 788 | 20 PPM Aromatic HC STD | PP23520 | 07/15/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/16/2024 |

FROM 0.80000ml of E3768 + 0.20000ml of PP23429 = Final Quantity: 1.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 789 | 10 PPM Aromatic HC STD | PP23521 | 07/15/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/16/2024 |

FROM 0.90000ml of E3768 + 0.10000ml of PP23429 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-----------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 790 | 5 PPM Aromatic HC STD | PP23522 | 07/15/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/16/2024 |

FROM 0.90000ml of E3768 + 0.10000ml of PP23519 = Final Quantity: 1.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 2946 | 20 PPM Aromatic HC STD ICV (Absolute) | PP23523 | 07/15/2024 | 11/16/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/16/2024 |

FROM 0.80000ml of E3768 + 0.20000ml of PP23430 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 231 | 10 PPM GRO STD 1ST SOURCE | PP23534 | 07/29/2024 | 01/22/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/30/2024 |

FROM 0.11100ml of P9826 + 9.89000ml of V14143 = Final Quantity: 10.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 3619 | 25 PPM AAA-TFT Surg | PP23538 | 07/29/2024 | 01/22/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/30/2024 |

FROM 0.10000ml of V11252 + 9.90000ml of V14143 = Final Quantity: 10.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 2589 | 20 PPM NJ EPH SPIKE for LOD-LOQ | PP23539 | 07/29/2024 | 11/13/2024 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 07/30/2024 |

FROM 1.00000ml of P12885 + 1.00000ml of P13142 + 8.00000ml of P11263 = Final Quantity: 10.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 781 | 100 PPM Aliphatic HC Working STD (Restek) | PP23644 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 09/10/2024 |

FROM 0.25000ml of P12972 + 0.25000ml of P13017 + 1.25000ml of P12362 + 23.25000ml of E3789 = Final Quantity: 25.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-------------------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 2900 | 100 PPM Aliphatic HC STD (Absolute) | PP23645 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 09/10/2024 |

FROM 0.25000ml of P12972 + 0.25000ml of P13017 + 2.50000ml of P13278 + 22.00000ml of E3789 = Final Quantity: 25.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 783 | 50 PPM Aliphatic HC STD | PP23646 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 09/10/2024 |

FROM 0.50000ml of E3789 + 0.50000ml of PP23644 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 784 | 20 PPM Aliphatic HC STD | PP23647 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 09/10/2024 |

FROM 0.80000ml of E3789 + 0.20000ml of PP23644 = Final Quantity: 1.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 785 | 10 PPM Aliphatic HC STD | PP23648 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| 09/10/2024 | | | | | | | | |

FROM 0.90000ml of E3789 + 0.10000ml of PP23644 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|------------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 786 | 5 PPM Aliphatic HC STD | PP23649 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| 09/10/2024 | | | | | | | | |

FROM 0.90000ml of E3789 + 0.10000ml of PP23646 = Final Quantity: 1.000 ml

Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|--|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 2901 | 20 PPM Aliphatic HC STD ICV (Absolute) | PP23650 | 09/09/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 09/10/2024 |

FROM 0.80000ml of E3789 + 0.20000ml of PP23645 = Final Quantity: 1.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------|-------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------|
| 234 | 100 PPB ICC GRO STD | PP23704 | 09/24/2024 | 01/22/2025 | Yogesh Patel | None | None | Ankita Jodhani |
| | | | | | | | | 10/01/2024 |

FROM 5.00000ml of W3112 + 0.02000ml of PP23538 + 0.05000ml of PP23534 = Final Quantity: 5.070 ml



Pest/Pcb STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|-------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 1339 | 100 PPM NJEPH Surrogate Spike | PP23706 | 09/26/2024 | 02/13/2025 | Yogesh Patel | None | None | Ankita Jodhani 10/01/2024 |
| <u>FROM</u> | 1.25000ml of P13018 + 1.25000ml of P13019 + 1.25000ml of P13020 + 1.25000ml of P13022 + 1.25000ml of P13044 + 1.25000ml of P13045 + 1.25000ml of P13047 + 1.25000ml of P13048 + 490.00000ml of E3788 = Final Quantity: 500.000 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|--|-------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 1330 | 100 PPM NJEPH Spike Solution | PP23712 | 09/30/2024 | 03/30/2025 | Yogesh Patel | None | None | Ankita Jodhani 10/01/2024 |
| <u>FROM</u> | 5.00000ml of P13094 + 5.00000ml of P13096 + 5.00000ml of P13424 + 5.00000ml of P13430 + 5.00000ml of P13431 + 5.00000ml of P13432 + 5.00000ml of P13433 + 5.00000ml of P13434 + 5.00000ml of P13435 + 5.00000ml of P13436 + 5.00000ml of P13442 + 5.00000ml of P13444 + 5.00000ml of P13447 + 5.00000ml of P13448 + 5.00000ml of P13451 + 5.00000ml of P13452 + 5.00000ml of P13453 + 5.00000ml of P13454 + 5.00000ml of P13455 + 5.00000ml of P13456 = Final Quantity: 100.000 ml | | | | | | | |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-3382-05 / Sand, Purified (cs/4x2.5kg) | 0000243821 | 12/31/2024 | 04/30/2020 / RAJESH | 04/28/2020 / RAJESH | E2865 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-----------------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| PCI Scientific Supply, Inc. | PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1 | 313201 | 01/03/2025 | 01/03/2024 / Rajesh | 07/20/2023 / Rajesh | E3551 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24C0162011 | 11/16/2024 | 05/16/2024 / Rajesh | 04/26/2024 / Rajesh | E3743 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24E2462004 | 01/08/2025 | 07/08/2024 / Rajesh | 06/21/2024 / Rajesh | E3768 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9254-03 / Acetone, Ultra Resi (cs/4x4L) | 23H1462005 | 04/01/2025 | 08/13/2024 / Rajesh | 08/13/2024 / Rajesh | E3788 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L) | 24C1862008 | 02/13/2025 | 08/13/2024 / Rajesh | 08/13/2024 / Rajesh | E3789 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|-----------------------------------|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | 9005-05 / Acetone Ultra (cs/4x4L) | 24E0761004 | 03/11/2025 | 09/12/2024 / Rajesh | 09/11/2024 / Rajesh | E3793 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24G2362009 | 03/17/2025 | 09/17/2024 / Rajesh | 09/03/2024 / Rajesh | E3794 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9262-03 / Hexane, Ultra-Resi (cs/4x4L) | 24G1962003 | 04/10/2025 | 10/10/2024 / Rajesh | 10/04/2024 / Rajesh | E3816 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24H2762011 | 04/09/2025 | 10/09/2024 / Rajesh | 10/09/2024 / Rajesh | E3817 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30541 / Custom NJEPH Aromatics Calibration Standard | A0165529 | 11/21/2024 | 05/21/2024 / yogesh | 01/26/2021 / dhaval | P10259 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 95709 / NJ EPH Aromatic Hydrocarbons, 2000 PPM | 060420 | 07/08/2024 | 01/08/2024 / yogesh | 10/29/2021 / Abdul | P11137 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | HP782 / Pentane, 1L | 21080835 | 11/13/2024 | 12/16/2021 / Ankita | 12/16/2021 / Ankita | P11263 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30540 / Custom NJEPH Aliphatics Calibration Standard | A0190424 | 03/09/2025 | 09/09/2024 / yogesh | 03/16/2023 / Yogesh | P12362 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0200008 | 01/29/2025 | 07/29/2024 / yogesh | 10/17/2023 / Yogesh | P12885 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|-------------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31098 / 1-Chlorooctadecane Standard | A0204989 | 03/09/2025 | 09/09/2024 / yogesh | 12/20/2023 / Yogesh | P12972 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 11/21/2024 | 05/21/2024 / yogesh | 12/21/2023 / Yogesh | P13004 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 11/21/2024 | 05/21/2024 / yogesh | 12/21/2023 / Yogesh | P13005 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 03/09/2025 | 09/09/2024 / yogesh | 12/21/2023 / Yogesh | P13017 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 03/26/2025 | 09/26/2024 / yogesh | 12/21/2023 / Yogesh | P13018 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 03/26/2025 | 09/26/2024 / yogesh | 12/21/2023 / Yogesh | P13019 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 03/26/2025 | 09/26/2024 / yogesh | 12/21/2023 / Yogesh | P13020 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31097 / o-Terphenyl Standard | A0204177 | 03/26/2025 | 09/26/2024 / yogesh | 12/21/2023 / Yogesh | P13022 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|-------------------------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31098 / 1-Chlorooctadecane Standard | A0200707 | 03/26/2025 | 09/26/2024 / yogesh | 12/26/2023 / Yogesh | P13044 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31098 / 1-Chlorooctadecane Standard | A0200707 | 03/26/2025 | 09/26/2024 / yogesh | 12/26/2023 / Yogesh | P13045 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31098 / 1-Chlorooctadecane Standard | A0200707 | 03/26/2025 | 09/26/2024 / yogesh | 12/26/2023 / Yogesh | P13047 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31098 / 1-Chlorooctadecane Standard | A0200707 | 03/26/2025 | 09/26/2024 / yogesh | 12/26/2023 / Yogesh | P13048 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0203911 | 03/30/2025 | 09/30/2024 / yogesh | 01/12/2024 / Yogesh | P13094 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0203911 | 03/30/2025 | 09/30/2024 / yogesh | 01/12/2024 / Yogesh | P13096 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0204020 | 01/29/2025 | 07/29/2024 / yogesh | 01/12/2024 / Yogesh | P13142 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31480 / MA Fractionation Surrogate Spike Mix | A0206496 | 11/21/2024 | 05/21/2024 / yogesh | 02/20/2024 / yogesh | P13258 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31480 / MA Fractionation Surrogate Spike Mix | A0206496 | 11/21/2024 | 05/21/2024 / yogesh | 02/20/2024 / yogesh | P13259 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|--------------------------|---|--------|-----------------|-------------------------|-----------------------------|----------------|
| Absolute Standards, Inc. | 95899 / NJ EPH Aliphatic n-Hydrocarbons-Revised, 1000 PPM | 040524 | 03/09/2025 | 09/09/2024 / yogesh | 04/11/2024 / yogesh | P13278 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0207239 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13424 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13430 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13431 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13432 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13433 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13434 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13435 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30542 / Custom NJEPH Aliphatics Matrix Spike Mix | A0211112 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13436 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13442 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13444 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13447 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13448 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13451 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0211254 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13452 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0207019 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13453 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0207019 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13454 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0207019 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13455 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30543 / Custom NJEPH Aromatics Matrix Spike Mix | A0207019 | 03/30/2025 | 09/30/2024 / yogesh | 07/16/2024 / Yogesh | P13456 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|-----------------------|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30065 / GRO Mix (EPA) | A0155991 | 01/25/2025 | 07/25/2024 / yogesh | 09/11/2020 / DHAVAL | P9826 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 30068 / VOA Mix, a, a, a-trifluorotoluene 2500uq/ml, P&T methanol, 1ml | A0158026 | 05/31/2028 | 11/27/2023 / yogesh | 09/11/2020 / DHAVAL | V11252 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA9077-02 / Methanol, Purge/Trap (cs=6x1L) | 22L0562016 | 01/22/2025 | 07/22/2024 / SAM | 02/06/2024 / SAM | V14143 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---------------------|---------------------|-----------------|----------------------------|--------------------------------|-------------------|
| Seidler Chemical | DIW / DI Water | Daily Lab-Certified | 07/03/2029 | 07/03/2024 / lwona | 07/03/2024 / lwona | W3112 |



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

DD
06/17/2021

Catalog No. : 30541 **Lot No.:** A0172403

Description : NJEPH Aromatics Calibration Standard

NJEPH Aromatics Calibration Standard 2,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2027 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P10758
TO
P10762
- (S)

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|---|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene CAS # 526-73-8 (Lot 8776.10-36) Purity 98% | 2,010.0 µg/mL | +/- 11.7957 µg/mL Gravimetric +/- 90.5449 µg/mL Unstressed +/- 100.4678 µg/mL Stressed |
| 2 | Naphthalene CAS # 91-20-3 (Lot MKBZ8680V) Purity 99% | 2,006.0 µg/mL | +/- 11.7723 µg/mL Gravimetric +/- 90.3656 µg/mL Unstressed +/- 100.2689 µg/mL Stressed |
| 3 | 2-Methylnaphthalene CAS # 91-57-6 (Lot STBG8884) Purity 99% | 2,008.0 µg/mL | +/- 11.7841 µg/mL Gravimetric +/- 90.4557 µg/mL Unstressed +/- 100.3688 µg/mL Stressed |
| 4 | Acenaphthylene CAS # 208-96-8 (Lot N19U) Purity 95% | 2,002.6 µg/mL | +/- 11.7524 µg/mL Gravimetric +/- 90.2125 µg/mL Unstressed +/- 100.0989 µg/mL Stressed |
| 5 | Acenaphthene CAS # 83-32-9 (Lot MKCN0610) Purity 99% | 2,000.0 µg/mL | +/- 11.7371 µg/mL Gravimetric +/- 90.0953 µg/mL Unstressed +/- 99.9689 µg/mL Stressed |
| 6 | Fluorene CAS # 86-73-7 (Lot 10217947) Purity 99% | 2,016.0 µg/mL | +/- 11.8310 µg/mL Gravimetric +/- 90.8161 µg/mL Unstressed +/- 100.7687 µg/mL Stressed |
| 7 | Phenanthrene CAS # 85-01-8 (Lot MKCL7390) Purity 99% | 2,012.0 µg/mL | +/- 11.8075 µg/mL Gravimetric +/- 90.6359 µg/mL Unstressed +/- 100.5688 µg/mL Stressed |

| | | | | | | | | | |
|----------|------------------------|----------|---------------------|---------|-------|-----|----------|-------|-------------|
| 8 | Anthracene | | | 2,002.0 | µg/mL | +/- | 11.7489 | µg/mL | Gravimetric |
| | CAS # | 120-12-7 | (Lot MKCM0015) | | | +/- | 90.1854 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.0689 | µg/mL | Stressed |
| 9 | Fluoranthene | | | 2,003.0 | µg/mL | +/- | 11.7547 | µg/mL | Gravimetric |
| | CAS # | 206-44-0 | (Lot MKCF7378) | | | +/- | 90.2305 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.1189 | µg/mL | Stressed |
| 10 | Pyrene | | | 2,011.0 | µg/mL | +/- | 11.8017 | µg/mL | Gravimetric |
| | CAS # | 129-00-0 | (Lot BCCB9880) | | | +/- | 90.5909 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.5188 | µg/mL | Stressed |
| 11 | Benz(a)anthracene | | | 2,011.0 | µg/mL | +/- | 11.8014 | µg/mL | Gravimetric |
| | CAS # | 56-55-3 | (Lot P0022018-0505) | | | +/- | 90.5890 | µg/mL | Unstressed |
| | Purity | 98% | | | | +/- | 100.5168 | µg/mL | Stressed |
| 12 | Chrysene | | | 2,000.0 | µg/mL | +/- | 11.7371 | µg/mL | Gravimetric |
| | CAS # | 218-01-9 | (Lot STBJ8094) | | | +/- | 90.0953 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 99.9689 | µg/mL | Stressed |
| 13 | Benzo(b)fluoranthene | | | 2,006.0 | µg/mL | +/- | 11.7721 | µg/mL | Gravimetric |
| | CAS # | 205-99-2 | (Lot 012012B) | | | +/- | 90.3638 | µg/mL | Unstressed |
| | Purity | 97% | | | | +/- | 100.2669 | µg/mL | Stressed |
| 14 | Benzo(k)fluoranthene | | | 2,010.0 | µg/mL | +/- | 11.7958 | µg/mL | Gravimetric |
| | CAS # | 207-08-9 | (Lot 012019K) | | | +/- | 90.5458 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.4688 | µg/mL | Stressed |
| 15 | Benzo(a)pyrene | | | 2,004.0 | µg/mL | +/- | 11.7606 | µg/mL | Gravimetric |
| | CAS # | 50-32-8 | (Lot RP210113) | | | +/- | 90.2755 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.1689 | µg/mL | Stressed |
| 16 | Indeno(1,2,3-cd)pyrene | | | 2,010.0 | µg/mL | +/- | 11.7958 | µg/mL | Gravimetric |
| | CAS # | 193-39-5 | (Lot 1-RAK-33-4) | | | +/- | 90.5458 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.4688 | µg/mL | Stressed |
| 17 | Dibenz(a,h)anthracene | | | 2,017.0 | µg/mL | +/- | 11.8369 | µg/mL | Gravimetric |
| | CAS # | 53-70-3 | (Lot ER032211-01) | | | +/- | 90.8611 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.8187 | µg/mL | Stressed |
| 18 | Benzo(g,h,i)perylene | | | 2,003.0 | µg/mL | +/- | 11.7547 | µg/mL | Gravimetric |
| | CAS # | 191-24-2 | (Lot 8GFYJ) | | | +/- | 90.2305 | µg/mL | Unstressed |
| | Purity | 99% | | | | +/- | 100.1189 | µg/mL | Stressed |
| <hr/> | | | | | | | | | |
| Solvent: | Methylene chloride | | | | | | | | |
| | CAS # | 75-09-2 | | | | | | | |
| | Purity | 99% | | | | | | | |

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

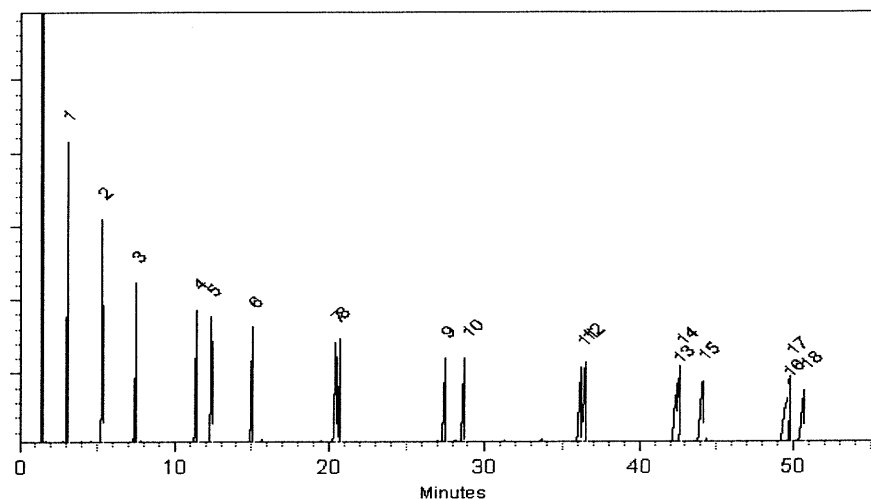
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

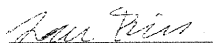
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Lane Kibe - Mix Technician

Date Mixed: 14-May-2021 Balance: B345965662


Alexis Shelow - Operations Tech I

Date Passed: 18-May-2021

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k \sqrt{U_{gravimetric}^2 + U_{homogeneity}^2 + U_{storage\ stability}^2 + U_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

| Label Conditions | Standard Conditions | Non-Standard Conditions |
|---|---------------------|-------------------------|
| 25°C Nominal (Room Temperature) | < 60°C | ≥ 60°C up to 7 days |
| 10°C or colder (Refrigerate) | < 40°C | ≥ 40°C up to 7 days |
| 0°C or colder (Freezer) -20°C or colder (Deep Freezer) | < 25°C | ≥ 25°C up to 7 days |

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

Sand
Purified
Washed and Ignited



Material No.: 3382-05
Batch No.: 0000243821
Manufactured Date: 2018/04/09
Retest Date: 2025/04/07
Revision No: 1

Certificate of Analysis

| Test | Specification | Result |
|---------------------------|---------------|--------|
| Substances Soluble in HCl | $\leq 0.16\%$ | 0.01 |

For Laboratory, Research or Manufacturing Use
Meets Reagent Specifications for testing USP/NF monographs

Country of Origin: US
Packaging Site: Paris Mfg Ctr & DC

E 2865


Jamie Ethier
Vice President Global Quality

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC
100 Matsonford Rd, Suite 200, Radnor, PA 19087. U.S.A. Phone: 610.386.1700



**PRODUCTOS
QUÍMICOS
MONTERREY, S.A. DE C.V.**

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MEXICO
CP 64070
TEL +52 81 13 52 57 57
www.pqm.com.mx

CERTIFICATE OF ANALYSIS

| | | | |
|------------------------|-----------------------------------|---------------|---------------------------------|
| PRODUCT : | SODIUM SULFATE CRYSTALS ANHYDROUS | | |
| QUALITY : | ACS (CODE RMB3375) | FORMULA : | Na ₂ SO ₄ |
| SPECIFICATION NUMBER : | 6399 | RELEASE DATE: | ABR/21/2023 |
| LOT NUMBER : | 313201 | | |

| TEST | SPECIFICATIONS | LOT VALUES |
|--|----------------|-------------|
| Assay (Na ₂ SO ₄) | Min. 99.0% | 99.7 % |
| pH of a 5% solution at 25°C | 5.2 - 9.2 | 6.1 |
| Insoluble matter | Max. 0.01% | 0.005 % |
| Loss on ignition | Max. 0.5% | 0.1 % |
| Chloride (Cl) | Max. 0.001% | <0.001 % |
| Nitrogen compounds (as N) | Max. 5 ppm | <5 ppm |
| Phosphate (PO ₄) | Max. 0.001% | <0.001 % |
| Heavy metals (as Pb) | Max. 5 ppm | <5 ppm |
| Iron (Fe) | Max. 0.001% | <0.001 % |
| Calcium (Ca) | Max. 0.01% | 0.002 % |
| Magnesium (Mg) | Max. 0.005% | 0.001 % |
| Potassium (K) | Max. 0.008% | 0.003 % |
| Extraction-concentration suitability | Passes test | Passes test |
| Appearance | Passes test | Passes test |
| Identification | Passes test | Passes test |
| Solubility and foreign matter | Passes test | Passes test |
| Retained on US Standard No. 10 sieve | Max. 1% | 0.1 % |
| Retained on US Standard No. 60 sieve | Min. 94% | 97.3 % |
| Through US Standard No. 60 sieve | Max. 5% | 2.5 % |
| Through US Standard No. 100 sieve | Max. 10% | 0.1 % |

COMMENTS

QC: PhC Irma Belmares

If you need further details, please call our factory or contact our local distributor.

Recd. by R3 on 7/24/23 E 3551

RC-02-01, Ed. 3

Material No.: 92E
Batch No.: 24C016
Manufactured Date: 2024-C
Expiration Date: 2025-C
Revision I

Certificate of Analysis

| Test | Specification | Result |
|--|------------------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 2 |
| Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 10 |
| Residue after Evaporation | $\leq 1.0 \text{ ppm}$ | 0.2 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | $\leq 10 \text{ ppm}$ | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG24A04224

E 3743


Ken Koehnlein
Sr. Manager, Quality Assurance

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700
Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087, U.S.A. Phone 610.386.1700
Page 1 of 1

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4
Batch No.: 24E2462004
Manufactured Date: 2024-04-10
Expiration Date: 2025-07-10
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|------------------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | 3 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 3 |
| Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | $\leq 1.0 \text{ ppm}$ | 0.1 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | $\leq 10 \text{ ppm}$ | 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG24D10725

E 3768

Jamie Croak
Director Quality Operations, Bioscience Production

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087, U.S.A. Phone 610.386.1700

Acetone

BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

Avantor™



Material No.: 9254-03
Batch No.: 23H1462005
Manufactured Date: 2023-07-26
Expiration Date: 2026-07-25
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|-------------|
| Assay ((CH ₃) ₂ CO) (by GC, corrected for water) | ≥ 99.4 % | 99.7 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.3 ppm |
| Substances Reducing Permanganate | Passes Test | Passes Test |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.1 |
| Titration Base (μeq/g) | ≤ 0.6 | < 0.1 |
| Water (H ₂ O) | ≤ 0.5 % | 0.3 % |
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd by RP on 8/13/24

E 3788

Ken Koehnlein
Sr. Manager, Quality Assurance

Material No.: 926
Batch No.: 24C186
Manufactured Date: 2024-0
Expiration Date: 2025-0
Revision N

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|-------------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |
| ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL) | ≤ 5 | 1 |
| Assay (Total Saturated C ₆ Isomers) (by GC, corrected for water) | ≥ 99.5 % | 99.7 % |
| Assay (as n-Hexane) (by GC, corrected for water) | ≥ 95 % | 98 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.4 ppm |
| Substances Darkened by H ₂ SO ₄ | Passes Test | Passes Test |
| Water (by KF, coulometric) | ≤ 0.05 % | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 8/13/24

E 3789



Jamie Croak
Director Quality Operations, Bioscience Products

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087, U.S.A. Phone 610.386.1700

Acetone
CMOS

avantor™



Material No.: 9005-05
Batch No.: 24E0761004
Manufactured Date: 2024-05-02
Retest Date: 2029-05-01
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|-------------|
| Assay ((CH ₃) ₂ CO) (by GC, corrected for water) | ≥ 99.5 % | 99.8 % |
| Color (APHA) | ≤ 10 | < 5 |
| Residue after Evaporation | ≤ 5 ppm | < 1 ppm |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.1 |
| Titration Base (μeq/g) | ≤ 0.5 | 0.1 |
| Water (H ₂ O) | ≤ 0.5 % | 0.1 % |
| Solubility in H ₂ O | Passes Test | Passes Test |
| Chloride (Cl) | ≤ 0.2 ppm | < 0.2 ppm |
| Phosphate (PO ₄) | ≤ 0.05 ppm | < 0.05 ppm |
| Trace Impurities – Aluminum (Al) | ≤ 50.0 ppb | < 5.0 ppb |
| Arsenic and Antimony (as As) | ≤ 5.0 ppb | < 5.0 ppb |
| Trace Impurities – Barium (Ba) | ≤ 20.0 ppb | < 1.0 ppb |
| Trace Impurities – Beryllium (Be) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Bismuth (Bi) | ≤ 20.0 ppb | < 10.0 ppb |
| Trace Impurities – Boron (B) | ≤ 10.0 ppb | < 5.0 ppb |
| Trace Impurities – Cadmium (Cd) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Calcium (Ca) | ≤ 25.0 ppb | 3.6 ppb |
| Trace Impurities – Chromium (Cr) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Cobalt (Co) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Copper (Cu) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Gallium (Ga) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Germanium (Ge) | ≤ 10.0 ppb | < 10.0 ppb |
| Trace Impurities – Gold (Au) | ≤ 20 ppb | < 5 ppb |
| Trace Impurities – Iron (Fe) | ≤ 20.0 ppb | < 1.0 ppb |
| Trace Impurities – Lead (Pb) | ≤ 10.0 ppb | < 10.0 ppb |
| Trace Impurities – Lithium (Li) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Magnesium (Mg) | ≤ 20 ppb | < 1 ppb |
| Trace Impurities – Manganese (Mn) | ≤ 10.0 ppb | < 1.0 ppb |

>>> Continued on page 2 >>>

Recd. by RP on 9/11/24

E3793

Acetone
CMOS



Material No.: 9005-05
Batch No.: 24E0761004

| Test | Specification | Result |
|---|---------------|------------|
| Trace Impurities – Molybdenum (Mo) | ≤ 10.0 ppb | < 5.0 ppb |
| Trace Impurities – Nickel (Ni) | ≤ 10.0 ppb | < 5.0 ppb |
| Trace Impurities – Niobium (Nb) | ≤ 50.0 ppb | < 1.0 ppb |
| Trace Impurities – Potassium (K) | ≤ 10.0 ppb | < 10.0 ppb |
| Trace Impurities – Silicon (Si) | ≤ 50 ppb | < 10 ppb |
| Trace Impurities – Silver (Ag) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Sodium (Na) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Strontium (Sr) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Tantalum (Ta) | ≤ 50.0 ppb | < 5.0 ppb |
| Trace Impurities – Thallium (Tl) | ≤ 10.0 ppb | < 5.0 ppb |
| Trace Impurities – Tin (Sn) | ≤ 20.0 ppb | < 10.0 ppb |
| Trace Impurities – Titanium (Ti) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Vanadium (V) | ≤ 10.0 ppb | < 1.0 ppb |
| Trace Impurities – Zinc (Zn) | ≤ 20.0 ppb | 7.9 ppb |
| Trace Impurities – Zirconium (Zr) | ≤ 10.0 ppb | < 1.0 ppb |
| Particle Count – 0.5 µm and greater (Rion KS42AF) | ≤ 100 par/ml | 8 par/ml |
| Particle Count – 1.0 µm and greater (Rion KS42AF) | ≤ 8 par/ml | 2 par/ml |

>>> Continued on page 3 >>>

Acetone
CMOS



Material No.: 9005-05
Batch No.: 24E0761004

| Test | Specification | Result |
|------|---------------|--------|
|------|---------------|--------|

For Microelectronic Use
Country of Origin: USA
Packaging Site: Paris Mfg Ctr & DC

Michelle Bales
Sr. Manager, Quality Assurance

n-Hexane 95%
ULTRA RESI-ANALYZED
For Organic Residue Analysis



Material No.: 9262-03
Batch No.: 24G1962003
Manufactured Date: 2024-05-23
Expiration Date: 2025-08-22
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|----------------|-------------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | 3 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |
| ECD-Sensitive Impurities (as Ethylene Dibromide) - Single Impurity Peak (ng/mL) | ≤ 5 | 1 |
| Assay (Total Saturated C ₆ Isomers) (by GC, corrected for water) | $\geq 99.5 \%$ | 99.7 % |
| Assay (as n-Hexane) (by GC, corrected for water) | $\geq 95 \%$ | 98 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.1 ppm |
| Substances Darkened by H ₂ SO ₄ | Passes Test | Passes Test |
| Water (by KF, coulometric) | $\leq 0.05 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

E3816

Rec'd by RP on 10/4/24

Jamie Croak
Director Quality Operations, Bioscience Production

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

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Page 1 of 1

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4

Batch No.: 24H2762011

Manufactured Date: 2024-06-05

Expiration Date: 2025-09-04

Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|----------------|------------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | 2 |
| ECD Sensitive Impurities (as HeptachlorEpoxide) Single Peak (pg/mL) | ≤ 10 | 5 |
| Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8\%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.3 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | ≤ 10 ppm | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02\%$ | $< 0.01\%$ |

For Laboratory, Research, or Manufacturing Use

MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: United States

Packaging Site: Phillipsburg Mfg Ctr & DC

E 3817

Jamie Croak
Director Quality Operations, Bioscience Production

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials LLC

Methanol
ULTRA RESI-ANALYZED
For Purge and Trap Analysis



Material No.: 9077-02
Batch No.: 22L0562016
Manufactured Date: 2022-10-26
Expiration Date: 2025-10-25
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|----------|
| Assay (CH ₃ OH) (by GC, corrected for water) | ≥ 99.9 % | 100.0 % |
| Residue after Evaporation | ≤ 1.0 ppm | 0.2 ppm |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.2 |
| Titration Base (μeq/g) | ≤ 0.10 | 0.03 |
| Water (by KF, coulometric) | ≤ 0.08 % | < 0.01 % |
| Volatile Organic Trace Analysis - Below EPA 8260B CRQL | Conforms | Conforms |

For Laboratory, Research, or Manufacturing Use
Performance Tested for Use in EPA Methods
500 Series for Drinking Water
600 Series for Wastewater
846 for Solid Waste

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Jamie Ethier
Vice President Global Quality



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 95709
Lot Number: 060420
Description: NJ EPH Aromatic Hydrocarbons
18 components
Expiration Date: 060425
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 2000
NIST Test ID#: 23060
Weight(s) shown below were combined and diluted to (mL): 500.0
Balance Uncertainty: 5E-05
Flask Uncertainty: 0.058

Solvent(s): Methylene chloride
Lot# 104923

| | | |
|----------------|-------------------|--------|
| Formulated By: | Benson Chan | 060420 |
| Reviewed By: | Pedro L. Renteria | 060420 |
| | | DATE |

| Compound | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (±) (µg/mL) | CAS# | SDS Information (Solvent Safety Info. On Attached pg.) | LD50 |
|----------|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|----------------------------------|------|--|------|
|----------|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|----------------------------------|------|--|------|

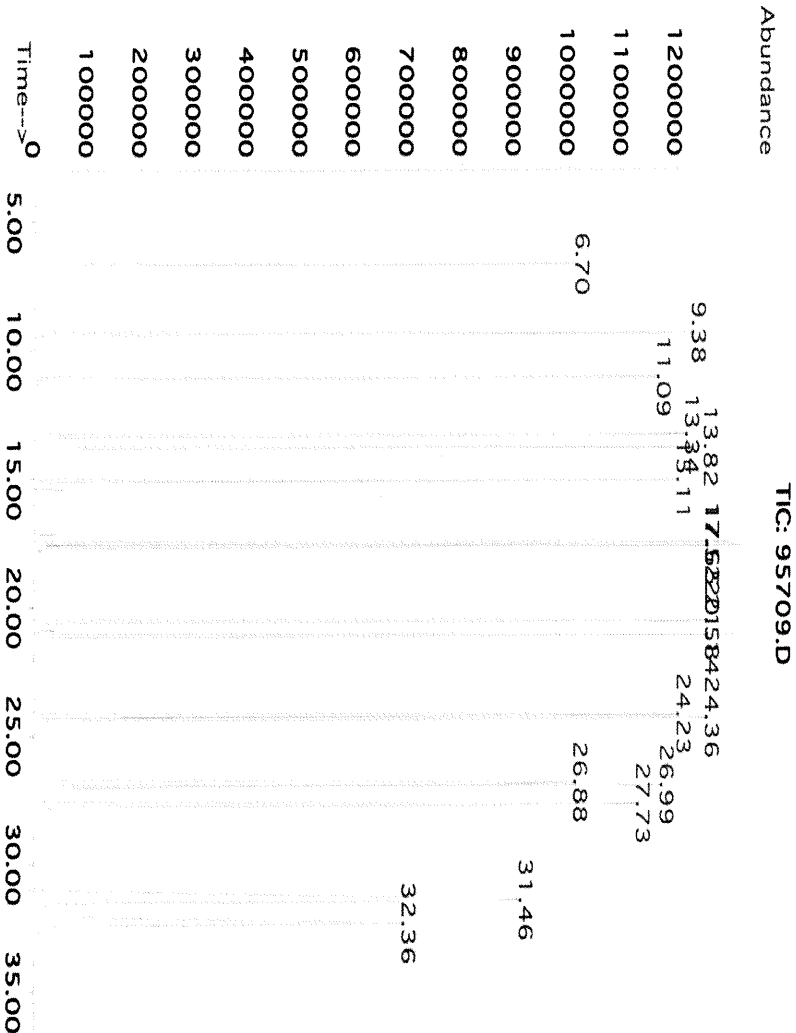
| | | | | | | | | | | | | |
|----------------------------|-----|-----------|------|------|-----|---------|---------|--------|-----|----------|---------------------|-------------------|
| 1. Acenaphthene | 1 | MKB14871V | 2000 | 99 | 0.2 | 1.01003 | 1.01010 | 2000.1 | 8.1 | 83-32-9 | N/A | ip-tral 600mg/kg |
| 2. Acenaphthylene | 3 | 012014 | 2000 | 98 | 0.2 | 1.02033 | 1.02053 | 2000.4 | 8.2 | 208-96-6 | N/A | N/A |
| 3. Anthracene | 13 | A0210580 | 2000 | 99 | 0.2 | 1.01003 | 1.01009 | 2000.1 | 8.1 | 120-12-7 | 0.2mg/m3 (8h) | ip-trus 430mg/kg |
| 4. Benz(a)anthracene | 28 | JY2TD-JT | 2000 | 98 | 0.2 | 1.02033 | 1.02051 | 2000.3 | 8.2 | 56-55-3 | N/A | N/A |
| 5. Benz(a)pyrene | 30 | 012012 | 2000 | 99.5 | 0.2 | 1.00495 | 1.00511 | 2000.3 | 8.1 | 50-32-8 | 0.2mg/m3 (8h) | scu-tral 50mg/kg |
| 6. Benz(b)fluoranthene | 31 | 012012b | 2000 | 99 | 0.2 | 1.01003 | 1.01012 | 2000.2 | 8.1 | 205-99-2 | N/A | N/A |
| 7. Benz(k)fluoranthene | 33 | 012012k | 2000 | 99 | 0.2 | 1.01003 | 1.01018 | 2000.3 | 8.1 | 207-08-9 | N/A | N/A |
| 8. Benz(g,h,i)perylene | 32 | 012018 | 2000 | 99 | 0.2 | 1.01003 | 1.01019 | 2000.3 | 8.1 | 191-24-2 | N/A | N/A |
| 9. Chrysene | 91 | 012015 | 2000 | 98 | 0.2 | 1.02033 | 1.02040 | 2000.1 | 8.2 | 218-01-9 | 0.2mg/m3 | N/A |
| 10. Dibenzo(a,h)anthracene | 112 | 012011 | 2000 | 98 | 0.2 | 1.02033 | 1.02050 | 2000.3 | 8.2 | 53-70-3 | 0.2mg/m3 | N/A |
| 11. Fluoranthene | 183 | 04221PV | 2000 | 98 | 0.2 | 1.02033 | 1.02050 | 2000.3 | 8.2 | 206-44-0 | N/A | of-tral 2000mg/kg |
| 12. Fluorene | 184 | 07211MV | 2000 | 98 | 0.2 | 1.02033 | 1.02047 | 2000.3 | 8.2 | 86-73-7 | N/A | ip-trus 2 g/kg |
| 13. Indeno(1,2,3-cd)pyrene | 202 | 012014 | 2000 | 99.9 | 0.2 | 1.00093 | 1.00119 | 2000.5 | 8.0 | 193-39-5 | N/A | N/A |
| 14. 2-Methylnaphthalene | 214 | MKB13783V | 2000 | 97 | 0.2 | 1.03085 | 1.03090 | 2000.1 | 8.3 | 91-57-6 | N/A | of-tral 1630mg/kg |
| 15. Naphthalene | 222 | MKB28690V | 2000 | 100 | 0.2 | 0.99993 | 0.99999 | 2000.1 | 8.0 | 91-20-3 | 10 ppm (50mg/m3/8h) | of-tral 490mg/kg |
| 16. Phenanthrene | 248 | 03410PV | 2000 | 99 | 0.2 | 1.01003 | 1.01030 | 2000.5 | 8.1 | 85-01-8 | 0.2mg/m3/8h | of-trus 700mg/kg |
| 17. Pyrene | 259 | 010197 | 2000 | 98 | 0.2 | 1.02033 | 1.02042 | 2000.2 | 8.2 | 129-00-0 | 0.2mg/m3/8h | of-tral 2700mg/kg |
| 18. 1,2,3-Trimethylbenzene | 944 | 031097 | 2000 | 99 | 0.2 | 1.01003 | 1.01025 | 2000.4 | 8.1 | 526-73-8 | N/A | N/A |

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certified (±) 0.5% of the stated value, unless otherwise stated.
* All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyat, C.F., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

P11137
P11141
11/10/21



Method GC8MSD-2.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (14min.), Rate = 10°C/min., Injector B= 250°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Melissa Stonier.



| Peak No. | Name | MSD RT (min.) |
|----------|---|---------------|
| 1 | 1,2,3-Trimethylbenzene | 6.70 |
| 2 | Naphthalene | 9.38 |
| 3 | 2-Methylnaphthalene | 11.09 |
| 4 | Acenaphthylene | 13.34 |
| 5 | Acenaphthene | 13.82 |
| 6 | Fluorene | 15.11 |
| 7 | Phenanthrene | 17.52 |
| 8 | Anthracene | 17.65 |
| 9 | Fluoranthene | 20.58 |
| 10 | Pyrene | 21.14 |
| 11 | Chrysene | 24.23 |
| 12 | Benzo(a)anthracene | 24.36 |
| 13 | Benzo(b)fluoranthene/Benzo(k)fluoranthene | 26.98 |
| 14 | Benzo(a)pyrene | 27.73 |
| 15 | Indeno(1,2,3-cd)pyrene/Dibenzo(a,h)anthracene | 31.46 |
| 16 | Benzo(g,h,i)perylene | 32.36 |



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30540 **Lot No.:** A0190424

Description : NJEPH Aliphatics Calibration Standard

Aliphatics Calibration Standard 2000µg/mL, Hexane/Carbon Disulfide (80:20), 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2029 **Storage:** 25°C nominal

Handling: Sonicate prior to use. **Ship:** Ambient

P12361
↓
P12370 } Y.P.
031/6/23

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | |
|---------------|---|-----------------------------|---|--|
| 1 | n-Nonane (C9) CAS # 111-84-2 Purity 99% (Lot SHBN5361) | 2,014.0 µg/mL | +/- 11.8193 +/- 50.0027 +/- 59.9491 | µg/mL Gravimetric Unstressed Stressed |
| 2 | n-Decane (C10) CAS # 124-18-5 Purity 99% (Lot SHBN8619) | 2,014.7 µg/mL | +/- 11.8232 +/- 50.0193 +/- 59.9689 | µg/mL Gravimetric Unstressed Stressed |
| 3 | Naphthalene CAS # 91-20-3 Purity 99% (Lot MKCH0219) | 2,015.3 µg/mL | +/- 11.8271 +/- 50.0358 +/- 59.9888 | µg/mL Gravimetric Unstressed Stressed |
| 4 | n-Dodecane (C12) CAS # 112-40-3 Purity 99% (Lot SHBN7174) | 2,008.0 µg/mL | +/- 11.7841 +/- 49.8538 +/- 59.7705 | µg/mL Gravimetric Unstressed Stressed |
| 5 | 2-Methylnaphthalene CAS # 91-57-6 Purity 96% (Lot STBK0259) | 2,007.0 µg/mL | +/- 11.7784 +/- 49.8299 +/- 59.7419 | µg/mL Gravimetric Unstressed Stressed |
| 6 | n-Tetradecane (C14) CAS # 629-59-4 Purity 99% (Lot STBK2282) | 2,016.7 µg/mL | +/- 11.8349 +/- 50.0689 +/- 60.0284 | µg/mL Gravimetric Unstressed Stressed |
| 7 | n-Hexadecane (C16) CAS # 544-76-3 Purity 98% (Lot SHBM4146) | 2,014.9 µg/mL | +/- 11.8244 +/- 50.0246 +/- 59.9753 | µg/mL Gravimetric Unstressed Stressed |

| | | | | | | | |
|---|--|------------------|---------------|-----|---------|-------|-------------|
| 8 | n-Octadecane (C18) CAS # 593-45-3 Purity 97% | (Lot VZKOJ) | 2,004.7 µg/mL | +/- | 11.7645 | µg/mL | Gravimetric |
| | | | | +/- | 49.7710 | µg/mL | Unstressed |
| | | | | +/- | 59.6712 | µg/mL | Stressed |
| 9 | n-Eicosane (C20) CAS # 112-95-8 Purity 99% | (Lot MKCF7888) | 2,018.0 µg/mL | +/- | 11.8428 | µg/mL | Gravimetric |
| | | | | +/- | 50.1020 | µg/mL | Unstressed |
| | | | | +/- | 60.0681 | µg/mL | Stressed |
| 10 | n-Heneicosane (C21) CAS # 629-94-7 Purity 99% | (Lot MKCL3226) | 2,000.7 µg/mL | +/- | 11.7410 | µg/mL | Gravimetric |
| | | | | +/- | 49.6717 | µg/mL | Unstressed |
| | | | | +/- | 59.5522 | µg/mL | Stressed |
| 11 | n-Docosane (C22) CAS # 629-97-0 Purity 99% | (Lot MKCL8918) | 2,005.3 µg/mL | +/- | 11.7684 | µg/mL | Gravimetric |
| | | | | +/- | 49.7876 | µg/mL | Unstressed |
| | | | | +/- | 59.6911 | µg/mL | Stressed |
| 12 | n-Tetracosane (C24) CAS # 646-31-1 Purity 99% | (Lot MKCN2863) | 2,018.0 µg/mL | +/- | 11.8428 | µg/mL | Gravimetric |
| | | | | +/- | 50.1020 | µg/mL | Unstressed |
| | | | | +/- | 60.0681 | µg/mL | Stressed |
| 13 | n-Hexacosane (C26) CAS # 630-01-3 Purity 99% | (Lot MKCD4540) | 2,014.0 µg/mL | +/- | 11.8193 | µg/mL | Gravimetric |
| | | | | +/- | 50.0027 | µg/mL | Unstressed |
| | | | | +/- | 59.9491 | µg/mL | Stressed |
| 14 | n-Octacosane (C28) CAS # 630-02-4 Purity 99% | (Lot BCCG0084) | 2,002.0 µg/mL | +/- | 11.7489 | µg/mL | Gravimetric |
| | | | | +/- | 49.7048 | µg/mL | Unstressed |
| | | | | +/- | 59.5919 | µg/mL | Stressed |
| 15 | n-Triacontane (C30) CAS # 638-68-6 Purity 97% | (Lot MKCQ9436) | 2,011.1 µg/mL | +/- | 11.8025 | µg/mL | Gravimetric |
| | | | | +/- | 49.9316 | µg/mL | Unstressed |
| | | | | +/- | 59.8637 | µg/mL | Stressed |
| 16 | n-Dotriacontane (C32) CAS # 544-85-4 Purity 99% | (Lot BCBW0661) | 2,012.0 µg/mL | +/- | 11.8075 | µg/mL | Gravimetric |
| | | | | +/- | 49.9531 | µg/mL | Unstressed |
| | | | | +/- | 59.8895 | µg/mL | Stressed |
| 17 | n-Tetratriacontane (C34) CAS # 14167-59-0 Purity 99% | (Lot OML4N) | 2,006.7 µg/mL | +/- | 11.7762 | µg/mL | Gravimetric |
| | | | | +/- | 49.8207 | µg/mL | Unstressed |
| | | | | +/- | 59.7308 | µg/mL | Stressed |
| 18 | n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99% | (Lot Z27H018) | 2,017.3 µg/mL | +/- | 11.8388 | µg/mL | Gravimetric |
| | | | | +/- | 50.0855 | µg/mL | Unstressed |
| | | | | +/- | 60.0483 | µg/mL | Stressed |
| 19 | n-Octatriacontane (C38) CAS # 7194-85-6 Purity 96% | (Lot 0000145137) | 2,017.3 µg/mL | +/- | 11.8385 | µg/mL | Gravimetric |
| | | | | +/- | 50.0842 | µg/mL | Unstressed |
| | | | | +/- | 60.0467 | µg/mL | Stressed |
| 20 | n-Tetracontane (C40) CAS # 4181-95-7 Purity 99% | (Lot BSBME) | 2,008.7 µg/mL | +/- | 11.7880 | µg/mL | Gravimetric |
| | | | | +/- | 49.8703 | µg/mL | Unstressed |
| | | | | +/- | 59.7903 | µg/mL | Stressed |
| Solvent: Hexane/Carbon disulfide (80:20) | | | | | | | |
| | CAS # 110-54-3/75-15-0 | | | | | | |
| | Purity 99% | | | | | | |

Column:
30m x 0.25mm x 0.25µm
Pxx-5 (cat.#10223)

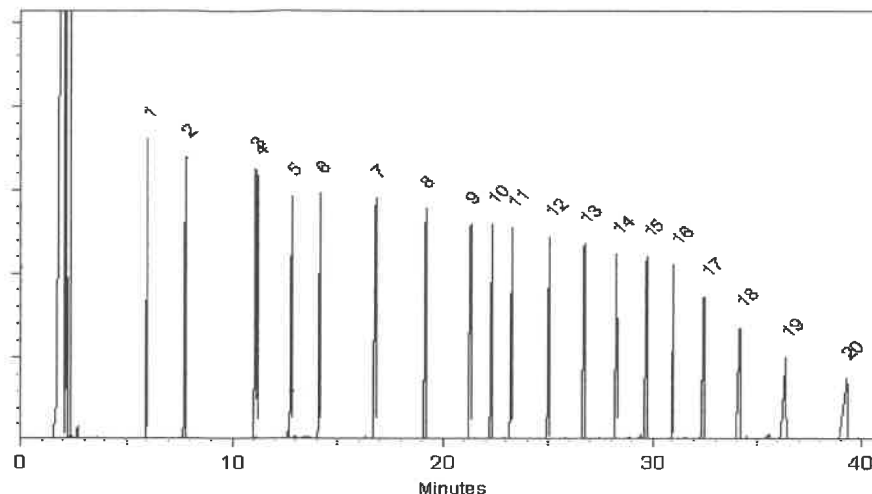
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Morgan Craighead - Mix Technician

Date Mixed: 10-Oct-2022 Balance: 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 20-Oct-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k \sqrt{U_{gravimetric}^2 + U_{homogeneity}^2 + U_{storage\ stability}^2 + U_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

| Label Conditions | Standard Conditions | Non-Standard Conditions |
|---|---------------------|-------------------------|
| 25°C Nominal (Room Temperature) | < 60°C | ≥ 60°C up to 7 days |
| 10°C or colder (Refrigerate) | < 40°C | ≥ 40°C up to 7 days |
| 0°C or colder (Freezer) -20°C or colder (Deep Freezer) | < 25°C | ≥ 25°C up to 7 days |

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 Lot No.: A0200008
Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul
Container Size : 5 mL Pkg Amt: > 5 mL
Expiration Date : August 31, 2030 Storage: 10°C or colder
Handling: Sonicate prior to use. Ship: Ambient

P12856
↓
P12855 } Y.P.
10/17/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 201.7 µg/mL | +/- 5.2098 |
| 2 | n-Decane (C10) | 124-18-5 | SHBP4427 | 99% | 201.3 µg/mL | +/- 5.2012 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBN7174 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 201.0 µg/mL | +/- 5.1926 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBP8192 | 99% | 201.7 µg/mL | +/- 5.2098 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 201.2 µg/mL | +/- 5.1984 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 201.4 µg/mL | +/- 5.2038 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 201.3 µg/mL | +/- 5.2012 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 201.3 µg/mL | +/- 5.2012 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCQ8345 | 99% | 201.3 µg/mL | +/- 5.2012 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 201.7 µg/mL | +/- 5.2098 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 201.0 µg/mL | +/- 5.1926 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.5 µg/mL | +/- 5.1788 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 201.3 µg/mL | +/- 5.2012 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.7 µg/mL | +/- 5.1839 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 201.0 µg/mL | +/- 5.1926 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 201.3 µg/mL | +/- 5.1998 |

18 n-Tetracontane (C40) 4181-95-7 4LJYN 98% 200.6 µg/mL +/- 5.1815

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

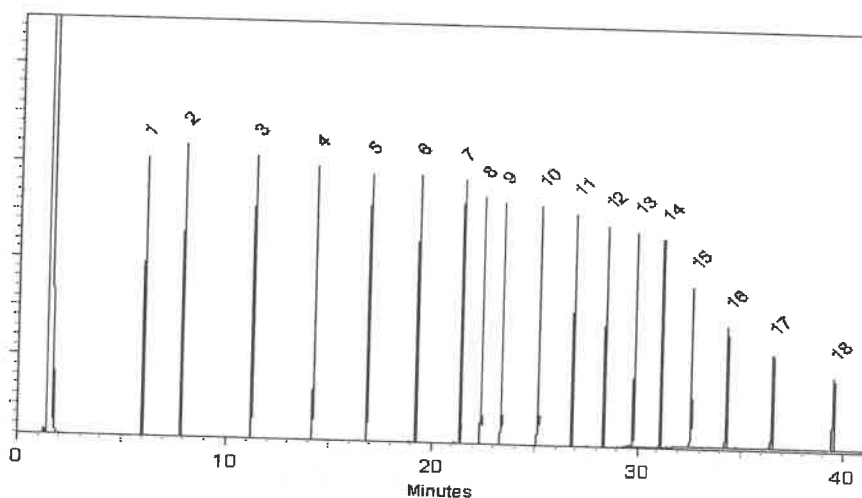
FID

Split Vent:

2 ml/min.

Inj. Vol

1µl



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John Friedline
John Friedline - Operations Technician I

Date Mixed: 18-Jul-2023

Balance Serial # 1127510105

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 21-Jul-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 31098 **Lot No.:** A0204989

Description: 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: January 31, 2031 **Storage:** 10°C or colder

Ship: Ambient

P12960
↓
P12991 } Y.P.
12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|-----------|----------|--------|-----------------------------|--|
| 1 | 1-Chlorooctadecane | 3386-33-2 | 14738400 | 99% | 10,097.3 µg/mL | +/- 567.2675 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

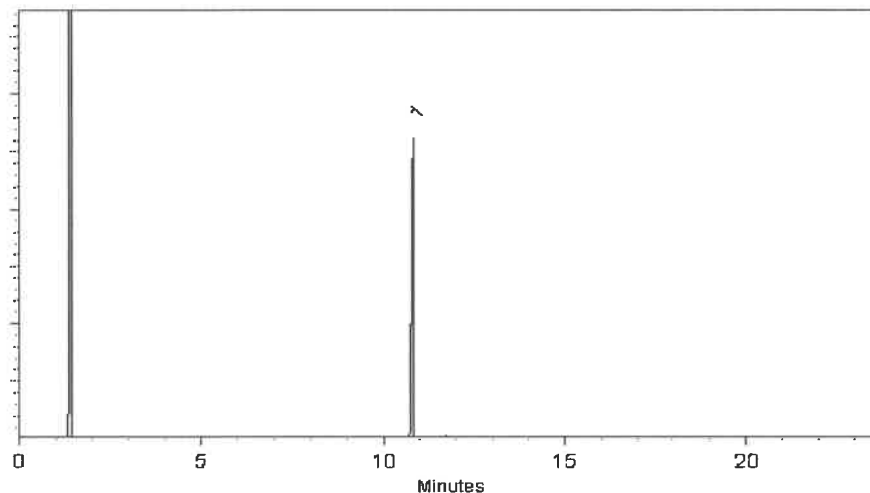
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



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Peter Robbins - Operations Technician I

Date Mixed: 02-Dec-2023

Balance Serial # B345965662

Christie Mills - Operations Lead Tech - ARM QC

Date Passed: 08-Dec-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

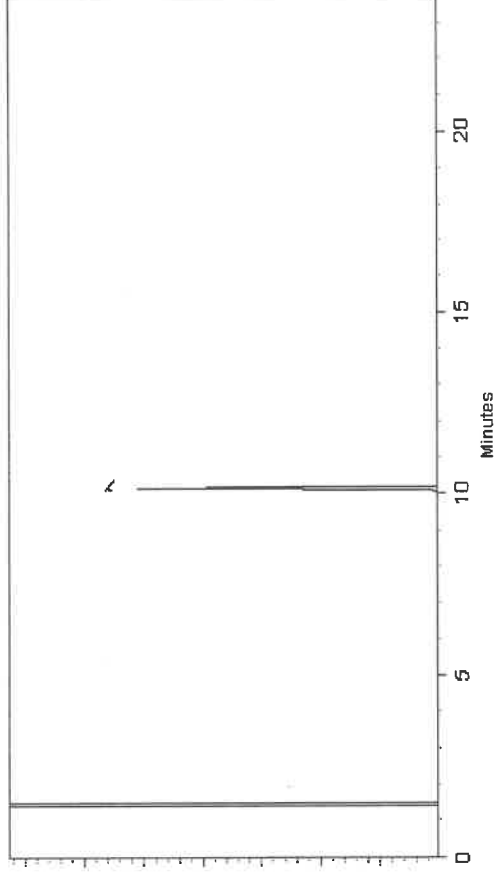
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905


Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 31097 Lot No.: A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL Pkg Amt: > 1 mL

Expiration Date: June 30, 2027 Storage: 10°C or colder

Handling: Sonicate prior to use. Ship: Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

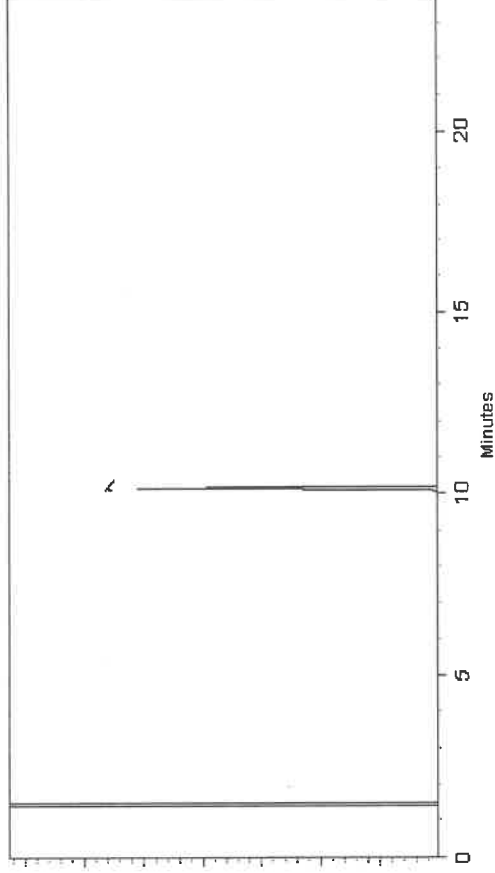
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905


Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
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- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

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Handling Notes:

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- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

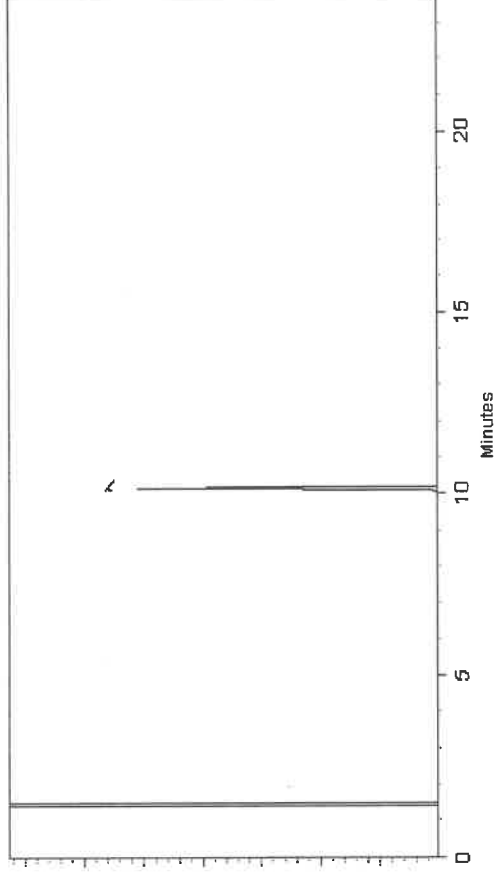
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905


Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

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Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

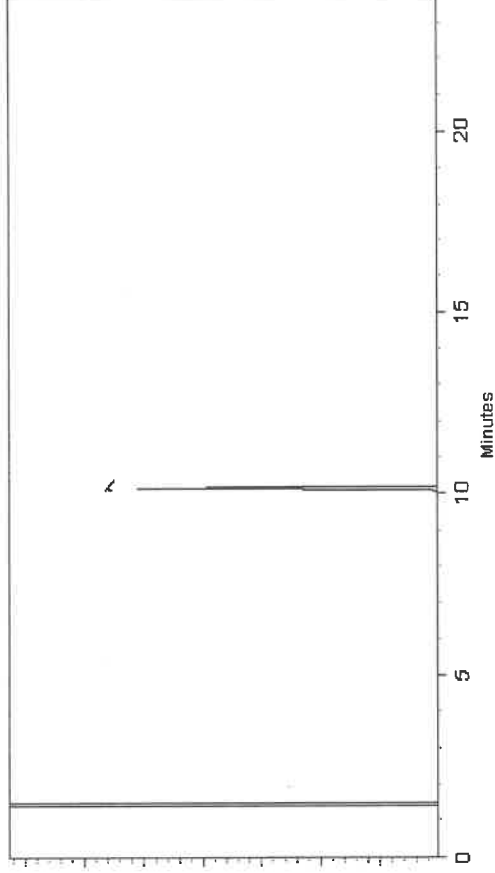
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905



Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

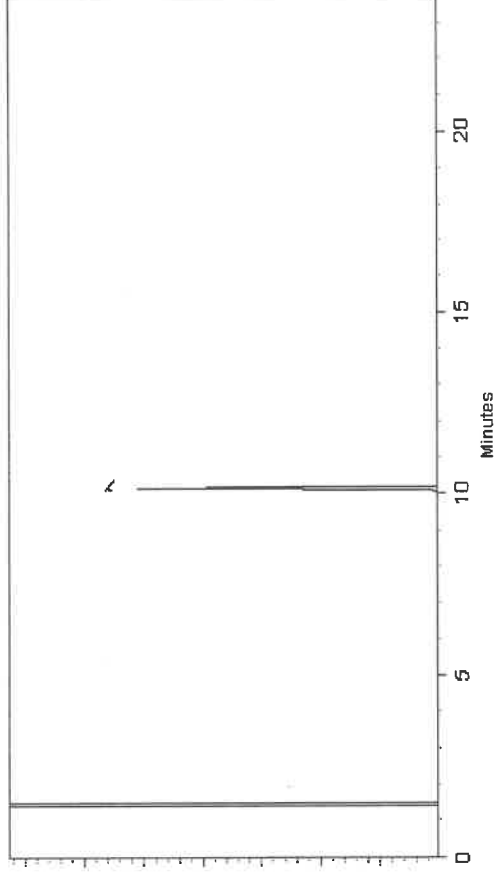
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905


Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
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Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/ μ ECD, GC/MS, LC/MS, RI, and/or melting point.
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- Purity values are rounded to the nearest whole number.

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Manufacturing Notes:

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Handling Notes:

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Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

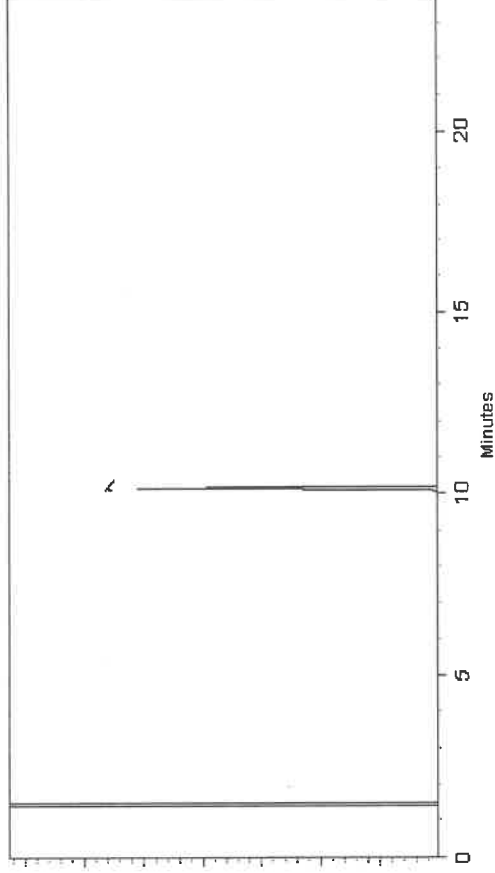
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905


Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
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Purity Notes:

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Manufacturing Notes:

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Handling Notes:

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Catalog No.: 31097 **Lot No.:** A0204177

Description: o-Terphenyl Standard

o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul

Container Size: 2 mL **Pkg Amt:** > 1 mL

Expiration Date: June 30, 2027 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P12992 } Y.P.
↓
P13031 } 12/21/2023

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|---------|-------|--------|-----------------------------|--|
| 1 | o-Terphenyl | 84-15-1 | GKSSA | 99% | 10,000.5 µg/mL | +/- 450.4278 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

* Expanded Uncertainty displayed in same units as Grav. Conc.

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

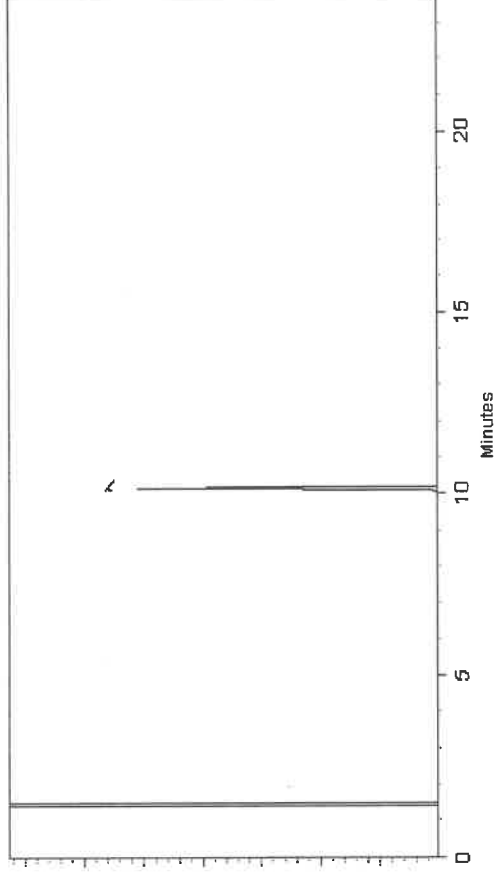
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
10 ml/min.

Inj. Vol
1µl



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Laith Clemente - Operations Technician I

Date Mixed: 07-Nov-2023 **Balance Serial #** 1128360905



Dillian Murphy - Operations Technician I

Date Passed: 09-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
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- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31098 **Lot No.:** A0200707

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2030 **Storage:** 10°C or colder

Ship: Ambient

P130hh
↓
P13051 } Y.B.
12/26/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|-----------|-------------|--------|-----------------------------|--|
| 1 | 1-Chlorooctadecane | 3386-33-2 | E230426RSRB | 99% | 10,018.0 µg/mL | +/- 562.8106 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

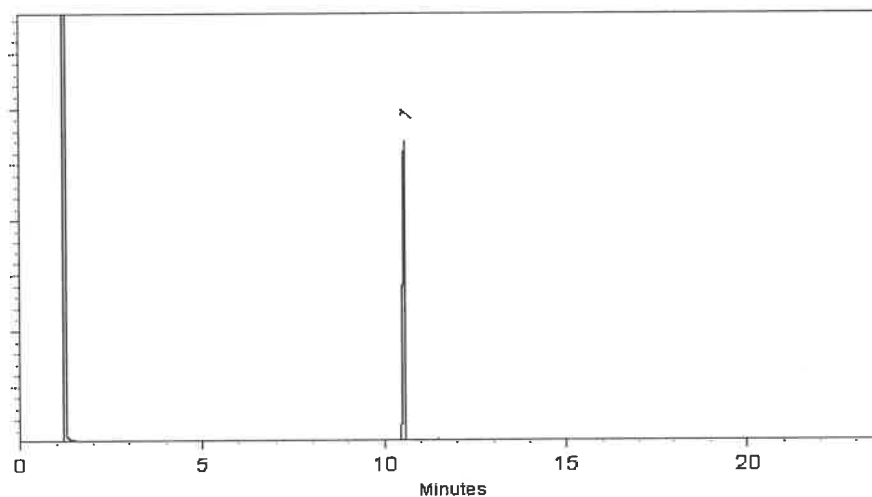
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



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Ashley Frantz - Quoting Technician

Date Mixed: 07-Aug-2023

Balance Serial # 1128360905


Dillan Murphy - Operations Technician I

Date Passed: 10-Aug-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31098 **Lot No.:** A0200707

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2030 **Storage:** 10°C or colder

Ship: Ambient

P130hh
2
P13051 } Y.B.
12/26/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|-----------|-------------|--------|-----------------------------|--|
| 1 | 1-Chlorooctadecane | 3386-33-2 | E230426RSRB | 99% | 10,018.0 µg/mL | +/- 562.8106 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

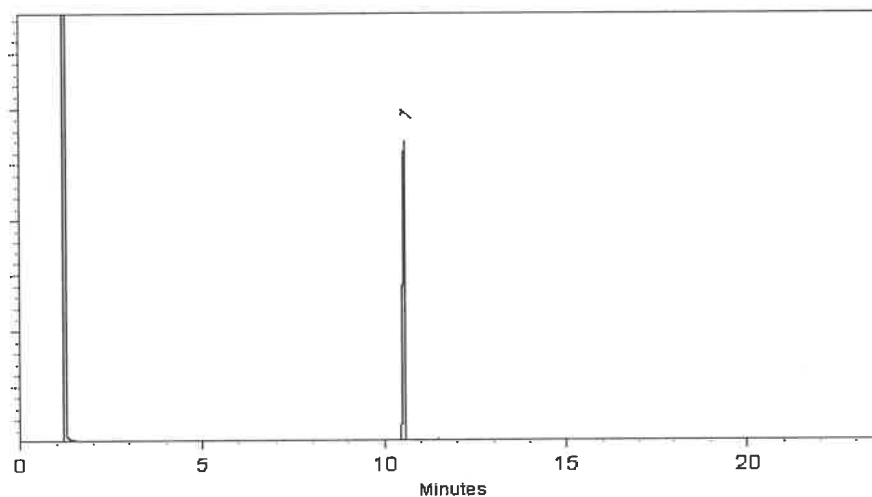
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



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Ashley Frantz - Quoting Technician

Date Mixed: 07-Aug-2023

Balance Serial # 1128360905


Dillan Murphy - Operations Technician I

Date Passed: 10-Aug-2023

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chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31098 **Lot No.:** A0200707

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2030 **Storage:** 10°C or colder

Ship: Ambient

P130hh
2
P13051 } Y.B.
12/26/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|-----------|-------------|--------|-----------------------------|--|
| 1 | 1-Chlorooctadecane | 3386-33-2 | E230426RSRB | 99% | 10,018.0 µg/mL | +/- 562.8106 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

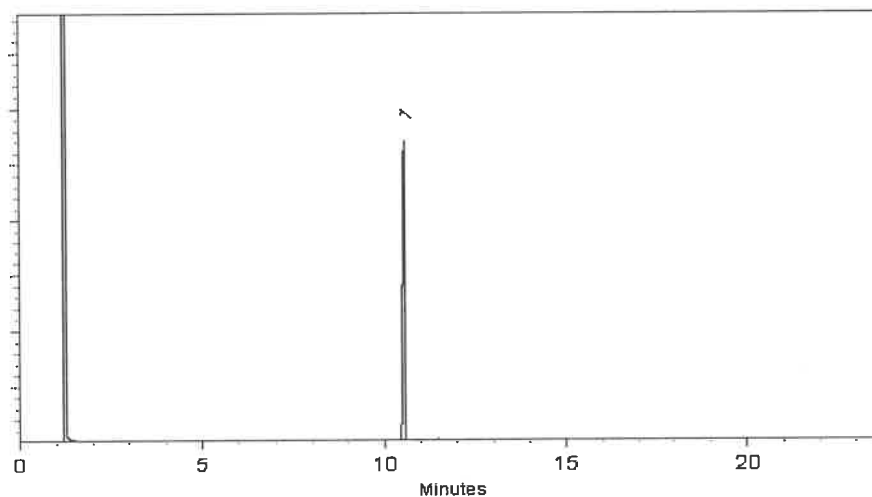
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Ashley Frantz - Quoting Technician

Date Mixed: 07-Aug-2023

Balance Serial # 1128360905


Dillan Murphy - Operations Technician I

Date Passed: 10-Aug-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



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Bellefonte, PA 16823-8812
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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31098 **Lot No.:** A0200707

Description : 1-Chlorooctadecane Standard

1-Chlorooctadecane Standard 10,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2030 **Storage:** 10°C or colder

Ship: Ambient

P130hh
2
P13051 } Y.B.
12/26/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|-----------|-------------|--------|-----------------------------|--|
| 1 | 1-Chlorooctadecane | 3386-33-2 | E230426RSRB | 99% | 10,018.0 µg/mL | +/- 562.8106 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

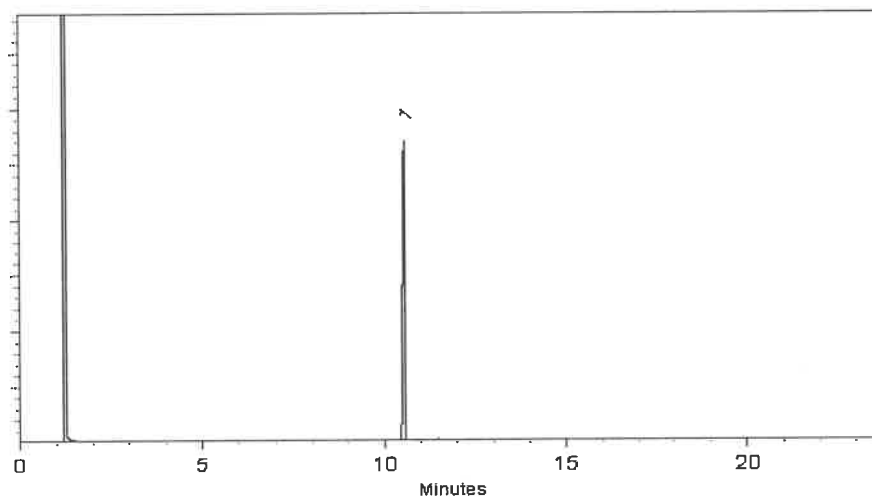
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Ashley Frantz - Quoting Technician

Date Mixed: 07-Aug-2023

Balance Serial # 1128360905


Dillan Murphy - Operations Technician I

Date Passed: 10-Aug-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0203911

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : November 30, 2030 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13053 } Y.P.
↓
P13099 } 01/12/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBP8192 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.6 µg/mL | +/- 5.1815 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.1 µg/mL | +/- 5.1704 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL8682 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCQ8345 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.5 µg/mL | +/- 5.1788 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.0 µg/mL | +/- 5.1667 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.0 µg/mL | +/- 5.1667 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

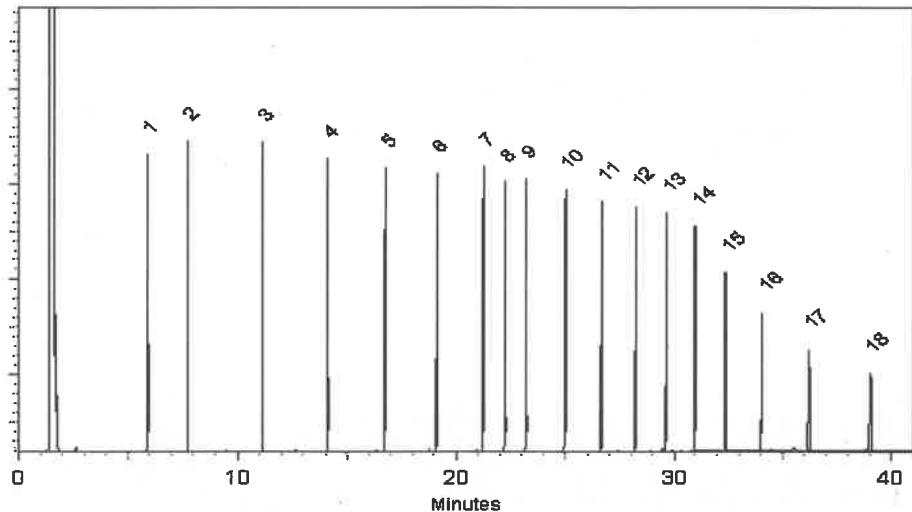
FID

Split Vent:

2 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 31-Oct-2023

Balance Serial # B345965662


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 06-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0203911

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : November 30, 2030 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13053 } Y.P.
↓
P13099 } 01/12/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBP8192 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.6 µg/mL | +/- 5.1815 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.1 µg/mL | +/- 5.1704 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL8682 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCQ8345 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.5 µg/mL | +/- 5.1788 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.0 µg/mL | +/- 5.1667 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.0 µg/mL | +/- 5.1667 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

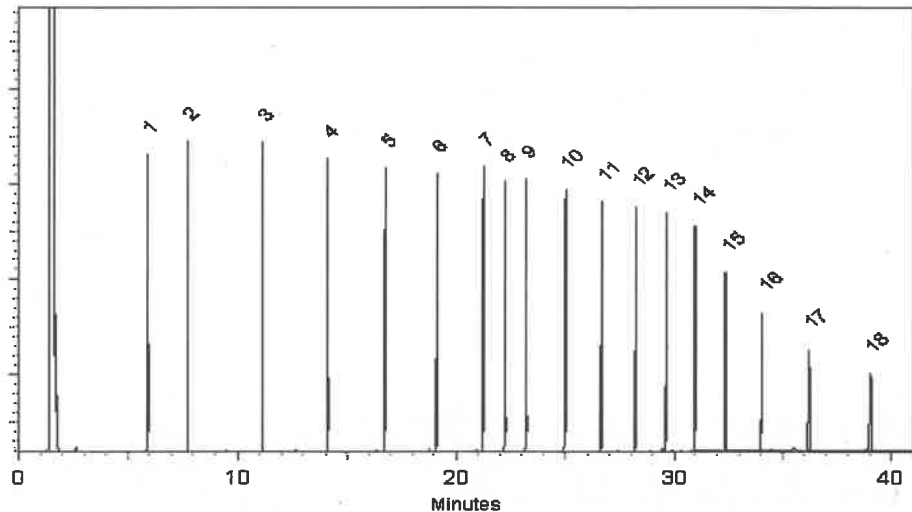
FID

Split Vent:

2 ml/min.

Inj. Vol

1µl



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Laith Clemente - Operations Technician I

Date Mixed: 31-Oct-2023

Balance Serial # B345965662


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 06-Nov-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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Catalog No. : 30543

Lot No.: A0200091

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL

Pkg Amt: > 5 mL

Expiration Date : June 30, 2029

Storage: 10°C or colder

Handling: Sonication required. Mix is photosensitive.

Ship: Ambient

P13113 } Y.P.
↓
P13121 } 01/12/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-36 | 98% | 200.7 µg/mL | +/- 9.0431 |
| 2 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.8 µg/mL | +/- 9.0489 |
| 4 | Acenaphthylene | 208-96-8 | L10L | 95% | 201.0 µg/mL | +/- 9.0574 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 201.0 µg/mL | +/- 9.0565 |
| 6 | Fluorene | 86-73-7 | 10236068 | 99% | 201.0 µg/mL | +/- 9.0547 |
| 7 | Phenanthrene | 85-01-8 | MKCQ2033 | 99% | 200.8 µg/mL | +/- 9.0492 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 201.1 µg/mL | +/- 9.0601 |
| 9 | Fluoranthene | 206-44-0 | MKCF7378 | 99% | 201.0 µg/mL | +/- 9.0583 |
| 10 | Pyrene | 129-00-0 | BCCG8479 | 98% | 201.0 µg/mL | +/- 9.0572 |
| 11 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 99% | 201.0 µg/mL | +/- 9.0583 |
| 12 | Chrysene | 218-01-9 | RP230512B | 99% | 200.8 µg/mL | +/- 9.0474 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 022013B | 99% | 200.8 µg/mL | +/- 9.0492 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 022022K | 99% | 200.9 µg/mL | +/- 9.0510 |
| 15 | Benzo(a)pyrene | 50-32-8 | RP230525 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 200.9 µg/mL | +/- 9.0522 |

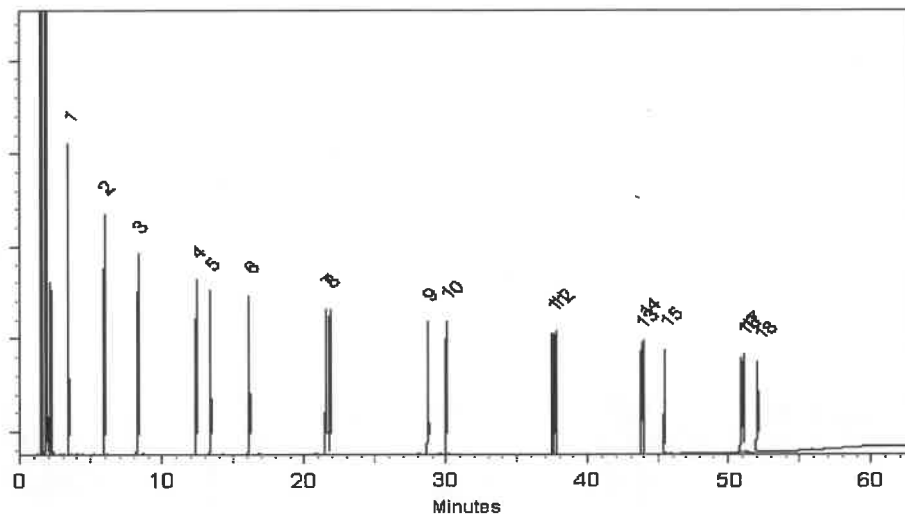
| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 200.9 µg/mL | +/- 9.0519 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.
Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)
Inj. Temp:
250°C
Det. Temp:
330°C
Det. Type:
FID
Split Vent:
20 ml/min.
Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Nick Yaw
Nick Yaw - Operations Tech I

Date Mixed: 19-Jul-2023 **Balance Serial #** 1128353505

Christie Mills
Christie Mills - Operations Lead Tech - ARM QC

Date Passed: 25-Jul-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31480 **Lot No.:** A0206496

Description : MA Fractionation Surrogate Spike Mix
MA Fractionation Surrogate Spike Mix 4000µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13258 } 7-P.
↓
P13277 } 02/20/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|----------|-----------|--------|-----------------------------|--|
| 1 | 2-Fluorobiphenyl | 321-60-8 | 00021384 | 99% | 4,008.5 µg/mL | +/- 180.5736 |
| 2 | 2-Bromonaphthalene | 580-13-2 | STBC5362V | 99% | 4,001.5 µg/mL | +/- 180.2582 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

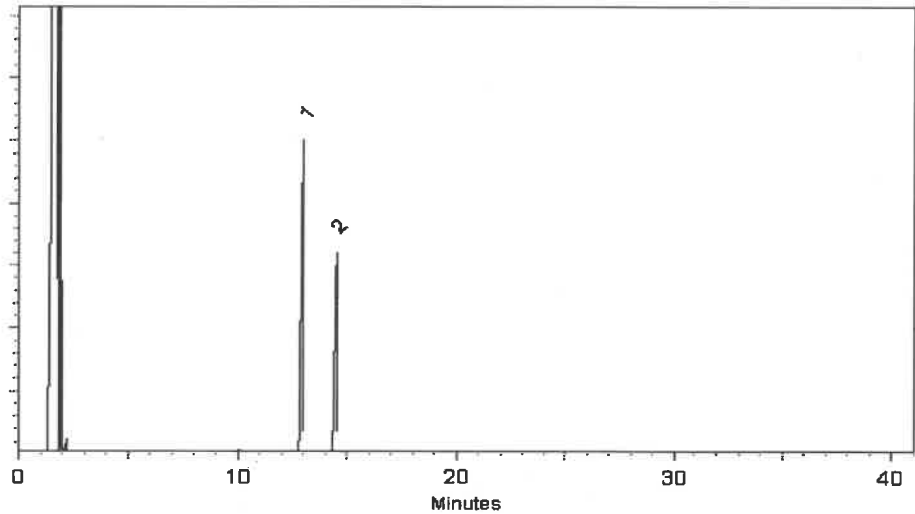
FID

Split Vent:

2 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Gingerich

Rebecca Gingerich - Operations Tech II

Date Mixed: 11-Jan-2024

Balance Serial # B345965662

Dylan Murphy

Dylan Murphy - Operations Technician I

Date Passed: 15-Jan-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31480 **Lot No.:** A0206496

Description : MA Fractionation Surrogate Spike Mix
MA Fractionation Surrogate Spike Mix 4000µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13258 } 7-P.
↓
P13277 } 02/20/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------|----------|-----------|--------|-----------------------------|--|
| 1 | 2-Fluorobiphenyl | 321-60-8 | 00021384 | 99% | 4,008.5 µg/mL | +/- 180.5736 |
| 2 | 2-Bromonaphthalene | 580-13-2 | STBC5362V | 99% | 4,001.5 µg/mL | +/- 180.2582 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Hexane
CAS # 110-54-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

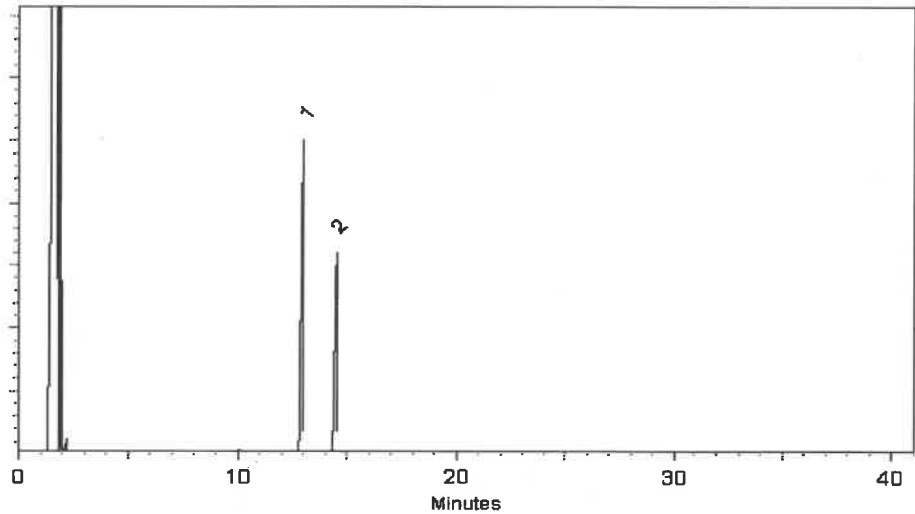
FID

Split Vent:

2 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Rebecca Gingerich

Rebecca Gingerich - Operations Tech II

Date Mixed: 11-Jan-2024

Balance Serial # B345965662

Dillon Murphy

Dillon Murphy - Operations Technician I

Date Passed: 15-Jan-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

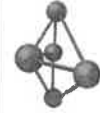
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



CERTIFIED WEIGHT REPORT

Part Number: 95999

Lot Number: 040524

Description: NJ EPH Aliphatic n-Hydrocarbons - Revised
20 components

Expiration Date: 040534

Recommended Storage: Ambient (20 °C)

Nominal Concentration (µg/mL): 1000

NIST Test ID#: 6UTB

Weight(s) shown below were combined and diluted to (mL):

CAUTION: Sonicate Before Use

Solvent(s):
Cyclohexane

Lot#
28930

P13278
Y.P.
P13287
04/11/24

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

| | | | |
|----------------|-----------------|--------|------|
| Formulated By: | Anthony Mahoney | 040524 | DATE |
| Reviewed By: | Pedro L. Rentas | 040524 | DATE |

| Compound | | Part Number | (RM#) | Lot Number | DIL Factor | Initial Vol. (mL) | Initial Conc (µg/mL) | Nominal Conc (µg/mL) | Purity (%) | Purity Uncertainty | Pipette | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/mL) | Expanded Uncertainty (+/-) (µg/mL) | SDS Information (Solvent Safety Info. On Attached pg.) | | |
|----------|---------------------|-------------|-----------|------------|------------|-------------------|----------------------|----------------------|------------|--------------------|---------|------------------|------------------|---------------------|------------------------------------|---|-------------------------------------|-------------------|
| | | | | | | | | | | | | | | | | CAS# | OSHA PEL (TWA) | LD50 |
| 1. | 2-Methylnaphthalene | (0214) | MKBF3783V | NA | NA | NA | NA | 1000 | 97 | 0.2 | NA | 0.02579 | 0.02594 | 1005.7 | 5.7 | 91-57-6 | N/A | or-rat 1630mg/kg |
| 2. | Naphthalene | (0222) | MKB28680V | NA | NA | NA | NA | 1000 | 100 | 0.2 | NA | 0.02502 | 0.02511 | 1003.7 | 5.7 | 91-20-3 | 10 ppm (50mg/m ³ /8H) | or-rat 490mg/kg |
| 3. | n-Nonane | 95708 | 120222 | 1.00 | 25.00 | 1000.7 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.0 | 4.2 | 111-84-2 | 200 ppm (1050mg/m ³ /8H) | ivn-mus 218mg/kg |
| 4. | n-Decane | 95708 | 120222 | 1.00 | 25.00 | 1000.9 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.2 | 4.2 | 124-18-5 | N/A | N/A |
| 5. | n-Dodecane | 95708 | 120222 | 1.00 | 25.00 | 1000.7 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.0 | 4.2 | 112-40-3 | N/A | ivn-mus 3494mg/kg |
| 6. | n-Tetradecane | 95708 | 120222 | 1.00 | 25.00 | 1002.1 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1001.3 | 4.2 | 629-59-4 | N/A | N/A |
| 7. | n-Hexadecane | 95708 | 120222 | 1.00 | 25.00 | 1000.5 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.7 | 4.2 | 544-76-3 | N/A | N/A |
| 8. | n-Octadecane | 95708 | 120222 | 1.00 | 25.00 | 1001.0 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.3 | 4.1 | 583-45-3 | N/A | N/A |
| 9. | n-Eicosane | 95708 | 120222 | 1.00 | 25.00 | 1001.0 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.3 | 4.2 | 112-95-8 | N/A | N/A |
| 10. | n-Henicosane | 95708 | 120222 | 1.00 | 25.00 | 1002.4 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1001.6 | 4.2 | 629-94-7 | N/A | N/A |
| 11. | n-Docosane | 95708 | 120222 | 1.00 | 25.00 | 1001.9 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1001.2 | 4.2 | 629-97-0 | N/A | N/A |
| 12. | n-Tetracosane | 95708 | 120222 | 1.00 | 25.00 | 1000.8 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.1 | 4.2 | 646-31-1 | N/A | N/A |
| 13. | n-Hexacosane | 95708 | 120222 | 1.00 | 25.00 | 1001.2 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.4 | 4.2 | 630-01-3 | N/A | N/A |
| 14. | n-Octacosane | 95708 | 120222 | 1.00 | 25.00 | 1000.5 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.8 | 4.2 | 630-02-4 | N/A | N/A |
| 15. | n-Triacontane | 95708 | 120222 | 1.00 | 25.00 | 1000.5 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.8 | 4.2 | 638-68-6 | N/A | N/A |
| 16. | n-Dotriacontane | 95708 | 120222 | 1.00 | 25.00 | 1000.5 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.8 | 4.3 | 544-85-4 | N/A | ivn-mus 100mg/kg |
| 17. | n-Tetracontane | 95708 | 120222 | 1.00 | 25.00 | 1000.4 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.7 | 4.2 | 14167-59-0 | N/A | N/A |
| 18. | n-Hexatriacontane | 95708 | 120222 | 1.00 | 25.00 | 1001.5 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 1000.8 | 4.2 | 630-06-8 | N/A | N/A |
| 19. | n-Octatriacontane | 95708 | 120222 | 1.00 | 25.00 | 1000.3 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.6 | 4.3 | 7184-86-6 | N/A | N/A |
| 20. | n-Tetracontane | 95708 | 120222 | 1.00 | 25.00 | 1000.6 | 1000 | 1000 | NA | 0.013 | NA | NA | NA | 999.9 | 4.3 | 4181-95-7 | N/A | N/A |

* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N. and Kuyal, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).



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Fax: 1-814-353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0207239

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : February 28, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13417 } Y-P.
2 }
P13429 } 07/11/24.

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 201.0 µg/mL | +/- 5.1926 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBL0465 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBM4146 | 98% | 200.6 µg/mL | +/- 5.1815 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 199.9 µg/mL | +/- 5.1647 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 199.8 µg/mL | +/- 5.1621 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL8682 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 9 | n-Docosane (C22) | 629-97-0 | MKQC3882 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKQC4814 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.3 µg/mL | +/- 5.1753 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKQC9436 | 97% | 199.8 µg/mL | +/- 5.1621 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 201.0 µg/mL | +/- 5.1926 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | OML4N | 99% | 200.7 µg/mL | +/- 5.1839 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.0 µg/mL | +/- 5.1667 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 201.0 µg/mL | +/- 5.1915 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.3 µg/mL | +/- 5.1753 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

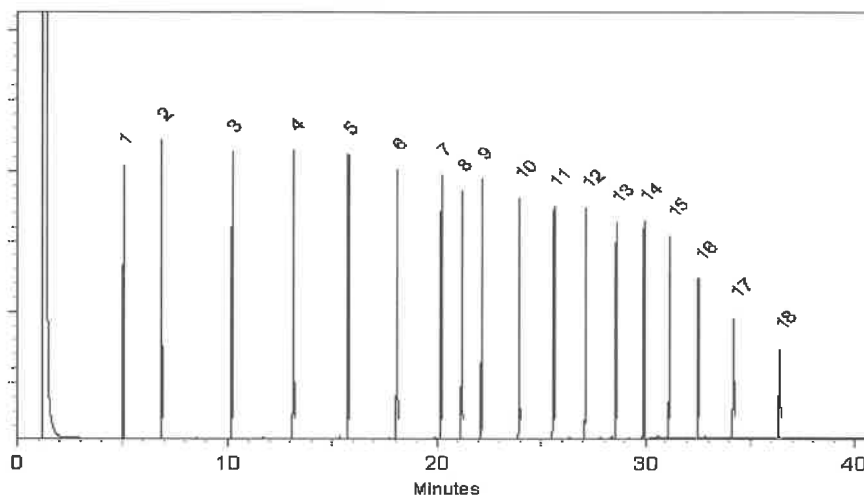
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Matt Fraga
Matt Fraga - Mix Technician

Date Mixed: 31-Jan-2024 **Balance Serial #** 1128353505

Dylan Murphy
Dylan Murphy - Operations Technician I

Date Passed: 02-Feb-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13430 } Y-8.
↓
P13436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

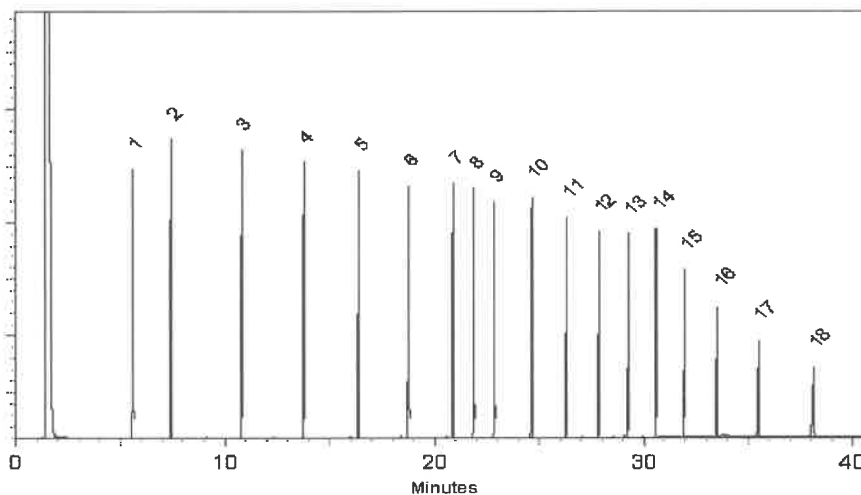
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

PIB430 } Y-8.
↓
PIB436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

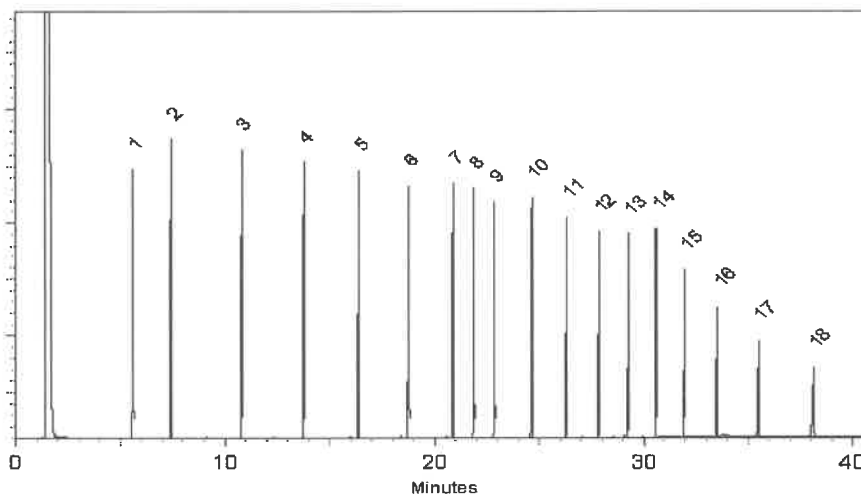
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905

[Signature]
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13430 } Y-8.
↓
P13436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

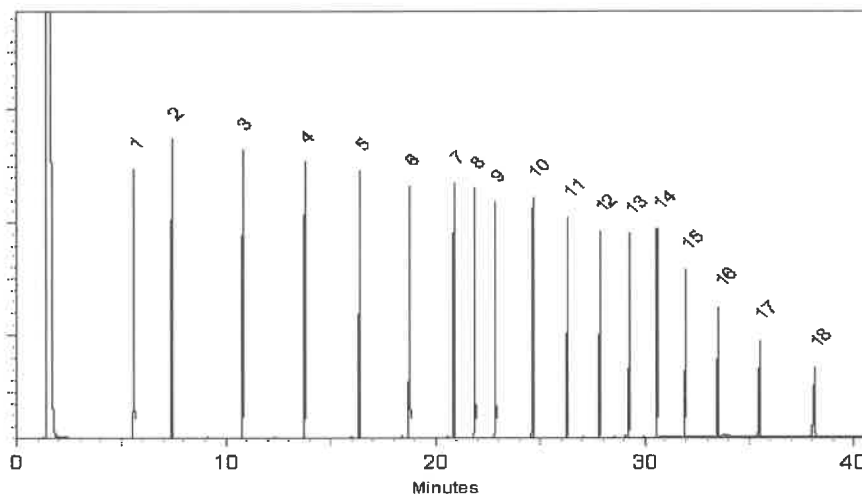
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

PIB430 } Y-8.
↓
PIB436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

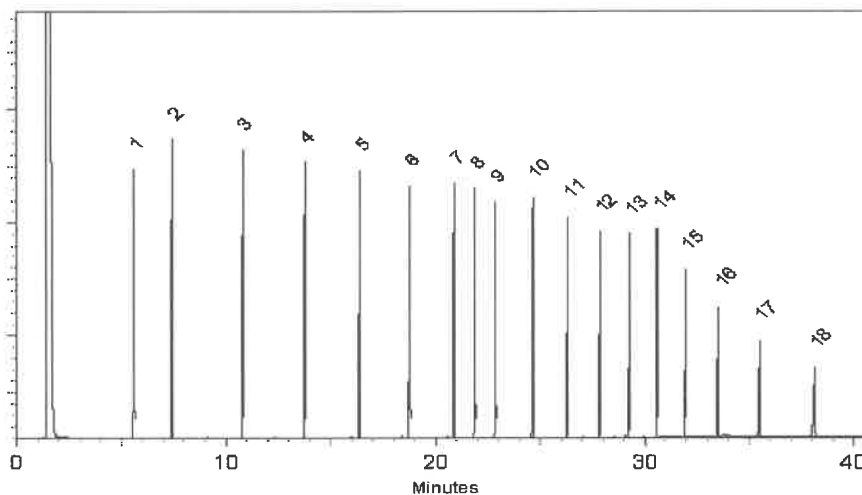
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13430 } Y-8.
↓
P13436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

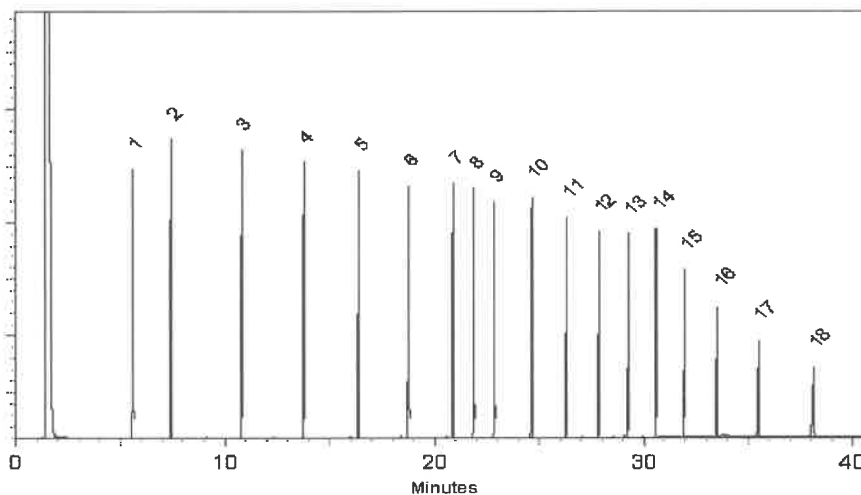
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905

[Signature]
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

PIB430 } Y-8.
↓
PIB436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

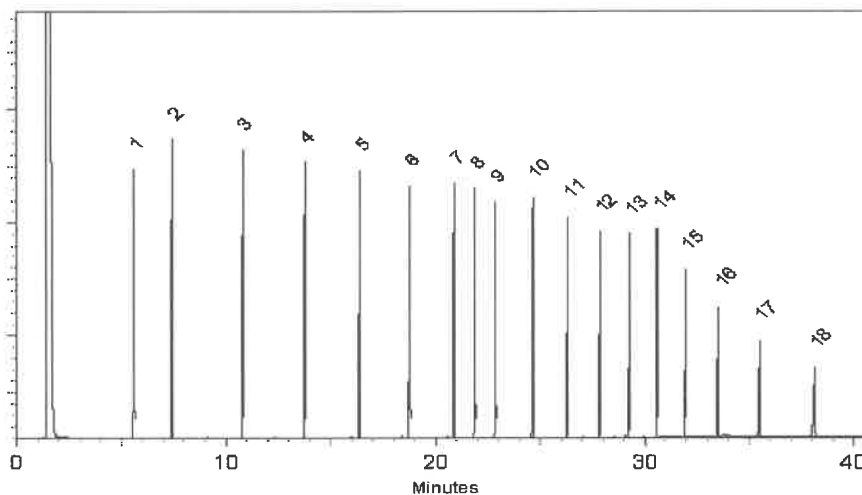
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30542 **Lot No.:** A0211112

Description : NJEPH Aliphatics Matrix Spike Mix
NJEPH Aliphatics Matrix Spike Mix 200 µg/mL, n-Pentane, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : June 30, 2031 **Storage:** 10°C or colder

Handling: Sonicate prior to use. **Ship:** Ambient

P13430 } Y-8.
↓
P13436 } 67116124

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|--------------------------|------------|------------|--------|-----------------------------|--|
| 1 | n-Nonane (C9) | 111-84-2 | SHBP9752 | 99% | 200.9 µg/mL | +/- 5.1891 |
| 2 | n-Decane (C10) | 124-18-5 | SHBQ1342 | 99% | 200.7 µg/mL | +/- 5.1857 |
| 3 | n-Dodecane (C12) | 112-40-3 | SHBP7054 | 99% | 200.4 µg/mL | +/- 5.1771 |
| 4 | n-Tetradecane (C14) | 629-59-4 | STBK5437 | 99% | 200.7 µg/mL | +/- 5.1839 |
| 5 | n-Hexadecane (C16) | 544-76-3 | SHBR0669 | 99% | 200.6 µg/mL | +/- 5.1822 |
| 6 | n-Octadecane (C18) | 593-45-3 | UE5NG | 98% | 200.4 µg/mL | +/- 5.1782 |
| 7 | n-Eicosane (C20) | 112-95-8 | MKCN8767 | 97% | 200.4 µg/mL | +/- 5.1771 |
| 8 | n-Heneicosane (C21) | 629-94-7 | MKCL3226 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 9 | n-Docosane (C22) | 629-97-0 | MKCQ3882 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 10 | n-Tetracosane (C24) | 646-31-1 | MKCS9978 | 99% | 200.5 µg/mL | +/- 5.1805 |
| 11 | n-Hexacosane (C26) | 630-01-3 | MKCQ4814 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 12 | n-Octacosane (C28) | 630-02-4 | BCCG0084 | 99% | 200.5 µg/mL | +/- 5.1796 |
| 13 | n-Triacontane (C30) | 638-68-6 | MKCQ9436 | 97% | 200.4 µg/mL | +/- 5.1763 |
| 14 | n-Dotriacontane (C32) | 544-85-4 | BCBW0661 | 99% | 200.4 µg/mL | +/- 5.1779 |
| 15 | n-Tetratriacontane (C34) | 14167-59-0 | D3MZN | 99% | 200.5 µg/mL | +/- 5.1805 |
| 16 | n-Hexatriacontane (C36) | 630-06-8 | Z27H018 | 99% | 200.6 µg/mL | +/- 5.1814 |
| 17 | n-Octatriacontane (C38) | 7194-85-6 | 0000145137 | 96% | 200.5 µg/mL | +/- 5.1808 |

| | | | | | | |
|----|----------------------|-----------|-------|-----|-------------|------------|
| 18 | n-Tetracontane (C40) | 4181-95-7 | OKEGA | 99% | 200.5 µg/mL | +/- 5.1805 |
|----|----------------------|-----------|-------|-----|-------------|------------|

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: n-Pentane
CAS # 109-66-0
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-S (cat.#10223)
Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

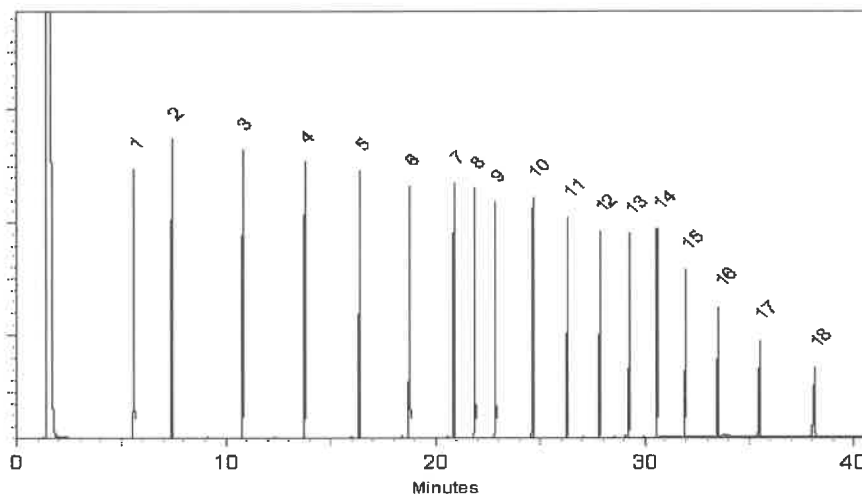
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
2 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
Laith Clemente - Operations Technician I

Date Mixed: 07-May-2024 **Balance Serial #** 1128360905

[Signature]
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 09-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } Y-P.
07/16/24.

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 199.8 µg/mL | +/- 9.0033 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

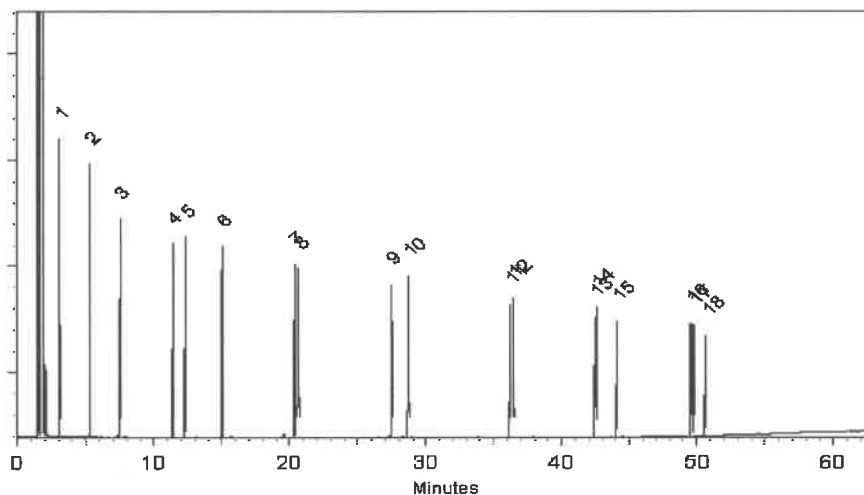
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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CERTIFIED REFERENCE MATERIAL

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 199.8 µg/mL | +/- 9.0033 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

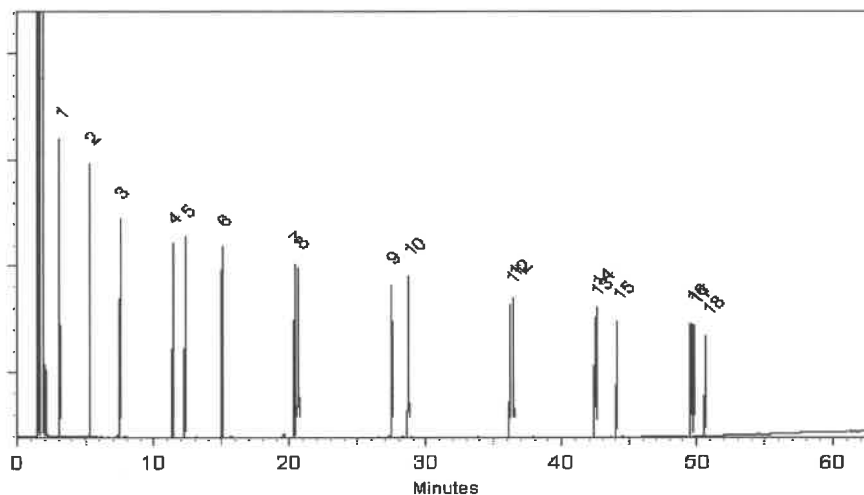
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 199.8 µg/mL | +/- 9.0033 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

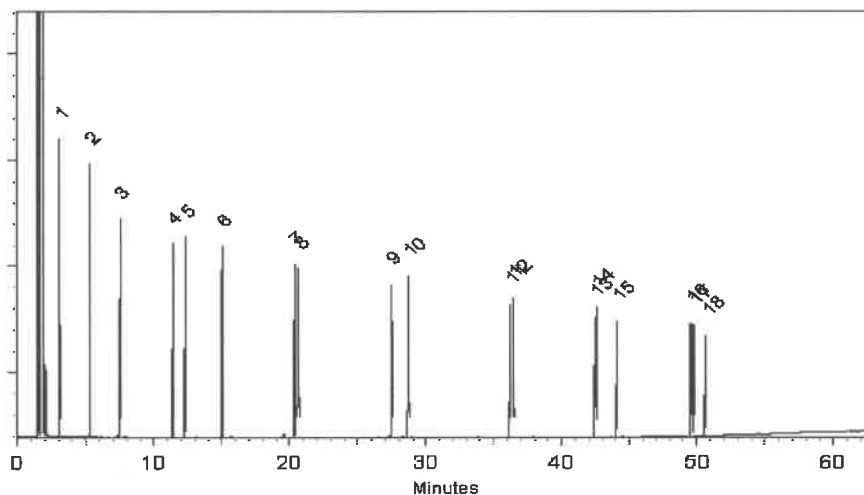
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

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k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
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Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 199.8 µg/mL | +/- 9.0033 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

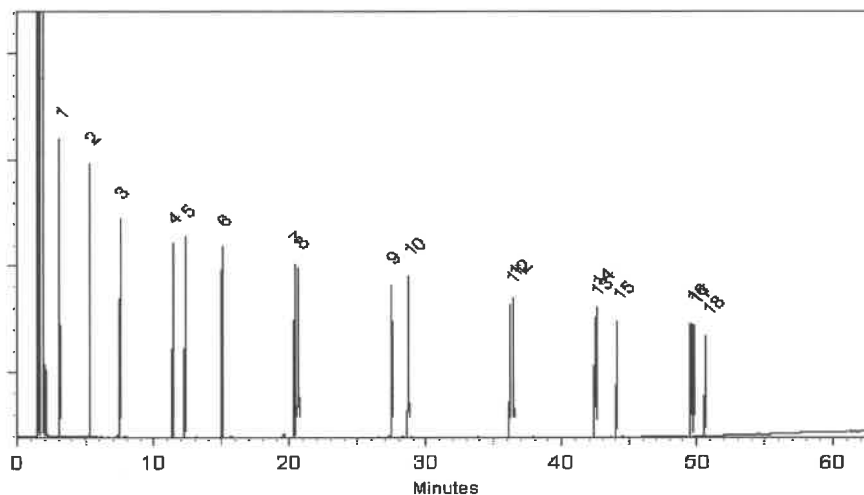
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
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k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

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Certificate of Analysis

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This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
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| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

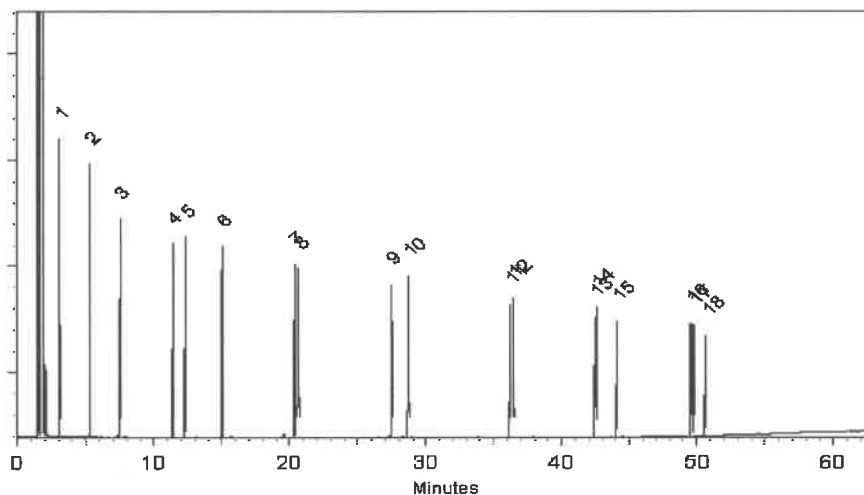
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



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Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

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Manufacturing Notes:

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CERTIFIED REFERENCE MATERIAL

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Catalog No. : 30543 **Lot No.:** A0211254

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : April 30, 2030 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13437
↓
P13452 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0316 |
| 4 | Acenaphthylene | 208-96-8 | 214935L31M | 98% | 200.3 µg/mL | +/- 9.0255 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 202.0 µg/mL | +/- 9.1015 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 7 | Phenanthrene | 85-01-8 | MKCS5188 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.8 µg/mL | +/- 9.0474 |
| 10 | Pyrene | 129-00-0 | BCCK2592 | 99% | 201.2 µg/mL | +/- 9.0655 |
| 11 | Benz(a)anthracene | 56-55-3 | I30012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP231206RSR | 99% | 200.4 µg/mL | +/- 9.0294 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 200.4 µg/mL | +/- 9.0294 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.0 µg/mL | +/- 9.0114 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.7 µg/mL | +/- 9.0431 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 199.8 µg/mL | +/- 9.0033 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | 2-ASA-59-1 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP240105ECS | 99% | 200.8 µg/mL | +/- 9.0474 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:
hydrogen-constant pressure 10 psi.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

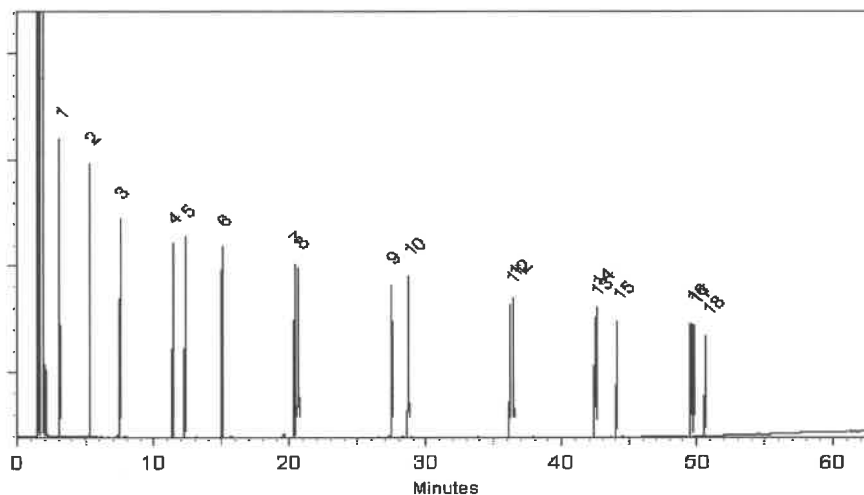
Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID

Split Vent:
20 ml/min.

Inj. Vol
1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Michael Maye
Michael Maye - Operations Tech I

Date Mixed: 09-May-2024 **Balance Serial #** 1128353505

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-May-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0207019

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13h53
↓
P13h56 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0299 |
| 4 | Acenaphthylene | 208-96-8 | L10L | 95% | 200.7 µg/mL | +/- 9.0437 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 7 | Phenanthrene | 85-01-8 | MKQCQ2033 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.7 µg/mL | +/- 9.0438 |
| 9 | Fluoranthene | 206-44-0 | MKQCQ4728 | 99% | 200.6 µg/mL | +/- 9.0366 |
| 10 | Pyrene | 129-00-0 | BCCG8479 | 98% | 200.7 µg/mL | +/- 9.0449 |
| 11 | Benz(a)anthracene | 56-55-3 | I20012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP230601 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 022013B | 99% | 200.6 µg/mL | +/- 9.0384 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.8 µg/mL | +/- 9.0456 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.6 µg/mL | +/- 9.0378 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 200.6 µg/mL | +/- 9.0400 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 200.4 µg/mL | +/- 9.0276 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP231003RSR | 99% | 200.5 µg/mL | +/- 9.0330 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
 Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

100°C (hold 1 min.) to 330°C
 @ 4°C/min. (hold 5 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

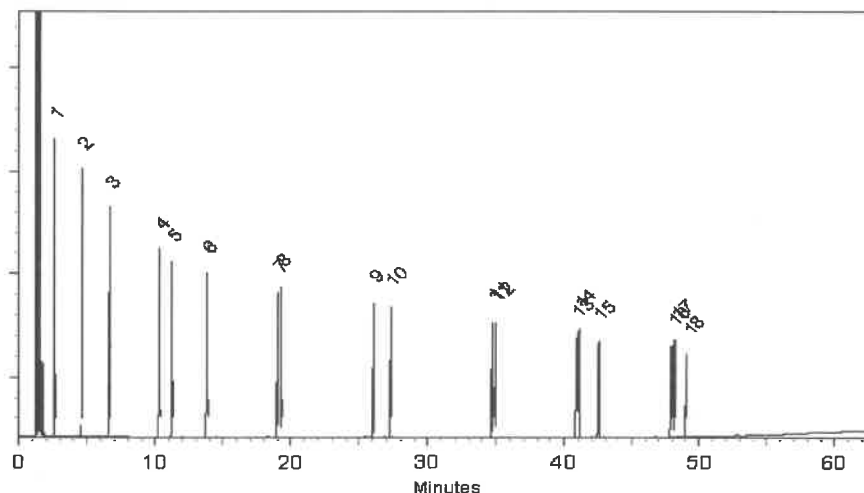
FID

Split Vent:

20 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
 Laith Clemente - Operations Technician I

Date Mixed: 25-Jan-2024

Balance Serial # 1128360905

[Signature]
 Dillan Murphy - Operations Technician I

Date Passed: 29-Jan-2024

Manufactured under Restek's ISO 9001:2015
 Registered Quality System
 Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0207019

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13h53
↓
P13h56 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0299 |
| 4 | Acenaphthylene | 208-96-8 | L10L | 95% | 200.7 µg/mL | +/- 9.0437 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 7 | Phenanthrene | 85-01-8 | MKCQ2033 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.7 µg/mL | +/- 9.0438 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.6 µg/mL | +/- 9.0366 |
| 10 | Pyrene | 129-00-0 | BCCG8479 | 98% | 200.7 µg/mL | +/- 9.0449 |
| 11 | Benz(a)anthracene | 56-55-3 | I20012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP230601 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 022013B | 99% | 200.6 µg/mL | +/- 9.0384 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.8 µg/mL | +/- 9.0456 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.6 µg/mL | +/- 9.0378 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 200.6 µg/mL | +/- 9.0400 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 200.4 µg/mL | +/- 9.0276 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP231003RSR | 99% | 200.5 µg/mL | +/- 9.0330 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

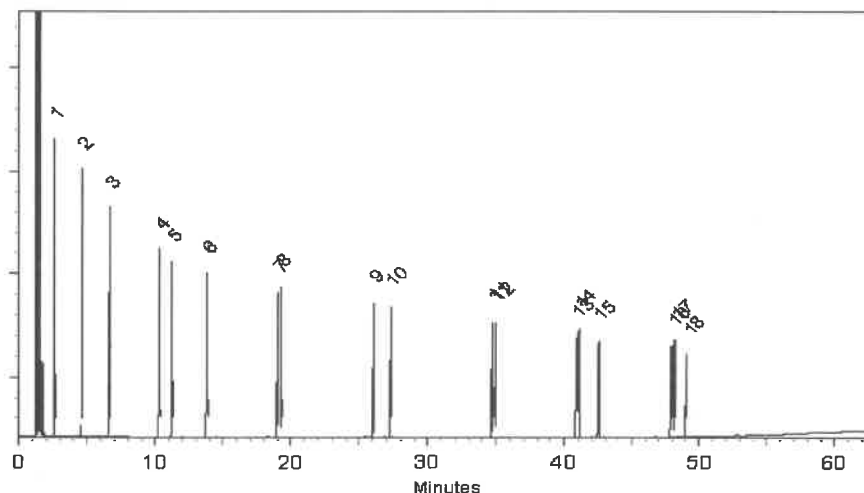
FID

Split Vent:

20 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Laith Clemente
Laith Clemente - Operations Technician I

Date Mixed: 25-Jan-2024

Balance Serial # 1128360905

Dylan Murphy
Dylan Murphy - Operations Technician I

Date Passed: 29-Jan-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0207019

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13h53
↓
P13h56 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0299 |
| 4 | Acenaphthylene | 208-96-8 | L10L | 95% | 200.7 µg/mL | +/- 9.0437 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 7 | Phenanthrene | 85-01-8 | MKCQ2033 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.7 µg/mL | +/- 9.0438 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.6 µg/mL | +/- 9.0366 |
| 10 | Pyrene | 129-00-0 | BCCG8479 | 98% | 200.7 µg/mL | +/- 9.0449 |
| 11 | Benz(a)anthracene | 56-55-3 | I20012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP230601 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 022013B | 99% | 200.6 µg/mL | +/- 9.0384 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.8 µg/mL | +/- 9.0456 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.6 µg/mL | +/- 9.0378 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 200.6 µg/mL | +/- 9.0400 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 200.4 µg/mL | +/- 9.0276 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP231003RSR | 99% | 200.5 µg/mL | +/- 9.0330 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

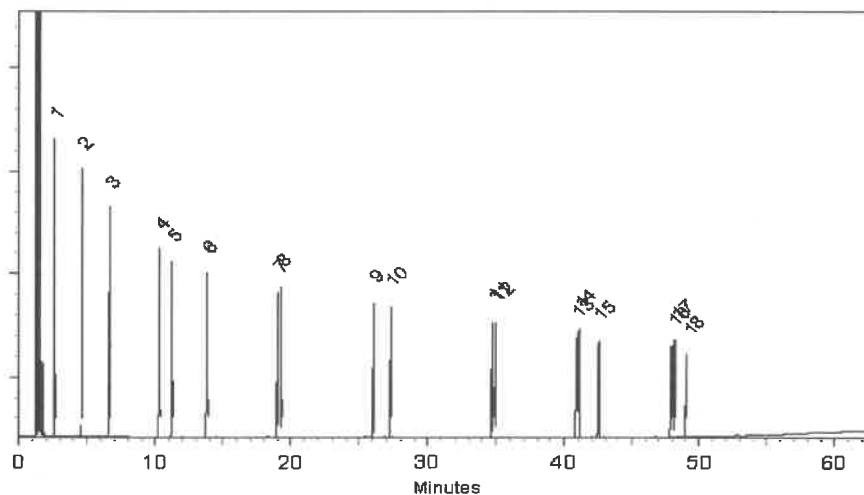
FID

Split Vent:

20 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Laith Clemente - Operations Technician I

Date Mixed: 25-Jan-2024

Balance Serial # 1128360905


Dillan Murphy - Operations Technician I

Date Passed: 29-Jan-2024

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 30543 **Lot No.:** A0207019

Description : NJEPH Aromatics Matrix Spike Mix

NJEPH Aromatics Matrix Spike Mix 200µg/mL, Acetone/Toluene (50:50), 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : December 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

P13h53
↓
P13h56 } 7-P.
07/16/24

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,3-Trimethylbenzene | 526-73-8 | 8776.10-38 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 2 | Naphthalene | 91-20-3 | STBL1057 | 99% | 200.6 µg/mL | +/- 9.0384 |
| 3 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 200.4 µg/mL | +/- 9.0299 |
| 4 | Acenaphthylene | 208-96-8 | L10L | 95% | 200.7 µg/mL | +/- 9.0437 |
| 5 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 200.0 µg/mL | +/- 9.0114 |
| 6 | Fluorene | 86-73-7 | 10241100 | 99% | 200.4 µg/mL | +/- 9.0294 |
| 7 | Phenanthrene | 85-01-8 | MKCQ2033 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 8 | Anthracene | 120-12-7 | MKCR0570 | 99% | 200.7 µg/mL | +/- 9.0438 |
| 9 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 200.6 µg/mL | +/- 9.0366 |
| 10 | Pyrene | 129-00-0 | BCCG8479 | 98% | 200.7 µg/mL | +/- 9.0449 |
| 11 | Benz(a)anthracene | 56-55-3 | I20012022BAA | 99% | 200.8 µg/mL | +/- 9.0474 |
| 12 | Chrysene | 218-01-9 | RP230601 | 99% | 200.5 µg/mL | +/- 9.0330 |
| 13 | Benzo(b)fluoranthene | 205-99-2 | 022013B | 99% | 200.6 µg/mL | +/- 9.0384 |
| 14 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 200.8 µg/mL | +/- 9.0456 |
| 15 | Benzo(a)pyrene | 50-32-8 | O45GL | 98% | 200.6 µg/mL | +/- 9.0378 |
| 16 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 200.6 µg/mL | +/- 9.0400 |

| | | | | | | |
|----|-----------------------|----------|-------------|-----|-------------|------------|
| 17 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 200.4 µg/mL | +/- 9.0276 |
| 18 | Benzo(g,h,i)perylene | 191-24-2 | RP231003RSR | 99% | 200.5 µg/mL | +/- 9.0330 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Acetone/Toluene (50:50)
CAS # 67-64-1/108-88-3
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
 Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

100°C (hold 1 min.) to 330°C
 @ 4°C/min. (hold 5 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

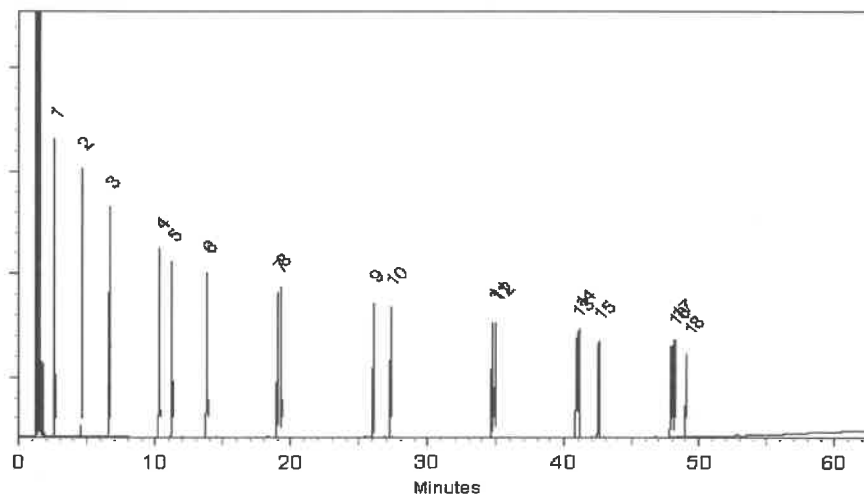
FID

Split Vent:

20 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
 Laith Clemente - Operations Technician I

Date Mixed: 25-Jan-2024

Balance Serial # 1128360905

[Signature]
 Dillan Murphy - Operations Technician I

Date Passed: 29-Jan-2024

Manufactured under Restek's ISO 9001:2015
 Registered Quality System
 Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.

