284 Sheffield Street, Mountainside, New Jersey 07092, Phone : 908 789 8900,
Fax : 908 789 8922

# Prep Standard - Chemical Standard Summary

**Order ID :** P3440

**Test :** Hexavalent Chromium

**Prepbatch ID :**

**Sequence ID/Qc Batch ID:** LB131838,

**Standard ID :**
WP107791,WP108658,WP108659,WP108907,WP108948,WP108949,WP108950,WP108951,WP108952,WP108953,WP108954,WP108955,WP108957,

**Chemical ID :**
E3769,M5211,W2606,W2651,W2652,W2979,W3112,

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Fax : 908 789 8922

# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 126 | 5N sulfuric acid | WP107791 | 05/07/2024 | 10/24/2024 | Niha Farheen Shaik | None | None | Iwona Zarych 05/07/2024 |

**FROM** 140.00000ml of M5211 + 860.00000ml of W2606 = Final Quantity: 1.000 L

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1993 | HEXAVALENTCHROMIUM STOCK STD 1, 50PPM | WP108658 | 07/09/2024 | 01/09/2025 | Rubina Mughal | WETCHEM_SCALE_5 (WCSC-5) | None | Iwona Zarych 07/09/2024 |

**FROM** 0.14140gram of W2651 + 1000.00000ml of W3112 = Final Quantity: 1000.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1994 | HEXAVALENTCHROMIUM STOCK STD 2, 50PPM | WP108659 | 07/09/2024 | 01/09/2025 | Rubina Mughal | WETCHEM_SCALE_5 (WCSC-5) | None | Iwona Zarych 07/09/2024 |

**FROM** 0.14140gram of W2652 + 1000.00000ml of W3112 = Final Quantity: 1000.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 114 | hexavalent chromium color reagent | WP108907 | 07/30/2024 | 08/06/2024 | Iwona Zarych | WETCHEM_SCALE_5 (WCSC-5) | None | Mohan Bera 08/02/2024 |

**FROM** 0.25000gram of W2979 + 50.00000ml of E3769 = Final Quantity: 50.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 1103 | HEX CHROME INTERMEDIATE STD SOURCE 1 (5PPM) | WP108948 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 9.00000ml of W3112 + 1.00000ml of WP108658 = Final Quantity: 10.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 110 | calibration std. hexchrome 0 ppm | WP108949 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | None | Mohan Bera 08/02/2024 |

**FROM** 100.00000ml of W3112 = Final Quantity: 100.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 109 | calibration std. hexchrome 0.01 ppm | WP108950 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.80000ml of W3112 + 0.20000ml of WP108948 = Final Quantity: 100.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 3800 | Calibration Std Hexachrome 0.025 ppm | WP108951 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.50000ml of W3112 + 0.50000ml of WP108948 = Final Quantity: 100.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 108 | Calibration Std. hexchrome 0.05 ppm | WP108952 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.00000ml of W3112 + 1.00000ml of WP108948 = Final Quantity: 100.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 107 | Calibration Std. hexchrome 0.1 ppm | WP108953 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.80000ml of W3112 + 0.20000ml of WP108658 = Final Quantity: 100.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 3808 | Calibration and CCV std HexChrome 0.5PPM | WP108954 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.00000ml of W3112 + 1.00000ml of WP108658 = Final Quantity: 100.000 ml

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 3809 | Calibration std HexChrome 1.0PPM | WP108955 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 98.00000ml of W3112 + 2.00000ml of WP108658 = Final Quantity: 100.000 ml

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# Wet Chemistry STANDARD PREPARATION LOG

| Recipe ID | NAME | NO. | Prep Date | Expiration Date | Prepared By | ScaleID | PipetteID | Supervised By |
|---|---|---|---|---|---|---|---|---|
| 3804 | Hexavalent Chromium ICV-LCS Std | WP108957 | 08/01/2024 | 08/02/2024 | Iwona Zarych | None | WETCHEM_PIPETTE_3 (WC) | Mohan Bera 08/02/2024 |

**FROM** 99.00000ml of W3112 + 1.00000ml of WP108659 = Final Quantity: 100.000 ml

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# CHEMICAL RECEIPT LOG BOOK

| 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 | 01/12/2025 | 07/12/2024 / Rajesh | 07/02/2024 / Rajesh | E3769 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L) | 22D0862014 | 01/20/2025 | 08/22/2022 / mohan | 04/26/2022 / mohan | M5211 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| Seidler Chemical | DIW / DI Water | Daily Lab-Certified | 10/24/2024 | 10/24/2019 / apatel | 10/24/2019 / apatel | W2606 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| PCI Scientific Supply, Inc. | AA13450-36 / Potassium Dichromate, 500g(NEW) | T15F019 | 01/24/2030 | 01/24/2020 / apatel | 01/24/2020 / apatel | W2651 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| PCI Scientific Supply, Inc. | P188-500 / Potassium Dichromate, 500g(new-2nd lot) | 194664 | 01/24/2030 | 01/24/2020 / apatel | 01/24/2020 / apatel | W2652 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|---|---|---|---|---|---|---|
| PCI Scientific Supply, Inc. | 31390 / 1,5-Diphenylcarbazide | MKCR6636 | 12/09/2027 | 12/09/2022 / Iwona | 12/09/2022 / Iwona | W2979 |

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# 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 / Iwona | 07/03/2024 / Iwona | W3112 |

ThermoFisher SCIENTIFIC

# Certificate of Analysis

Product No.: 13450

Product: Potassium dichromate, ACS, 99.0% min

Lot No.: T15F019

| Test | Limits | Results |
|---|---|---|
| Appearance | Orange-red crystals | Orange-red crystals |
| Identification | To Pass | Passes |
| Purity | 99.0 % min | 99.67 % |
| Insoluble matter | 0.005 % max | 0.004 % |
| Loss on drying | 0.05 % max | 0.03 % |
| Chloride | 0.001 % max | < 0.001 % |
| Sulfate | 0.005 % max | < 0.005 % |
| Iron | 0.001 % max | < 0.001 % |
| Calcium | 0.003 % max | 0.0012 % |
| Sodium | 0.02 % max | 0.0047 % |

ThermoFisher SCIENTIFIC

# Certificate of Analysis

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120632

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

| | | | |
|---|---|---|---|
| Catalog Number | P188 | Quality Test / Release Date | 08/12/2019 |
| Lot Number | 194664 | | |
| Description | POTASSIUM DICHROMATE, A.C.S. | | |
| Country of Origin | United States | Suggested Retest Date | Aug/2024 |
| Chemical Origin | Inorganic-non animal | | |
| BSE/TSE Comment | No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product. | | |
| Chemical Comment | | | |

| N/A | | | |
|---|---|---|---|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Fine, orange-red crystals |
| ASSAY | % | >= 99 | 99.2 |
| CALCIUM | % | <= 0.003 | <0.003 |
| CHLORIDE | % | <= 0.001 | <0.001 |
| LOSS ON DRYING @ 105 C | % | <= 0.05 | <0.05 |
| SULFATE (SO4) | % | <= 0.005 | <0.005 |
| INSOLUBLE MATTER | % | <= 0.005 | 0.003 |
| IRON (Fe) | % | <= 0.001 | <0.001 |
| SODIUM (Na) | % | <= 0.02 | <0.02 |
| IDENTIFICATION | PASS/FAIL | = PASS TEST | PASS TEST |

Teresa Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis Fair Lawn

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
If there are any questions with this certificate, please call at (800) 227-6701.
*Based on suggested storage condition.

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™ | J.T.Baker®

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 ($(CH_3)_2CO$) (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 |
| Titrable Acid (µeq/g) | ≤ 0.3 | 0.1 |
| Titrable Base (µeq/g) | ≤ 0.6 | < 0.1 |
| Water ($H_2O$) | ≤ 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 7/21/24

E 3769

Ken Koehnlein
Sr. Manager, Quality Assurance

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

M5210 - M5217
MB

avantor™ | J.T.Baker®

Material No.: 9673-33
Batch No.: 22D0862014
Manufactured Date: 2022-02-23
Retest Date: 2027-02-22
Revision No.: 0

# Certificate of Analysis

| Test | Specification | Result |
|---|---|---|
| ACS - Assay ($H_2SO_4$) | 95.0 - 98.0 % | 96.5 % |
| Appearance | Passes Test | Passes Test |
| ACS - Color (APHA) | ≤ 10 | 5 |
| ACS - Residue after Ignition | ≤ 3 ppm | < 1 ppm |
| ACS - Substances Reducing Permanganate (as SO2) | ≤ 2 ppm | < 2 ppm |
| Ammonium ($NH_4$) | ≤ 1 ppm | < 1 ppm |
| Chloride (Cl) | ≤ 0.1 ppm | < 0.1 ppm |
| Nitrate ($NO_3$) | ≤ 0.2 ppm | < 0.1 ppm |
| Phosphate ($PO_4$) | ≤ 0.5 ppm | < 0.1 ppm |
| Trace Impurities - Aluminum (Al) | ≤ 30.0 ppb | 1.7 ppb |
| Arsenic and Antimony (as As) | ≤ 4.0 ppb | < 2.0 ppb |
| Trace Impurities - Boron (B) | ≤ 10.0 ppb | < 5.0 ppb |
| Trace Impurities - Cadmium (Cd) | ≤ 2.0 ppb | < 0.3 ppb |
| Trace Impurities - Chromium (Cr) | ≤ 6.0 ppb | < 0.4 ppb |
| Trace Impurities - Cobalt (Co) | ≤ 0.5 ppb | < 0.3 ppb |
| Trace Impurities - Copper (Cu) | ≤ 1.0 ppb | < 0.1 ppb |
| Trace Impurities - Gold (Au) | ≤ 10.0 ppb | < 0.2 ppb |
| Heavy Metals (as Pb) | ≤ 500.0 ppb | < 100.0 ppb |
| Trace Impurities - Iron (Fe) | ≤ 50.0 ppb | 2.0 ppb |
| Trace Impurities - Lead (Pb) | ≤ 0.5 ppb | < 0.5 ppb |
| Trace Impurities - Magnesium (Mg) | ≤ 7.0 ppb | 0.6 ppb |
| Trace Impurities - Manganese (Mn) | ≤ 1.0 ppb | < 0.4 ppb |
| Trace Impurities - Mercury (Hg) | ≤ 0.5 ppb | < 0.1 ppb |
| Trace Impurities - Nickel (Ni) | ≤ 2.0 ppb | < 0.3 ppb |
| Trace Impurities - Potassium (K) | ≤ 500.0 ppb | < 2.0 ppb |
| Trace Impurities - Selenium (Se) | ≤ 50.0 ppb | 12.1 ppb |
| Trace Impurities - Silicon (Si) | ≤ 100.0 ppb | 4.4 ppb |
| Trace Impurities - Silver (Ag) | ≤ 1.0 ppb | < 0.3 ppb |

>>> Continued on page 2 >>>

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

avantor™ | J.T.Baker®

Material No.: 9673-33
Batch No.: 22D0862014

| Test | Specification | Result |
|---|---|---|
| Trace Impurities - Sodium (Na) | ≤ 500.0 ppb | 6.2 ppb |
| Trace Impurities - Strontium (Sr) | ≤ 5.0 ppb | < 0.2 ppb |
| Trace Impurities - Tin (Sn) | ≤ 5.0 ppb | < 0.8 ppb |
| Trace Impurities - Zinc (Zn) | ≤ 5.0 ppb | 0.6 ppb |

For Laboratory,Research,or Manufacturing Use

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

James T Ethier

Jamie Ethier
Vice President Global Quality

Sigma-Aldrich.

W 2979

Rec: 12/08/22

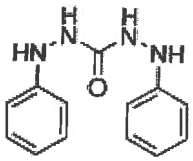
exp. 12/08/27

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

# Certificate of Analysis

Product Name:
1,5-Diphenylcarbazide - ACS reagent

| | |
|---|---|
| **Product Number:** | **259225** |
| **Batch Number:** | **MKCR6636** |
| Brand: | SIAL |
| CAS Number: | 140-22-7 |
| MDL Number: | MFCD00003013 |
| Formula: | C13H14N4O |
| Formula Weight: | 242.28 g/mol |
| Quality Release Date: | 02 JUN 2022 |



| Test | Specification | Result |
|---|---|---|
| Appearance (Color)<br>Off-White to Pink, Light Purple or Tan | Conforms to Requirements | Pink |
| Appearance (Form) | Powder or Chunks | Powder |
| Melting Point | 173.0 - 176.0 °C | 173.0 °C |
| Infrared Spectrum | Conforms to Structure | Conforms |
| Residue on ignition (Ash)<br>15 minutes, 800 Degrees Celsius | ≤ 0.05 % | 0.01 % |
| Solubility | Pass | Pass |
| Sensitivity Test | Pass | Pass |
| Meets ACS Requirements | Current ACS Specification | Conforms |

Larry Coers, Director
Quality Control
Milwaukee, WI US