Safety Data Sheet
acc. to OSHA HCS

1 Identification

· Product identifier
  · Trade name: Trace Metals on Filter Media
  · Article number: QC-TMFM-C

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: High-Purity Standards
    P.O. Box 41727
    Charleston, SC 29423
    Telephone: (843) 767-7900
    FAX: (843) 767-7906

· Information department: Product safety department
  · Emergency telephone number:
    INFOTRAC
    Emergency telephone numbers 1-800-535-5053
    Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

· Classification of the substance or mixture
  The product is not classified, according to the Globally Harmonized System (GHS).

· Label elements
  · GHS label elements: Void
  · Hazard pictograms: Void
  · Signal word: Void
  · Hazard statements: Void
  · Classification system:
    · NFPA ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0
    · HMIS-ratings (scale 0 - 4)
      HEALTH: Health = *0
      FIRE: Fire = 0
      REACTIVITY: Reactivity = 0
  · Other hazards
  · Results of PBT and vPvB assessment
    · PBT: Not applicable.
    · vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures
  · Description: Mixture of the substances listed below with nonhazardous additions.

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Printing date 12/06/2018
Reviewed on 12/05/2018

Trade name: Trace Metals on Filter Media

· Dangerous components:
  9004-70-0 nitrocellulose, dry or wetted with less than 25% water (or alcohol), by mass 80-90%
  7439-92-1 lead 0.13%

· Chemical identification of the substance/preparation
  9004-35-7 Cellulose Acetate 0-10%
  7440-22-4 silver 0.23%
  7440-66-6 zinc 0.23%
  7440-38-2 arsenic 0.23%
  7440-50-8 copper 0.13%
  7439-89-6 iron 0.13%
  7440-48-4 cobalt 0.06%
  7439-96-5 manganese 0.06%
  7440-02-0 nickel 0.06%
  7440-41-7 beryllium 0.06%
  7440-28-0 thallium 0.06%
  7440-62-2 vanadium 0.06%
  7440-43-9 cadmium (non-pyrophoric) 0.06%
  7440-47-3 chromium 0.06%
  7440-39-3 barium 0.06%

4 First-aid measures

· Description of first aid measures
  · General information: No special measures required.
  · After inhalation: Supply fresh air; consult doctor in case of complaints.
  · After skin contact: Generally the product does not irritate the skin.
  · After eye contact: Rinse opened eye for several minutes under running water.
  · After swallowing: If symptoms persist consult doctor.

· Information for doctor:
  · Most important symptoms and effects, both acute and delayed No further relevant information available.
  · Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

· Extinguishing media
  · Suitable extinguishing agents: Use fire fighting measures that suit the environment.
  · Special hazards arising from the substance or mixture No further relevant information available.
  · Advice for firefighters
  · Protective equipment: No special measures required.
## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:** Pick up mechanically.
- **Reference to other sections**
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

### PAC-1:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Name</th>
<th>PAC-1 concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-22-4</td>
<td>silver</td>
<td>0.3 mg/m³</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>zinc</td>
<td>6 mg/m³</td>
</tr>
<tr>
<td>7440-38-2</td>
<td>arsenic</td>
<td>1.5 mg/m³</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>copper</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>3.2 mg/m³</td>
</tr>
<tr>
<td>7439-92-1</td>
<td>lead</td>
<td>0.15 mg/m³</td>
</tr>
<tr>
<td>7440-48-4</td>
<td>cobalt</td>
<td>0.18 mg/m³</td>
</tr>
<tr>
<td>7439-96-5</td>
<td>manganese</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>7440-02-0</td>
<td>nickel</td>
<td>4.5 mg/m³</td>
</tr>
<tr>
<td>7440-41-7</td>
<td>beryllium</td>
<td>0.0023 mg/m³</td>
</tr>
<tr>
<td>7440-28-0</td>
<td>thallium</td>
<td>0.06 mg/m³</td>
</tr>
<tr>
<td>7440-62-2</td>
<td>vanadium</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>7440-43-9</td>
<td>cadmium (non-pyrophoric)</td>
<td>0.10 mg/m³</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>chromium</td>
<td>1.5 mg/m³</td>
</tr>
<tr>
<td>7440-39-3</td>
<td>barium</td>
<td>1.5 mg/m³</td>
</tr>
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### PAC-2:

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Name</th>
<th>PAC-2 concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-22-4</td>
<td>silver</td>
<td>170 mg/m³</td>
</tr>
<tr>
<td>7440-66-6</td>
<td>zinc</td>
<td>21 mg/m³</td>
</tr>
<tr>
<td>7440-38-2</td>
<td>arsenic</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td>7440-50-8</td>
<td>copper</td>
<td>33 mg/m³</td>
</tr>
<tr>
<td>7439-89-6</td>
<td>iron</td>
<td>35 mg/m³</td>
</tr>
<tr>
<td>7439-92-1</td>
<td>lead</td>
<td>120 mg/m³</td>
</tr>
<tr>
<td>7440-48-4</td>
<td>cobalt</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>7439-96-5</td>
<td>manganese</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td>7440-02-0</td>
<td>nickel</td>
<td>50 mg/m³</td>
</tr>
<tr>
<td>7440-41-7</td>
<td>beryllium</td>
<td>0.025 mg/m³</td>
</tr>
<tr>
<td>7440-28-0</td>
<td>thallium</td>
<td>3.3 mg/m³</td>
</tr>
<tr>
<td>7440-62-2</td>
<td>vanadium</td>
<td>3.8 mg/m³</td>
</tr>
<tr>
<td>7440-43-9</td>
<td>cadmium (non-pyrophoric)</td>
<td>0.76 mg/m³</td>
</tr>
<tr>
<td>7440-47-3</td>
<td>chromium</td>
<td>17 mg/m³</td>
</tr>
<tr>
<td>7440-39-3</td>
<td>barium</td>
<td>180 mg/m³</td>
</tr>
</tbody>
</table>
47.1.4 PAC-3:

- 7440-22-4 silver 990 mg/m³
- 7440-66-6 zinc 120 mg/m³
- 7440-38-2 arsenic 100 mg/m³
- 7440-50-8 copper 200 mg/m³
- 7439-89-6 iron 150 mg/m³
- 7439-92-1 lead 700 mg/m³
- 7440-48-4 cobalt 20 mg/m³
- 7439-96-5 manganese 1,800 mg/m³
- 7440-02-0 nickel 99 mg/m³
- 7440-41-7 beryllium 0.1 mg/m³
- 7440-28-0 thallium 20 mg/m³
- 7440-62-2 vanadium 35 mg/m³
- 7440-43-9 cadmium (non-pyrophoric) 4.7 mg/m³
- 7440-47-3 chromium 99 mg/m³
- 7440-39-3 barium 1,100 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling: No special measures required.
  - Information about protection against explosions and fires: No special measures required.
- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: None.
- Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components with limit values that require monitoring at the workplace:
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
  At this time, the remaining constituent has no known exposure limits.
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
  At this time, the other constituents have no known exposure limits.
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<table>
<thead>
<tr>
<th>7439-92-1 lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL Long-term value: 0.05* mg/m³</td>
</tr>
<tr>
<td>REL Long-term value: 0.05* mg/m³</td>
</tr>
<tr>
<td>TLV Long-term value: 0.05* mg/m³</td>
</tr>
<tr>
<td>*see 29 CFR 1910.1025</td>
</tr>
<tr>
<td>*8-hr TWA ;See PocketGuide App.C</td>
</tr>
<tr>
<td>*and inorganic compounds, as Pb; BEI</td>
</tr>
</tbody>
</table>

- Ingredients with biological limit values:

<table>
<thead>
<tr>
<th>7439-92-1 lead</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEI 30 µg/100 ml</td>
</tr>
<tr>
<td>Medium: blood</td>
</tr>
<tr>
<td>Time: not critical</td>
</tr>
<tr>
<td>Parameter: Lead</td>
</tr>
<tr>
<td>10 µg/100 ml</td>
</tr>
<tr>
<td>Medium: blood</td>
</tr>
<tr>
<td>Time: not critical</td>
</tr>
<tr>
<td>Parameter: Lead (women of child bearing potential)</td>
</tr>
</tbody>
</table>

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures:
    The usual precautionary measures for handling chemicals should be followed.
  - Breathing equipment: Not required.
  - Protection of hands:
    The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
    Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
  - Material of gloves
    The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
  - Penetration time of glove material
    The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection: Not required.

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    Form: Solid
    Color: Whitish
    Odor: Characteristic
Trade name: Trace Metals on Filter Media

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor threshold</td>
<td>Not determined.</td>
</tr>
<tr>
<td>pH-value</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits</td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Upper</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water</td>
<td>Insoluble.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Kinematic</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Solvent content</td>
<td></td>
</tr>
<tr>
<td>VOC content</td>
<td>0.00 %</td>
</tr>
<tr>
<td></td>
<td>0.0 g/l / 0.00 lb/gal</td>
</tr>
<tr>
<td>Solids content</td>
<td>81.6-91.6 %</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

- Reactivity: No further relevant information available.
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.
### 11 Toxicological information

#### Information on toxicological effects

- **Acute toxicity:**
  - **LD/LC50 values that are relevant for classification:**
    - 7440-38-2 arsenic
      - Oral LD50 763 mg/kg (rat)
    - 7440-43-9 cadmium (non-pyrophoric)
      - Oral LD50 225 mg/kg (rat)
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** No irritating effect.
  - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:**
    - The product is not subject to classification according to internally approved calculation methods for preparations:
      - When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    - 7440-38-2 arsenic 1
    - 7439-92-1 lead 2B
    - 7440-48-4 cobalt 2B
    - 7440-02-0 nickel 2B
    - 7440-41-7 beryllium 1
    - 7440-43-9 cadmium (non-pyrophoric) 1
    - 7440-47-3 chromium 3
  - **NTP (National Toxicology Program)**
    - 7440-38-2 arsenic K
    - 7439-92-1 lead R
    - 7440-48-4 cobalt R
    - 7440-02-0 nickel R
    - 7440-41-7 beryllium K
    - 7440-43-9 cadmium (non-pyrophoric) K
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - 7440-38-2 arsenic
    - 7440-43-9 cadmium (non-pyrophoric)

### 12 Ecological information

- **Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
  - **Persistence and degradability:** No further relevant information available.
Trade name: Trace Metals on Filter Media

- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    Water hazard class 2 (Self-assessment): hazardous for water
    Do not allow product to reach ground water, water course or sewage system.
    Danger to drinking water if even small quantities leak into the ground.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
- Recommendation: Smaller quantities can be disposed of with household waste.
- Uncleaned packagings:
- Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADR, ADN, IMDG, IATA: not regulated
- UN proper shipping name
  - DOT, ADR, ADN, IMDG, IATA: not regulated
- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA: not regulated
  - Class: not regulated
- Packing group
  - DOT, ADR, IMDG, IATA: not regulated
- Environmental hazards:
  - Not applicable.
- Special precautions for user
  - Not applicable.
- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
  - Not applicable.
- UN "Model Regulation": not regulated

(Contd. on page 9)
## 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**

  - **Sara**
    - **Section 355 (extremely hazardous substances):**
      - None of the ingredients is listed.
    - **Section 313 (Specific toxic chemical listings):**
      - 7440-22-4 silver
      - 7440-66-6 zinc
      - 7440-38-2 arsenic
      - 7440-50-8 copper
      - 7439-92-1 lead
      - 7440-48-4 cobalt
      - 7439-96-5 manganese
      - 7440-02-0 nickel
      - 7440-41-7 beryllium
      - 7440-28-0 thallium
      - 7440-62-2 vanadium
      - 7440-43-9 cadmium (non-pyrophoric)
      - 7440-47-3 chromium
      - 7440-39-3 barium
    - **TSCA (Toxic Substances Control Act):**
      - All ingredients are listed.
    - **Proposition 65**
      - **Chemicals known to cause cancer:**
        - 7440-38-2 arsenic
        - 7439-92-1 lead
        - 7440-48-4 cobalt
        - 7440-02-0 nickel
        - 7440-41-7 beryllium
        - 7440-43-9 cadmium (non-pyrophoric)
      - **Chemicals known to cause reproductive toxicity for females:**
        - 7439-92-1 lead
      - **Chemicals known to cause reproductive toxicity for males:**
        - 7439-92-1 lead
        - 7440-43-9 cadmium (non-pyrophoric)
      - **Chemicals known to cause developmental toxicity:**
        - 7439-92-1 lead
        - 7440-43-9 cadmium (non-pyrophoric)
### Carcinogenic categories

**EPA (Environmental Protection Agency) (Substances not listed)**
- 9004-70-0 nitrocellulose,dry or wetted with less than 25% water(or alcohol), by mass
- 9004-35-7 Cellulose Acetate
- 7439-89-6 iron
- 7440-48-4 cobalt
- 7440-02-0 nickel
- 7440-28-0 thallium
- 7440-62-2 vanadium

**TLV (Threshold Limit Value established by ACGIH)**
- 7440-38-2 arsenic $A_1$
- 7439-92-1 lead $A_3$
- 7440-48-4 cobalt $A_3$
- 7440-02-0 nickel $A_5$
- 7440-41-7 beryllium $A_1$
- 7440-43-9 cadmium (non-pyrophoric) $A_2$
- 7440-47-3 chromium $A_4$
- 7440-39-3 barium $A_4$

**NIOSH-Ca (National Institute for Occupational Safety and Health)**
- 7440-38-2 arsenic
- 7440-02-0 nickel
- 7440-41-7 beryllium
- 7440-43-9 cadmium (non-pyrophoric)

**GHS label elements** Void
**Hazard pictograms** Void
**Signal word** Void
**Hazard statements** Void
**Chemical safety assessment**: A Chemical Safety Assessment has not been carried out.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS**: Environment protection department.
- **Contact**:
  - High-Purity Standards
  - Tel: 843-767-7900
  - Fax: 843-767-7906
- **Date of preparation / last revision**: 12/06/2018 / -
- **Abbreviations and acronyms**:
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose, 50 percent</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL</td>
<td>Recommended Exposure Limit</td>
</tr>
<tr>
<td>BEI</td>
<td>Biological Exposure Limit</td>
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</table>