

1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier** MSDS 991050
- **Trade name:** CRS AFS Cartridge (HiQ)
- **Article number:** 202900, 202920, 202910
- **Application of the substance / the preparation** Analytical chemistry.
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Chromatography Research Supplies, Inc.
2601 Technology Drive
LOUISVILLE, KY 40299
USA
DJones@chromres.com
- **Information department:** Product safety department
- **Emergency telephone number:**
During normal opening times: +1 (502) 491-6300
CHEMTREC (24 Hours) 800-424-9300 (U.S.A.)
When Calling from Outside the U.S.A., Dial Your Access Code for the U.S.A., then 1, then 703-527-3887.

2 Composition/information on ingredients

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

· **Dangerous components:**

7440-44-0	Carbon	H320	15-45%
1344-28-1	Aluminum oxide		0-30%
1313-13-9	Manganese dioxide	⚠ H302; H332	5-15%
1305-78-8	Calcium oxide	⚠ H318	0-20%
1317-38-0	Activated Copper oxide	⚠ H251; ⚠ H301	1-10%
14808-60-7	Quartz (SiO ₂)		<4%
10034-96-5	Manganese(II)-sulfate-Monohydrate		<1%

· **Additional Components**

7631-86-9	Silicon dioxide, chemically prepared		0-50%
1313-59-3	Sodium oxide		0-20%

3 Hazards identification

- **Classification of the substance or mixture**



GHS02 Flame

H251 Self-heating: may catch fire.



GHS05 Corrosion

H318 Causes serious eye damage.

H303 May be harmful if swallowed.

H333 May be harmful if inhaled.

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· **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

 **Irritant**

Irritating to eyes.

· **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of international guidelines.

· **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

· **Label elements**

· **GHS label elements** *The product is classified and labelled according to the Globally Harmonized System (GHS).*

· **Hazard pictograms**



GHS02 GHS05

· **Signal word** *Danger*

· **Hazard-determining components of labelling:**

Calcium oxide

· **Hazard statements**

Self-heating: may catch fire.

May be harmful if swallowed.

May be harmful if inhaled.

Causes serious eye damage.

· **Precautionary statements**

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Wear protective gloves/protective clothing/eye protection/face protection.

Keep cool. Protect from sunlight.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Immediately call a POISON CENTER or doctor/physician.

Store bulk masses greater than 5 lbs at temperatures not exceeding 100°F.

Store away from other materials.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 1

Fire = 4

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 1

Fire = 4

Reactivity = 0

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4 First aid measures

- **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. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

5 Firefighting measures

- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:** No special measures required.
- **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.

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
 - Do not open cartridge. Contents may become hot on exposure to air or water.
Prevent formation of dust.
- **Information about protection against explosions and fires:** No special measures required.
- **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:** Keep receptacle tightly sealed.
- **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.

- **Components with limit values that require monitoring at the workplace:**

1344-28-1 Aluminum oxide

PEL	15* 5** mg/m ³ *total dust **respirable fraction
REL	Short-term value: 1.5* mg/m ³ *as resprable fraction
TLV	1* mg/m ³ *as respirable fraction

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1313-13-9 Manganese dioxide	
PEL	Short-term value: C 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV	0.2 mg/m ³ as Mn
1305-78-8 Calcium oxide	
PEL	5 mg/m ³
REL	2 mg/m ³
TLV	2 mg/m ³
14808-60-7 Quartz (SiO₂)	
PEL	see Quartz listing
REL	0.05* mg/m ³ *respirable dust
TLV	0.025* mg/m ³ *as respirable fraction
10034-96-5 Manganese(II)-sulfate-Monohydrate	
PEL	Short-term value: C 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV	0.2 mg/m ³ as Mn

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

· **Personal protective equipment:**

· **General protective and hygienic measures:**

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.
- Avoid contact with the eyes.
- Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

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.

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- **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:**



Tightly sealed goggles

9 Physical and chemical properties

· General Information	
· Appearance:	
Form:	Solid
Color:	Various colors
· Odor:	Odorless
· Odour threshold:	Not determined.
· pH-value:	Not applicable.
· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· Flash point:	Not applicable.
· Flammability (solid, gaseous):	Not determined.
· Ignition temperature:	>220°C (>428 °F)
· Decomposition temperature:	Not determined.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure:	Not applicable.
· Density at 20°C (68 °F):	1.2 g/cm ³ (10.014 lbs/gal)
· Relative density	Not determined.
· Vapour density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water:	Insoluble.
· Segregation coefficient (n-octanol/water): Not determined.	
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Solvent content:	
Organic solvents:	0.0 %

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· **Other information** No further relevant information available.

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

12 Ecological information

- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
 - Do not open cartridge. Contents of cartridge should be treated as a RCRA characteristically hazardous waste (D001, Ignitability) unless all metallic fines are shown to be in the "oxidized" state. Dispose of this product in accordance with applicable local, state and federal regulations. Recover metal components by reprocessing whenever possible.
 - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information


- **UN-Number**
- **DOT, ADR, IMDG, IATA** UN3190


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<ul style="list-style-type: none"> · UN proper shipping name · DOT, IMDG, IATA · ADR 	<p><i>SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide)</i></p> <p><i>3190 SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide)</i></p>
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<ul style="list-style-type: none"> · Transport hazard class(es) · DOT, IMDG, IATA 	<p></p>
<ul style="list-style-type: none"> · Class · Label 	<p><i>4.2 Substances liable to spontaneous combustion.</i></p> <p><i>4.2</i></p>

<ul style="list-style-type: none"> · ADR 	<p></p>
<ul style="list-style-type: none"> · Class · Label 	<p><i>4.2 Substances liable to spontaneous combustion</i></p> <p><i>4.2</i></p>

<ul style="list-style-type: none"> · Packing group · DOT, ADR, IMDG, IATA 	<p><i>II</i></p>
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<ul style="list-style-type: none"> · Environmental hazards: · Marine pollutant: 	<p><i>No</i></p>
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<ul style="list-style-type: none"> · Special precautions for user · Danger code (Kemler): · EMS Number: 	<p><i>Not applicable.</i></p> <p><i>Warning: Substances liable to spontaneous combustion</i></p> <p><i>40</i></p> <p><i>F-A,S-J</i></p>
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<ul style="list-style-type: none"> · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	<p><i>Not applicable.</i></p>
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<ul style="list-style-type: none"> · Transport/Additional information: · DOT · Remarks: 	<p>• <i>Product contains less than 30 g self-heating substance. See 49 CFR Ch. 1 § 173.4 for small quantity exceptions.</i></p>
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<ul style="list-style-type: none"> · ADR · Remarks: 	<p>• <i>Product contains less than 30 g self-heating substance.</i></p>
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<ul style="list-style-type: none"> · IMDG · Remarks: 	<p>• <i>Product contains less than 30 g self-heating substance.</i></p>
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<ul style="list-style-type: none"> · IATA · Remarks: 	<p>• <i>Product contains less than 30 g self-heating substance. See IATA Section 2.6 for small quantity exceptions.</i></p>
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<ul style="list-style-type: none"> · UN "Model Regulation": 	<p><i>UN3190, SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide), 4.2, II</i></p>
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15 Regulatory information

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

1344-28-1 | Aluminum oxide

· **TSCA (Toxic Substances Control Act):**

7440-44-0 | Carbon

7631-86-9 | Silicon dioxide, chemically prepared

1344-28-1 | Aluminum oxide

1313-13-9 | Manganese dioxide

1305-78-8 | Calcium oxide

1313-59-3 | Sodium oxide

1317-38-0 | Activated Copper oxide

14808-60-7 | Quartz (SiO₂)

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

1313-13-9 | Manganese dioxide

D

10034-96-5 | Manganese(II)-sulfate-Monohydrate

D

· **IARC (International Agency for Research on Cancer)**

7631-86-9 | Silicon dioxide, chemically prepared

3

14808-60-7 | Quartz (SiO₂)

1

· **NTP (National Toxicology Program)**

14808-60-7 | Quartz (SiO₂)

K

· **TLV (Threshold Limit Value established by ACGIH)**

1344-28-1 | Aluminum oxide

A4

14808-60-7 | Quartz (SiO₂)

A2

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

14808-60-7 | Quartz (SiO₂)

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labelled according to the Globally Harmonized System (GHS).

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· **Hazard pictograms**



GHS02 GHS05

· **Signal word** *Danger*

· **Hazard-determining components of labelling:**

Calcium oxide

· **Hazard statements**

Self-heating: may catch fire.

May be harmful if swallowed.

May be harmful if inhaled.

Causes serious eye damage.

· **Precautionary statements**

If medical advice is needed, have product container or label at hand.

Keep out of reach of children.

Read label before use.

Wear protective gloves/protective clothing/eye protection/face protection.

Keep cool. Protect from sunlight.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Immediately call a POISON CENTER or doctor/physician.

Store bulk masses greater than 5 lbs at temperatures not exceeding 100°F.

Store away from other materials.

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 MSDS:** *Product safety department*

· **Contact:** *Mr. Jones*

· **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)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

ACGIH: American Conference of Governmental Industrial Hygienists

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)