

1 Identification

· **Product identifier:**

This product is considered an article. This Material Safety Data Sheet is written based on the encapsulated substance or mixture in this article.

· **Trade name:** CRS AFS Purifier I

· **Article number:** 202900, 202902, 202910, 202920

· **SDS number:** SDS-0031

· **Application of the substance / the mixture** Gas purification

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Chromatography Research Supplies, Inc.
2601 Technology Drive
Louisville, KY 40299 USA
sds@chromres.com

· **Information department:** Product safety department

· **Emergency telephone number:**

From U.S.A., Canada, Puerto Rico and U.S. Virgin Islands
+1-502-491-6300 8 am - 5 pm East Coast U.S. Time
+1-800-255-3924 ChemTel (24 Hours) Contract Number MIS3660977
From Outside the U.S.A., Canada, Puerto Rico or U.S. Virgin Islands
+01-813-248-0585 ChemTel (24 Hours)
Additional In-Country numbers:
China: 400-120-0751; Brazil: 0-800-591-6042; India: 000-800-100-4086; Mexico: 01-800-099-0731.

2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS02

Self-heating substances and mixtures 1

H251 Self-heating: may catch fire.



GHS08

Carcinogenicity 1A

H350 May cause cancer.

Specific Target Organ Toxicity - Repeated Exposure 2 H373 May cause damage to organs through prolonged or repeated exposure.

· **Label elements**

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

· **Hazard pictograms**



GHS02



GHS08

· **Signal word** Danger

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

Manganese dioxide

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Quartz (SiO₂)**Hazard statements**

H251 Self-heating: may catch fire.

H350 May cause cancer.

H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep cool. Protect from sunlight.

Do not breathe dust/fume/gas/mist/vapors/spray.

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

IF exposed or concerned: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Store locked up.

Maintain air gap between stacks/pallets.

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

Store away from other materials.

Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:**NFPA ratings (scale 0 - 4)**

Health = 1

Fire = 4

Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = *1

Fire = 4

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.**Dangerous components:**

7440-44-0	Carbon Consisting of: 14808-60-7 Quartz (SiO ₂) (<4%); 7440-48-4 cobalt (<0.1%); 13463-67-7 titanium dioxide (<0.1%) Combustible Dust	10-35%
1313-13-9	Manganese dioxide ☠ Specific Target Organ Toxicity - Repeated Exposure 2, H373; ⚠ Acute Toxicity - Oral 4, H302; Acute Toxicity - Inhalation 4, H332	5-20%
1317-38-0	Activated Copper oxide ☠ Self-heating substances and mixtures 1, H251; ☠ Specific Target Organ Toxicity - Repeated Exposure 2, H373; ⚠ Aquatic Acute 1, H400; Aquatic Chronic 1, H410; ⚠ Acute Toxicity - Oral 4, H302; Eye Irritation 2B, H320	1-10%

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14808-60-7	Quartz (SiO ₂)	<4%
	 Carcinogenicity 1A, H350	
10034-96-5	Manganese(II)-sulfate-Monohydrate	<1%
· Additional Components		
1318-02-1	Zeolite	35-65%
1327-43-1	Magnesium aluminosilicate clay	0-15%

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **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.
- **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** During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
- **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:		
14808-60-7	Quartz (SiO ₂)	0.075 mg/m ³
10034-96-5	Manganese(II)-sulfate-Monohydrate	9.2 mg/m ³

· PAC-2:		
14808-60-7	Quartz (SiO ₂)	33 mg/m ³
10034-96-5	Manganese(II)-sulfate-Monohydrate	15 mg/m ³

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· **PAC-3:**

14808-60-7	Quartz (SiO ₂)	200 mg/m ³
10034-96-5	Manganese(II)-sulfate-Monohydrate	90 mg/m ³

7 Handling and storage

· **Handling:**· **Precautions for safe handling**

- Do not open cartridge. Contents may become hot on exposure to air or water.

Ensure good ventilation/exhaustion at the workplace.

· **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.

Keep respiratory protective device available.

· **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:** 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 section 7.

· **Control parameters**· **Components with limit values that require monitoring at the workplace:**

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.

1313-13-9 Manganese dioxide

PEL	Ceiling limit value: 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV	Long-term value: 0.02* 0.1** mg/m ³ as Mn; *respirable **inhalable fraction

14808-60-7 Quartz (SiO₂)

PEL	Long-term value: 0.05* mg/m ³ *resp. dust; 30mg/m ³ /%SiO ₂ +2
REL	Long-term value: 0.05* mg/m ³ *respirable dust; See Pocket Guide App. A
TLV	Long-term value: 0.025* mg/m ³ *as respirable fraction

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

PEL	Ceiling limit value: 5 mg/m ³ as Mn
REL	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV	Long-term value: 0.02* 0.1** mg/m ³ as Mn; *respirable **inhalable fraction

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

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

· **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.

· **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

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Solid

Color: Various colors

· **Odor:** Odorless

· **Odor threshold:** Not determined.

· **pH-value:** Not applicable.

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· Change in condition Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· Flash point:	Not applicable.
· Flammability (solid, gaseous):	• Not ignitable, but may heat rapidly in air with risk of igniting combustible materials in contact with it.
· Auto igniting:	>220 °C (>428 °F)
· Decomposition temperature:	Not determined.
· Ignition temperature:	Product is not selfigniting.
· Danger of explosion:	Not determined.
· Explosion limits: Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure:	Not applicable.
· Density at 20 °C (68 °F):	0.8 g/cm ³ (6.7 lbs/gal)
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with Water:	Insoluble.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity: Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Solvent content: VOC content:	0.00 %
Solids content:	100.0 %
· Other information	No further relevant information available.

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.

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11 Toxicological information

- **Information on toxicological effects**

- **Acute toxicity:**

- **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 shows the following dangers according to internally approved calculation methods for preparations:

- **Carcinogenic categories**

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

1318-02-1	Zeolite	3
14808-60-7	Quartz (SiO ₂)	1

- **NTP (National Toxicology Program)**

14808-60-7	Quartz (SiO ₂)	K
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- **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**

- **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.

- **Mobility in soil:** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- **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:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **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.

- **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.

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· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· UN-Number	
· DOT, ADR, IMDG, IATA	UN3190
· UN proper shipping name	
· DOT, ADR, ADN, IMDG	Self-heating solid, inorganic, n.o.s. (Activated Copper oxide)
· ADR	3190 SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide)
· IMDG, IATA	SELF-HEATING SOLID, INORGANIC, N.O.S. (Activated Copper oxide)
· Transport hazard class(es)	
· DOT	
	
· Class	4.2 Substances liable to spontaneous combustion
· Label	4.2
· ADR, IMDG, IATA	
	
· Class	4.2 Substances liable to spontaneous combustion
· Label	4.2
· Packing group	
· DOT, ADR, IMDG, IATA	II
· Environmental hazards:	Not applicable.
· Special precautions for user	Warning: Substances liable to spontaneous combustion
· Hazard identification number (Kemler code):	40
· EMS Number:	F-A,S-J
· Stowage Category	E
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· DOT	
· Quantity limitations	On passenger aircraft/rail: 15 kg On cargo aircraft only: 50 kg
· Remarks:	• Product contains less than 30 g self-heating substance. See 49 CFR Ch. 1 § 173.4 for small quantity exceptions.

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<ul style="list-style-type: none"> · ADR · Excepted quantities (EQ) · Remarks: 	<ul style="list-style-type: none"> • Label 6.1 required for single packaging and combination packagings containing inner packagings with Dangerous Goods > 5 L for liquids or > 5 kg for solids. Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g • Product contains less than 30 g self-heating substance.
<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) · Remarks: 	<ul style="list-style-type: none"> 0 Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g • Product contains less than 30 g self-heating substance.
<ul style="list-style-type: none"> · IATA · Remarks: 	<ul style="list-style-type: none"> • Product contains less than 30 g self-heating substance. See IATA Section 2.6 for small quantity exceptions.
<ul style="list-style-type: none"> · UN "Model Regulation": 	<ul style="list-style-type: none"> UN 3190 SELF-HEATING SOLID, INORGANIC, N.O.S. (ACTIVATED COPPER OXIDE), 4.2, II

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):**

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

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

1327-43-1 | Magnesium aluminosilicate clay

ACTIVE

14808-60-7 | Quartz (SiO₂)

ACTIVE

- **Hazardous Air Pollutants**

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

- **Proposition 65**



WARNING: This product can expose you to chemicals including quartz (SiO₂), which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

- **Chemicals known to cause cancer:**

14808-60-7 | Quartz (SiO₂)

- **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.

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· **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

· **TLV (Threshold Limit Value)**

14808-60-7 Quartz (SiO₂)

A2

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

14808-60-7 Quartz (SiO₂)

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

· **Hazard pictograms**



GHS02

GHS08

· **Signal word** Danger

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

Manganese dioxide

Quartz (SiO₂)

· **Hazard statements**

H251 Self-heating: may catch fire.

H350 May cause cancer.

H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep cool. Protect from sunlight.

Do not breathe dust/fume/gas/mist/vapors/spray.

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

IF exposed or concerned: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Store locked up.

Maintain air gap between stacks/pallets.

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

Store away from other materials.

Dispose of contents/container in accordance with local/regional/national/international regulations.

· **National regulations:**

· **Additional classification according to Decree on Hazardous Materials:**

Carcinogenic hazardous material group III (dangerous).

· **Information about limitation of use:**

Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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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:** Product safety department

· **Contact:** Product Safety Department

· **Date of preparation / last revision** 03/24/2025

· **Abbreviations and acronyms:**

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

ICAO: International Civil Aviation Organisation

ADR: Accord relatif au transport international 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

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Self-heating substances and mixtures 1: Self-heating substances and mixtures – Category 1

Acute Toxicity - Oral 4: Acute toxicity – Category 4

Eye Irritation 2B: Serious eye damage/eye irritation – Category 2B

Carcinogenicity 1A: Carcinogenicity – Category 1A

Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

· *** Data compared to the previous version altered.**