Safety Data Sheet
Cu 0202 P

1. Identification

Product identifier used on the label

Cu 0202 P

Recommended use of the chemical and restriction on use

Recommended use*: Chemical
Recommended use*: Industrial catalyst

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company: RCS Rocket Motor Components, Inc.

Contact address:
2113 W 850 N
Cedar City, UT 84721 USA
Telephone: +1 435 865-7100

Emergency telephone number

INFOTRAC: 1-800-323-3500

Other means of identification

Chemical family: catalyst

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Skin Corr./Irrit.	2	Skin corrosion/irritation
Eye Dam./Irrit.	2A	Serious eye damage/eye irritation
Resp. Sens.	1	Respiratory sensitization
Skin Sens.	1	Skin sensitization
Muta.	1B	Germ cell mutagenicity
Carc.	1A	Carcinogenicity

Repr.	2 (fertility)	Reproductive toxicity
STOT SE	3 (irritating to respiratory system)	Specific target organ toxicity — single exposure
STOT RE	1	Specific target organ toxicity — repeated exposure
Aquatic Acute	1	Hazardous to the aquatic environment - acute
Aquatic Chronic	1	Hazardous to the aquatic environment - chronic

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H319	Causes serious eye irritation.
H315	Causes skin irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H361	Suspected of damaging fertility.
H372	Causes damage to organs through prolonged or repeated exposure.
H350	May cause cancer.
H340	May cause genetic defects.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P260	Do not breathe dust/gas/mist/vapours.
P273	Avoid release to the environment.
P201	Obtain special instructions before use.
P271	Use only outdoors or in a well-ventilated area.
P202	Do not handle until all safety precautions have been read and understood.
P284	In case of inadequate ventilation wear respiratory protection.
P270	Do not eat, drink or smoke when using this product.
P264	Wash with plenty of water and soap thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.

Precautionary Statements (Response):

P308 + P311	IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P314	Get medical advice/attention if you feel unwell.
P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P391	Collect spillage.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P337 + P311	If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Storage):

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

No applicable information available.

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Weight %	Chemical name
1317-38-0	50.0 - <= 100.0%	copper oxide
12018-10-9	25.0 - < 50.0%	Chromium copper oxide (Cr2CuO4)
1333-82-0	1.0 - < 3.0%	Chromium trioxide

4. First-Aid Measures

Description of first aid measures

General advice:
First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

If on skin:
Immediately wash thoroughly with soap and water, seek medical attention.

If in eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If swallowed:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms: metallic taste in mouth, coughing, nausea, vomiting, diarrhea, Additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, foam, dry powder

Additional information:
Use extinguishing measures to suit surroundings.

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
metal oxides, chromium oxides
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Do not breathe dust. Avoid contact with the skin, eyes and clothing. Use personal protective clothing. Information regarding personal protective measures, see section 8.

Environmental precautions

Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

Methods and material for containment and cleaning up

Avoid raising dust. Dampen, pick up mechanically and dispose of. Dispose of absorbed material in accordance with regulations. Do not discharge into drains/surface waters/groundwater. Reclaim for processing if possible.

7. Handling and Storage

Precautions for safe handling
Avoid dust formation. Avoid inhalation of dusts. Avoid contact with the skin, eyes and clothing. Wear suitable protective clothing and gloves. Provide suitable exhaust ventilation at the processing machines. Ensure adequate ventilation. Keep container tightly closed.

Protection against fire and explosion:
The product is not an oxidizer, not self-combustible and not explosive. The substance/product is non-combustible.

Conditions for safe storage, including any incompatibilities
Segregate from flammable substances. Segregate from peroxides. Segregate from strong oxidizing agents.

Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE)
Unsuitable materials for containers: Aluminium

Further information on storage conditions: Containers should be stored tightly sealed in a dry place.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

copper oxide		
	ACGIH TLV	TWA value 1 mg/m3 Dust and mist (copper (Cu)); TWA value 0.2 mg/m3 fumes/smoke (copper (Cu));
Chromium trioxide	OSHA PEL	TWA value 0.005 mg/m3 ; OSHA Action level 0.0025 mg/m3 ;
	ACGIH TLV	Skin Designation Inhalable fraction (chromium(VI)); The substance can be absorbed through the skin. TWA value 0.0002 mg/m3 Inhalable fraction (chromium(VI)); STEL value 0.0005 mg/m3 Inhalable fraction (chromium(VI));
Chromium copper oxide (Cr2CuO4)	OSHA PEL	PEL 0.5 mg/m3 (Chromium (Cr)); TWA value 1 mg/m3 ;
	ACGIH TLV	TWA value 0.2 mg/m3 fumes/smoke (copper (Cu)); TWA value 1 mg/m3 Dust and mist (copper (Cu)); TWA value 0.003 mg/m3 Inhalable fraction (chromium(III));

Personal protective equipment

Respiratory protection:
Wear appropriate certified respirator when exposure limits may be exceeded. Wear a NIOSH-certified (or equivalent) particulate respirator. Observe OSHA regulations for respirator use (29 CFR 1910.134).

Hand protection:
Wear chemical resistant protective gloves.

Eye protection:
Safety glasses with side-shields.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Avoid contact with the skin, eyes and clothing. Avoid inhalation of dust. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Form:	powder
Odour:	odourless
Odour threshold:	not applicable, odour not perceivable
Colour:	black
pH value:	not applicable
Melting point:	> 55 °C not determined
Boiling point:	not determined
Flash point:	not applicable, the product is a solid
Flammability:	Not a flammable solid according to UN transport regulations division 4.1 and GHS chapter 2.7. The product is not combustible.
Flammability of Aerosol Products:	not applicable, the product does not form flammable aerosoles
Lower explosion limit:	For solids not relevant for classification and labelling.
Upper explosion limit:	For solids not relevant for classification and labelling.
Autoignition:	not applicable
Vapour pressure:	(20 °C) negligible
Bulk density:	1.1 g/cm3
Vapour density:	The product is a non-volatile solid.
Partitioning coefficient n-octanol/water (log Pow):	not applicable for mixtures
Self-ignition temperature:	not self-igniting
Thermal decomposition:	No decomposition if correctly stored and handled. Not a substance liable to self-decomposition according to UN transport regulations, class 4.1.
Viscosity, dynamic:	not applicable, the product is a solid
Solubility in water:	4.0 g/l (25 °C)
Miscibility with water:	not soluble
Evaporation rate:	The product is a non-volatile solid.

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Oxidizing properties:
Not an oxidizer.

Chemical stability
The product is stable if stored and handled as prescribed/indicated.

Possibility of hazardous reactions
The product is stable if stored and handled as prescribed/indicated.
No hazardous reactions when stored and handled according to instructions.

Conditions to avoid
Avoid dust formation. Avoid deposition of dust. Avoid heat. Avoid humidity.

Incompatible materials
strong acids, strong bases, strong oxidizing agents, strong reducing agents

Hazardous decomposition products

Decomposition products:
Possible thermal decomposition products: metallic oxides, chromium oxides

Thermal decomposition:
No decomposition if correctly stored and handled. Not a substance liable to self-decomposition according to UN transport regulations, class 4.1.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Virtually nontoxic after a single ingestion. Virtually nontoxic by inhalation. Virtually nontoxic after a single skin contact.

Information on: Chromium trioxide
Assessment of acute toxicity:Of high toxicity after single ingestion. Of very high toxicity after short-term inhalation. Of high toxicity after short-term skin contact.

Oral
Type of value: ATE
Value: > 2,000 mg/kg

Inhalation
Type of value: ATE
Value: > 5 mg/l
Exposure time: 4 h
Determined for dust

Dermal
Type of value: ATE
Value: > 2,000 mg/kg

Assessment other acute effects
Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Assessment of STOT single:
Causes temporary irritation of the respiratory tract.

Irritation / corrosion
Assessment of irritating effects: Eye contact causes irritation. Skin contact causes irritation.

Information on: Chromium trioxide
Assessment of irritating effects: Highly corrosive! Damages skin and eyes. Causes temporary irritation of the respiratory tract.

Sensitization
Assessment of sensitization: May cause allergic skin reaction. May cause allergic respiratory reaction.

Information on: Chromium trioxide
Assessment of sensitization:
The substance may cause sensitization of the respiratory tract. Sensitization after skin contact possible.

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: Repeated exposure to small quantities may affect certain organs.

Information on: copper oxide
Assessment of repeated dose toxicity: The substance may cause damage to the liver after repeated ingestion of high doses, as shown in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.
May affect the liver and kidneys as indicated in animal studies.

Information on: Chromium trioxide
Assessment of repeated dose toxicity: Repeated inhalation exposure to small quantities may affect certain organs.
Repeated oral exposure to small quantities may affect certain organs. Kidney The substance may cause damage to the lung even after repeated inhalation of low doses, as shown in animal studies. The substance may cause damage to the hematological system even after repeated ingestion of low doses, as shown in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Genetic toxicity
Assessment of mutagenicity: Capable of causing genetic defects.

Information on: Chromium trioxide

Assessment of mutagenicity: Capable of causing genetic defects.

Information on: Chromium copper oxide (Cr2CuO4)
Assessment of mutagenicity: The substance was not mutagenic in bacteria. The substance was mutagenic in various cell culture test systems; however, these results could not be confirmed in tests with mammals.

Carcinogenicity
Assessment of carcinogenicity: May cause cancer.
Carcinogenic

Information on: Chromium trioxide
Assessment of carcinogenicity: The substance caused cancer in animal studies. The International Agency for Research on Cancer (IARC) has classified this substance as a Group 1 (known) human carcinogen.

Reproductive toxicity
Assessment of reproduction toxicity: Possible risk of impaired fertility.
The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Chromium trioxide
Assessment of reproduction toxicity: The results of animal studies suggest a fertility impairing effect.

Teratogenicity
Assessment of teratogenicity: Not classified, due to lack of data.
The product has not been tested. The statement has been derived from the properties of the individual components.

Other Information
The product has not been tested. The statement has been derived from the properties of the individual components. The product has been assessed on the basis of the components' available data. To some extent data gaps exist for individual components. According to our present knowledge and experience dangers which are not covered by the current labeling are not to be expected.

Symptoms of Exposure

metallic taste in mouth, coughing, nausea, vomiting, diarrhea, Additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Medical conditions aggravated by overexposure
Individuals with pre-existing diseases of the skin, respiratory disorders or impaired function for the liver/kidneys may have increased susceptibility to excessive exposures.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:

Very toxic (acute effect) to aquatic organisms. Very toxic to aquatic organisms based on long-term (chronic) toxicity study data.

Toxicity to fish

Information on: copper oxide
LC50 (96 h) 0.0366 mg/l, Oncorhynchus mykiss (OECD Guideline 203)

Information on: Chromium trioxide
LC50 (96 h) 20.8 mg/l, Colisa fasciatus (other, static)

Information on: Chromium copper oxide (Cr2CuO4)
LC50 (48 h) 1.53 mg/l equivalent to 0,42 mg/L Cu2+, Morone saxatilis (static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The statement of the toxic effect relates to the analytically determined concentration.
LC0 > 10,000 mg/l, Brachydanio rerio (static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The details of the toxic effect relate to the nominal concentration.

Aquatic invertebrates

Information on: copper oxide
EC50 (48 h) 0.0313 mg/l, Ceriodaphnia dubia (other, static)

Information on: Chromium trioxide
LC50 (48 h) 0.03 mg/l, Ceriodaphnia dubia
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aquatic plants

Information on: copper oxide
EC50 (72 h) 0.134 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201)

Information on: Chromium trioxide
EC50 (72 h) 0.13 mg/l (biomass), Desmodesmus subspicatus
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Not applicable for inorganic substances.

Bioaccumulative potential

Assessment bioaccumulation potential

Information on: copper oxide

Does not significantly accumulate in organisms.

Information on: Chromium trioxide

Significant accumulation in organisms is not to be expected.

Additional information

Other ecotoxicological advice:
The product has not been tested. The statement has been derived from the properties of the individual components. The product has been assessed on the basis of the components' available data. To some extent data gaps exist for individual components. According to our present knowledge and experience dangers which are not covered by the current labeling are not to be expected.

13. Disposal considerations

Waste disposal of substance:
Dispose of in accordance with local authority regulations. Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected. All waste materials should be reviewed to determine the applicable hazards (testing may be necessary). Used catalysts may have different hazardous properties than the original products.

Container disposal:
Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

14. Transport Information

Land transport
USDOT

Hazard class:	9
Packing group:	III
ID number:	UN 3077
Hazard label:	9, EHSM
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains COPPEROXIDE)

Sea transport
IMDG

Hazard class:	9
Packing group:	III
ID number:	UN 3077
Hazard label:	9, EHSM
Marine pollutant:	YES
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains COPPEROXIDE)

Air transport
IATA/ICAO

Hazard class:	9
Packing group:	III
ID number:	UN 3077
Hazard label:	9, EHSM
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (contains COPPEROXIDE)

15. Regulatory Information

Federal Regulations

Registration status:
Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

EPCRA 313:

CAS Number	Chemical name
1317-38-0	copper oxide
12018-10-9	Chromium copper oxide (Cr2CuO4)

CERCLA RQ	CAS Number	Chemical name
10 LBS	1333-82-0	Chromium trioxide

State regulations

State RTK	CAS Number	Chemical name
NJ	1317-38-0	copper oxide
	12018-10-9	Chromium copper oxide (Cr2CuO4)
PA	1317-38-0	copper oxide
	12018-10-9	Chromium copper oxide (Cr2CuO4)
	1333-82-0	Chromium trioxide

Safe Drinking Water & Toxic Enforcement Act, CA Prop. 65:

WARNING: This product can expose you to chemicals including CHROMIUM (HEXAVALENT COMPOUNDS), which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

NFPA Hazard codes:
Health: 2 Fire: 0 Reactivity: 0 Special:

HMIS III rating
Health: 2¤ Flammability: 0 Physical hazard: 0

16. Other Information

SDS Prepared by:
RCS Rocket Motor Components, Inc.
SDS Prepared on: 10/14/20

END OF DATA SHEET