



Original issue: July, 2018

Last update: July, 2022

Safety Data Sheet

RMMG-1

1 – MATERIAL AND COMPANY IDENTIFICATION

CRM code	RMMG-1
CRM name	Mining Waste (Jarosite)
Product intended use	This certified reference material (CRM) is intended for use in calibration of a measurement system, assessment of a measurement procedure, quality control and value assignment to materials with similar matrices. An RMMG-1 unit consists of around 80 g of material packaged in eight vacuum sealed PET+aluminum+PE lined sachets, containing a minimum of 10 g of material each.
Producer information	Center for Mineral Technology - CETEM Certified Reference Material Program - PMRC Av. Pedro Calmon, 900 – Ilha da Cidade Universitária 21941-908 – Rio de Janeiro – RJ Brazil Telephone / Fax: 55 21 3865-7310 / 55 21 2290-9196 E-mail: pmrc@cetem.gov.br Website: http://www.cetem.gov.br/crm

2 – HAZARDS IDENTIFICATION

Classification:	
▪ Physical hazard	Not classified.
▪ Health hazard	Not classified.
Label elements:	Not applicable.
▪ Symbol	No symbol or pictogram.
▪ Signal word	No signal word.
▪ Hazard statement(s)	Not applicable.
▪ Precautionary statement(s)	Not applicable.
▪ Hazards not otherwise classified	Not applicable.
▪ Ingredients with unknown acute toxicity	Not applicable.

3 – COMPOSITION AND INFORMATION ON INGREDIENTS

Substance/Mixture	Jarosite
Other designation	Residue generated in a primary zinc plant.
Components	Quartz, gypsum, calcite and minerals from the amphibole, alunite and hydrotalcite supergroups/groups, probably close to hornblende, jarosite and hydrowoodwardite, respectively. Gypsum, calcite, jarosite and hydrowoodwardite are likely synthetic phases precipitated from metallurgical residues rather than minerals whereas quartz and hornblende might be refractory minerals withstanding the ore's processing.
CAS N°	Not applicable.

The Certificate of Analysis reports the concentrations of the individual constituents as elements. The elements are not freely available in the material as sold. The health and safety information provided in this SDS are for jarosite residue not for its individual constituents. This material does not contain free crystalline silica, quartz; silicon is present but in form of silicates.

4 – FIRST AID MEASURES

Description of first aid measures:

▪ **Inhalation**

If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

▪ **Skin contact**

Wash skin with soap and water.

▪ **Eye contact**

Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

▪ **Ingestion**

If adverse effects occur after ingestion, seek medical treatment.

Most important symptoms and effects, acute and delayed

Exposure may cause mechanical irritation.

Indication of any immediate medical attention and special treatment needed, if necessary

If any of the above symptoms are present, seek medical attention if needed.

5 – FIRE FIGHTING MEASURES

Fire and explosion hazards

Negligible fire hazard. Avoid generating dust. The material is not flammable, explosive or combustible.

Extinguishing media

Regular dry chemical, carbon dioxide, water in the form of mist, regular foam. Never use direct water jet on fire.

Specific hazards arising from the chemical

None listed.

Special protective equipment and precautions for fire-fighters

Avoid inhalation of material or combustion byproducts. Wear full protective clothing and a self-contained breathing apparatus.

6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Any accumulated material on surfaces should be removed and properly disposed of. Use suitable personal protective equipment (see section 8).

Measures for environmental protection

Keep out of water supplies and sewers.

Methods and materials for containment and clean up

Collect spilled material in appropriate container for disposal. Keep unnecessary people away, isolate hazard area and deny entry.

7 – HANDLING AND STORAGE

Safe handling precautions

Minimize dust generation and accumulation on surfaces. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Use suitable personal protective equipment (see section 8) Avoid contact with incompatible materials (see section 10).

Storage

The material must be stored in its original package, at room temperature in a clean and dry place. The bottle must be opened only during sampling and kept in a desiccator under vacuum or vacuum sealed in a laminated aluminum foil pouch to minimize oxidation and moisture absorption.

8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure limits

No occupational exposure limits have been established for jarosite. This material is a particulate matter and adequate inhalation/respiratory protection should be used to minimize exposure. The exposure limits for Particulates Not Otherwise Regulated (PNOR) are applicable.
OSHA (PEL) 15 mg/m³ (TWA, total particulates not otherwise regulated); 5 mg/m³ (TWA, respirable particulates not otherwise regulated).

Engineering controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal equipment

Wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory protection	If workspace conditions warrant respirator, wear adequate respirators against dust when handling the material.
Eye/face protection	Wear safety goggles with face shields. An eye wash station should be readily available near areas of use.
Skin and body protection	Personal protective equipment for the body should be selected on the task being performed and the risks involved. Chemical-resistant gloves should be worn at all times when handling chemicals.
9 – PHYSICAL AND CHEMICAL PROPERTIES	
Appearance	Powder / pale brown color.
Odor	Odorless.
pH	Not applicable.
Melting point / freezing point (°C)	Not available.
Initial boiling point and boiling range	Not applicable.
Flash point (°C)	Not available.
Evaporation rate	Not applicable.
Flammability	Not flammable.
Explosive limits (% volume)	Not available.
Vapor pressure	Not available.
Vapor density (air=1)	Not available.
Density (specific gravity)	2.67 g/cm ³
Solubility in water at 20°C	Soluble.
Partition coefficient (n-octanol/water)	Not available.
Autoignition temperature	Not available.
Thermal decomposition	>400 °C
Viscosity (cP)	Not applicable.
Radioactivity	Not available.
Nominal particle size	<0.075mm.
10 – STABILITY AND REACTIVITY	
Reactivity	Non-reactive.
Chemical stability	Stable at normal temperatures and pressure.
Possible hazardous reactions	None listed.
Conditions to avoid	Avoid generating dust. Avoid heat, flames, sparks, and other sources of ignitions. Avoid contact with incompatible materials.
Incompatible materials	Flammable products (solvents, oils and greases), acid vapors and chemical fumes.
Hazardous products of decomposition	Thermal decomposition will produce carbon dioxide.
11 – TOXICOLOGICAL INFORMATION	
Route of exposure	Inhalation and skin.
Symptoms related to the physical, chemical and toxicological characteristics	May aggravate respiratory disorders.
Potential health effects (acute, chronic and delayed):	
▪ Inhalation	Irritation and difficulty breathing.

▪ Skin contact	May cause mechanical irritation.
▪ Eye contact	May cause irritation or eye damage.
▪ Ingestion	No data available on significant adverse effects.

Numerical measures of toxicity:

▪ Acute toxicity	Not classified, no data available.
▪ Skin corrosion / irritation	Not classified, no data available.
▪ Serious eye damage / eye irritation	Not classified, no data available.
▪ Respiratory sensitization	Not classified, no data available.
▪ Skin sensitization	Not classified, no data available.
▪ Germ cell mutagenicity	Not classified, no data available.
▪ Carcinogenicity	Not classified, no data available.
▪ Listed as a carcinogen / potential carcinogen	Not listed.
▪ Reproductive toxicity	Not classified, no data available.
▪ Specific target organ toxicity, single exposure	Not classified, no data available.
▪ Specific target organ toxicity, repeated exposure	Not classified, no data available.
▪ Aspiration hazard	Not applicable.

12 – ECOLOGICAL INFORMATION

Ecotoxicity Data	No data available.
Persistence and degradability	No data available.
Bioaccumulation potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No data available.

13 – DISPOSAL CONSIDERATIONS

Waste disposal	Dispose of waste in accordance with local, state and federal regulations.
Disposal of empty packages	The empty package, after clean, may be recycled.

14 – TRANSPORT INFORMATION

Transportation requirements	The material is not regulated by national or foreign transportation requirements. The product is not classified as dangerous for transportation according to ABTLP, IMDG or IATA criteria.
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15 – REGULATORY INFORMATION

Specific regulations	Not applicable.
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16 – ADDITIONAL INFORMATION

This SDS was prepared according to ABNT NBR 14725-4:2014 – Chemicals – Information about safety, health and environment. Part 4: Safety Data Sheet (SDS) for chemicals; and on the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 6^a ed.: UNO, 2015.

Key and Legend: CAS – Chemical Abstracts Service.

Disclaimer: This SDS provides information based on the current level of knowledge only for use in assessing the hazardous nature of the material and safety measures. The certified values for this material are given in the Certificate of Analysis.

Users of RMMG-1 certified reference material should ensure that the SDS in their possession is current. This can be accomplished by contacting CETEM: (55 21) 3865-7310, fax (55 21) 2290-9196, e-mail pmrc@cetem.gov.br; or downloading it from the website <http://www.cetem.gov.br/mrc>.