



SAFETY DATA SHEET

(REACH regulation (EC) n° 1907/2006 - n° 2020/878)

SECTION 1 : IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name : LMM14 BLACK LASER MARKING PASTE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Laser marking material for metal

1.3. Details of the supplier of the safety data sheet

Registered company name : GRAVOTECH MARKING SAS.
Address : 56, avenue Jean Jaurès.10600.La Chapelle Saint Luc.France.
Telephone : +33 (0)3 25 41 65 65. Fax : +33 (0)3 25 79 04 25.
e-mail : info@gravograph.fr
http://www.gravograph.com

1.4. Emergency telephone number : +33 (0)1 45 42 59 59.

Association/Organisation : INRS / ORFILA <http://www.centres-antipoison.net>.

Other emergency numbers

National Poisons Information Service of England: <http://npis.org> - NHS 111: dial 111 - National Poisons Information Centre of Ireland: 353 (1) 809 2166 - LUXEMBOURG : (+352) 8002 5500 - European Emergency Number Association (EENA) : 112

SECTION 2 : HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

In compliance with EC regulation No. 1272/2008 and its amendments.

Eye irritation, Category 2 (Eye Irrit. 2, H319).
May produce an allergic reaction (EUH208).
Carcinogenicity, Category 2 (Carc. 2, H351).
Specific target organ toxicity (single exposure), Category 3 (STOT SE 3, H335).
This mixture does not present a physical hazard. Refer to the recommendations regarding the other products present on the site.
This mixture does not present an environmental hazard. No known or foreseeable environmental damage under standard conditions of use.

2.2. Label elements

In compliance with EC regulation No. 1272/2008 and its amendments.

Hazard pictograms :



GHS08

GHS07

Signal Word :

WARNING

Product identifiers :

042-001-00-9 MOLYBDENUM TRIOXIDE

Additional labeling :

EUH208 Contains NICKEL. May produce an allergic reaction.

Hazard statements :

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer .

Precautionary statements - Prevention :

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statements - Response :	
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER/doctor/if you feel unwell.
P337 + P313	If eye irritation persists: Get medical advice/attention.
Precautionary statements - Disposal :	
P501	Dispose of contents/container at a disposal facility in accordance with local regulations.



2.3. Other hazards

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

The mixture does not contain substances classified as 'Substances of Very High Concern' (SVHC) $\geq 0.1\%$ published by the European Chemicals Agency (ECHA) under article 57 of REACH: <http://echa.europa.eu/fr/candidate-list-table>

The mixture fulfils neither the PBT nor the vPvB criteria for mixtures in accordance with annexe XIII of the REACH regulations EC 1907/2006.

The mixture does not contain substances $\geq 0.1\%$ with endocrine disrupting properties in accordance with the criteria of the Delegated Regulation (EU) 2017/2100 of the Commission or Regulation (EU) 2018/605 of the Commission.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Composition :

Identification	Classification (EC) 1272/2008	Note	%
INDEX: 042-001-00-9 CAS: 1313-27-5 EC: 215-204-7 MOLYBDENUM TRIOXIDE	GHS08, GHS07 Wng Carc. 2, H351 Eye Irrit. 2, H319 STOT SE 3, H335	[1] [2]	25 \leq x % < 50
CAS: 12001-26-2 EC: 310-127-6 MICA		[1]	2.5 \leq x % < 10
CAS: 14808-60-7 EC: 238-878-4 QUARTZ (SIO2)		[1]	2.5 \leq x % < 10
INDEX: 028-002-00-7 CAS: 7440-02-0 EC: 231-111-4 REACH: 01-2119438727-29 NICKEL	GHS08, GHS07 Dgr Carc. 2, H351 STOT RE 1, H372 Skin Sens. 1, H317	S [1] [2] [XVII]	0.1 \leq x % < 1
CAS: 7439-96-5 EC: 231-105-1 MANGANESE		[1]	0.1 \leq x % < 1
CAS: 1309-37-1 EC: 215-168-2 REACH: 01-2119457614-35 DIIRON TRIOXIDE		[1]	0.1 \leq x % < 1



Information on ingredients :

(Full text of H-phrases: see section 16)

[XVII] Restricted substance under Regulation (EC) No. 1907/2006 (REACH), Annex XVII.

[1] Substance for which maximum workplace exposure limits are available.

[2] Carcinogenic, mutagenic or reprotoxic (CMR) substance.

SECTION 4 : FIRST AID MEASURES

As a general rule, in case of doubt or if symptoms persist, always call a doctor.
NEVER induce swallowing by an unconscious person.



4.1. description of first aid measures

In the event of exposure by inhalation :

In the event of massive inhalation of dust, remove the person exposed to fresh air. Keep warm and at rest.
If the person is unconscious, place in recovery position. Notify a doctor in all events, to ascertain whether observation and supportive hospital care will be necessary.
If breathing is irregular or has stopped, effect mouth-to-mouth resuscitation and call a doctor.
In the event of an allergic reaction, seek medical attention.

In the event of splashes or contact with eyes :

Wash thoroughly with fresh, clean water for 15 minutes holding the eyelids open.
If there is any redness, pain or visual impairment, consult an ophthalmologist.

In the event of splashes or contact with skin :

Watch out for any remaining product between skin and clothing, watches, shoes, etc.
In the event of an allergic reaction, seek medical attention.



In the event of swallowing :

Do not give the patient anything orally.
Seek medical attention immediately, showing the label.

4.2. Most important symptoms and effects, both acute and delayed

No data available.

4.3. Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5 : FIREFIGHTING MEASURES

Non-flammable.

5.1. Extinguishing media

No data available.

5.2. Special hazards arising from the substance or mixture

A fire will often produce a thick black smoke. Exposure to decomposition products may be hazardous to health.
Do not breathe in smoke.

5.3. Advice for firefighters

Due to the toxicity of the gas emitted on thermal decomposition of the products, fire-fighting personnel are to be equipped with autonomous insulating breathing apparatus.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Consult the safety measures listed under headings 7 and 8.

For non first aid worker

Avoid any contact with the skin and eyes.
Avoid inhaling dust.

If a large quantity has been spilt, evacuate all personnel and only allow intervention by trained operators equipped with safety apparatus.

For first aid worker

First aid workers will be equipped with suitable personal protective equipment (See section 8).

6.2. Environmental precautions

Prevent any material from entering drains or waterways.

6.3. Methods and material for containment and cleaning up

No data available.

6.4. Reference to other sections

No data available.

SECTION 7 : HANDLING AND STORAGE

Requirements relating to storage premises apply to all facilities where the mixture is handled.

7.1. Precautions for safe handling

Always wash hands after handling.
Remove and wash contaminated clothing before re-using.

Fire prevention :

- Handle in well-ventilated areas.
- Prevent access by unauthorised personnel.

Recommended equipment and procedures :

- For personal protection, see section 8.
- Observe precautions stated on label and also industrial safety regulations.
- Avoid inhaling dust.
- Also provide breathing apparatus for certain short tasks of an exceptional nature and for emergency interventions.
- In all cases, recover emissions at source.
- Avoid eye contact with this mixture.
- Avoid exposure - obtain special instructions before use.

Prohibited equipment and procedures :

- No smoking, eating or drinking in areas where the mixture is used.

7.2. Conditions for safe storage, including any incompatibilities

- No data available.

Storage

- Keep the container tightly closed in a dry, well-ventilated place.

Packaging

- Always keep in packaging made of an identical material to the original.

7.3. Specific end use(s)

- Contra-indicated packaging material: Steel, iron, tin.

SECTION 8 : EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters****Occupational exposure limits :**

- ACGIH TLV (American Conference of Governmental Industrial Hygienists, Threshold Limit Values, 2010) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
12001-26-2	3 (R) mg/m ³				
14808-60-7	0.05 mg/m ³	-	-	-	R
7440-02-0	1.5 mg/m ³	-	-	-	I
7439-96-5	0.2 mg/m ³				
1309-37-1	5 mg/m ³	-	-	-	-

- Germany - AGW (BAuA - TRGS 900, 02/2022) :

CAS	VME :	VME :	Excess	Notes
7440-02-0		0.006 A mg/m ³		8(II)
7439-96-5		0.2 E mg/m ³		8(II)

- Australia (NOHSC: 3008, 1995) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1313-27-5	5 mg/m ³			H	
12001-26-2	2.5 (inspirable) mg/m ³			A*	
14808-60-7	0.1 mg/m ³				
7440-02-0	0.1 mg/m ³			H	
7439-96-5	1 mg/m ³	3 mg/m ³		H	
1309-37-1	5 mg/m ³			H	

- Austria (BGBl. II Nr. 156/2021) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
14808-60-7	0.05 A mg/m ³				
7440-02-0	0.5 E mg/m ³	2E mg/m ³			
7439-96-5	0.2 E mg/m ³	1.6 E mg/m ³			
1309-37-1	5A mg/m ³	10A mg/m ³			

- Belgium (Royal decree of 11/05/2021) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1313-27-5	0.5 mg/m ³				
12001-26-2	3 mg/m ³				
14808-60-7	0.1 mg/m ³			C	
7440-02-0	1 mg/m ³				
7439-96-5	0.05 mg/m ³			"	
1309-37-1	5 mg/m ³				

- France (INRS - Outils 65 / 2021-1849, 2021-1763, decree of 09/12/2021) :

CAS	VME-ppm :	VME-mg/m3 :	VLE-ppm :	VLE-mg/m3 :	Notes :	TMP No :
1313-27-5	-	-	-	5	-	-
14808-60-7	-	0.1 A	-	-	-	25
7440-02-0	-	1	-	-	C3	-
7439-96-5	-	1	-	-	-	-
1309-37-1	-	5	-	-	-	44.44 Bis.94

- Switzerland (Suva 2021) :

CAS	VME	VLE	Valeur plafond	Notations
1313-27-5	5 i mg/m ³			
12001-26-2	3 ppm			
14808-60-7	0.15 ppm			
7440-02-0	0.05 ppm			
7439-96-5	0.5 ppm			
1309-37-1	3 ppm			

- UK / WEL (Workplace exposure limits, EH40/2005, Fourth Edition 2020) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1313-27-5	5 mg/m ³	10 mg/m ³			
12001-26-2	0.8 mg/m ³				
14808-60-7	0.3 mg/m ³	-	-	-	R
7440-02-0	0.1 mg/m ³	-	-	-	-
7439-96-5	0.5 mg/m ³	-	-	-	-
1309-37-1	5 mg/m ³	10 mg/m ³	-	-	-

- USA / OSHA PEL (Occupational Safety and Health Administration, Permissible Exposure Limits) :

CAS	TWA :	STEL :	Ceiling :	Definition :	Criteria :
1313-27-5	5 mg/m ³				
12001-26-2	20 mppcf	-	-	-	-
14808-60-7	-	-	-	-	T
7440-02-0	1 mg/m ³				
7439-96-5			5 mg/m ³		
1309-37-1	15 mg/m ³				

8.2. Exposure controls

Personal protection measures, such as personal protective equipment

Pictogram(s) indicating the obligation of wearing personal protective equipment (PPE) :



Use personal protective equipment that is clean and has been properly maintained.

Store personal protective equipment in a clean place, away from the work area.

Never eat, drink or smoke during use. Remove and wash contaminated clothing before re-using. Ensure that there is adequate ventilation, especially in confined areas.

- Eye / face protection

Avoid contact with eyes.

Before handling powders or dust emission, wear mask goggles in accordance with standard EN166.

Prescription glasses are not considered as protection.

Provide eyewash stations in facilities where the product is handled constantly.

- Hand protection

Wear suitable protective gloves in the event of prolonged or repeated skin contact.

Use suitable protective gloves that are resistant to chemical agents in accordance with standard EN ISO 374-1.

Gloves must be selected according to the application and duration of use at the workstation.

Protective gloves need to be selected according to their suitability for the workstation in question : other chemical products that may be handled, necessary physical protections (cutting, pricking, heat protection), level of dexterity required.

Type of gloves recommended :

- Natural latex

- Nitrile rubber (butadiene-acrylonitrile copolymer rubber (NBR))

- PVC (polyvinyl chloride)

- Butyl Rubber (Isobutylene-isoprene copolymer)

In the event of prolonged or repeated contact with the hands, use appropriate gloves.

- Body protection

Work clothing worn by personnel shall be laundered regularly.

After contact with the product, all parts of the body that have been soiled must be washed.

**- Respiratory protection**

Avoid inhaling dust.

If the ventilation is insufficient, wear appropriate breathing apparatus.

When workers are confronted with concentrations that are above occupational exposure limits, they must wear a suitable, approved, respiratory protection device.

Type of FFP mask :

Wear a disposable half-mask dust filter in accordance with standard EN149/A1.

Category :

- FFP1

With this preparation, particularly avoid inhaling dust.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties****Physical state**

Physical state :	Paste.
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**Colour**

Colour:	Gray - Yellow.
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**Odour**

Odour threshold :	Not stated.
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**Freezing point**

Freezing point / Freezing range :	Not stated.
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**Boiling point or initial boiling point and boiling range**

Boiling point/boiling range :	100 °C.
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**Flammability**

Flammability (solid, gas) :	Not stated.
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**Lower and upper explosion limit**

Explosive properties, lower explosivity limit (%) :	Not stated.
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Explosive properties, upper explosivity limit (%) :	Not stated.
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**Flash point**

Flash point interval :	Not relevant.
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**Auto-ignition temperature**

Self-ignition temperature :	Not relevant.
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**Decomposition temperature**

Decomposition point/decomposition range :	Not relevant.
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**pH**

pH :	Not relevant.
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pH (aqueous solution) :	Not stated.
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**Kinematic viscosity**

Viscosity :	Not stated.
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**Solubility**

Water solubility :	Partially soluble.
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Fat solubility :	Not stated.
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**Partition coefficient n-octanol/water (log value)**

Partition coefficient: n-octanol/water :	Not stated.
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**Vapour pressure**

Vapour pressure (50°C) :	Not relevant.
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**Density and/or relative density**

Density :	1.55 g/ml
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**Relative vapour density**

Vapour density :	20 g/m3 (Air=1)
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**9.2. Other information**

% VOC :	0
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**9.2.1. Information with regard to physical hazard classes**

No data available.

**9.2.2. Other safety characteristics**

No data available.

**Evaporation rate**

Evaporation rate : < 1 (BuAc=1)

SECTION 10 : STABILITY AND REACTIVITY

10.1. Reactivity

No data available.

10.2. Chemical stability

This mixture is stable under the recommended handling and storage conditions in section 7.

10.3. Possibility of hazardous reactions

No data available.



10.4. Conditions to avoid

Avoid :

- frost

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

No data available.

SECTION 11 : TOXICOLOGICAL INFORMATION



11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

May have reversible effects on the eyes, such as eye irritation which is totally reversible by the end of observation at 21 days.

Respiratory tract irritation may occur, together with symptoms such as coughing, choking and breathing difficulties.

In the event of dust formed by mechanical action (sanding, sawing, etc..), this dust may cause irritation by inhalation and contact with eyes.

Suspected human carcinogen.

11.1.1. Substances

No toxicological data available for the substances.

11.1.2. Mixture

Respiratory or skin sensitisation :

Contains at least one sensitising substance. May cause an allergic reaction.



11.2. Information on other hazards



Monograph(s) from the IARC (International Agency for Research on Cancer) :

CAS 1309-37-1 : IARC Group 3 : The agent is not classifiable as to its carcinogenicity to humans.

CAS 7440-02-0 : IARC Group 2B : The agent is possibly carcinogenic to humans.

CAS 14808-60-7 : IARC Group 1 : The agent is carcinogenic to humans.

CAS 1313-27-5 : IARC Group 2B : The agent is possibly carcinogenic to humans.

SECTION 12 : ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.2. Mixtures

No aquatic toxicity data available for the mixture.

12.2. Persistence and degradability

No data available.

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

No data available.



12.6. Endocrine disrupting properties

No data available.



12.7. Other adverse effects

No data available.



German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :

WGK 1 : Slightly hazardous for water.

SECTION 13 : DISPOSAL CONSIDERATIONS

Proper waste management of the mixture and/or its container must be determined in accordance with Directive 2008/98/EC.

13.1. Waste treatment methods

Do not pour into drains or waterways.

Waste :

Waste management is carried out without endangering human health, without harming the environment and, in particular without risk to water, air, soil, plants or animals.

Recycle or dispose of waste in compliance with current legislation, via a certified collector or company.

Do not contaminate the ground or water with waste, do not dispose of waste into the environment.

Soiled packaging :

Empty container completely. Keep label(s) on container.

Give to a certified disposal contractor.

SECTION 14 : TRANSPORT INFORMATION

Exempt from transport classification and labelling.

14.1. UN number or ID number

-

14.2. UN proper shipping name

-

14.3. Transport hazard class(es)

-

14.4. Packing group

-

14.5. Environmental hazards

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14.6. Special precautions for user

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14.7. Maritime transport in bulk according to IMO instruments

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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Classification and labelling information included in section 2:

The following regulations have been used:

- EU Regulation No. 1272/2008 amended by EU Regulation No. 2022/692 (ATP 18)

Container information:

No data available.

Restrictions applied under Title VIII of Regulation (EC) No. 1907/2006 (REACH):

The mixture contains at least one restricted substance under Annex XVII of Regulation (EC) No. 1907/2006 (REACH):
<https://echa.europa.eu/substances-restricted-under-reach>. Please refer to Section 3 to identify the substance involved.

Explosives precursors :

The mixture does not contain any substance subject to Regulation (EU) 2019/1148 on the marketing and use of explosives precursors.

Particular provisions :

No data available.

German regulations concerning the classification of hazards for water (WGK, AwSV Annex I, KBws) :

WGK 1 : Slightly hazardous for water.

15.2. Chemical safety assessment

No data available.

SECTION 16 : OTHER INFORMATION

Since the user's working conditions are not known by us, the information supplied on this safety data sheet is based on our current level of knowledge and on national and community regulations.

The mixture must not be used for other uses than those specified in section 1 without having first obtained written handling instructions.

It is at all times the responsibility of the user to take all necessary measures to comply with legal requirements and local regulations.

The information in this safety data sheet must be regarded as a description of the safety requirements relating to the mixture and not as a guarantee of the properties thereof.

Wording of the phrases mentioned in section 3 :

H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer .
H372	Causes damage to organs through prolonged or repeated exposure .



Abbreviations and acronyms :

REACH : Registration, Evaluation, Authorization and Restriction of Chemical Substances.

CMR: Carcinogenic, mutagenic or reprotoxic.

STEL : Short-term exposure limit

TWA : Time Weighted Averages

TMP : French Occupational Illness table

TLV : Threshold Limit Value (exposure)

AEV : Average Exposure Value.

ADR : European agreement concerning the international carriage of dangerous goods by Road.

IMDG : International Maritime Dangerous Goods.

IATA : International Air Transport Association.

ICAO : International Civil Aviation Organisation

RID : Regulations concerning the International carriage of Dangerous goods by rail.

WGK : Wassergefährdungsklasse (Water Hazard Class).

GHS07 : Exclamation mark

GHS08 : Health hazard

PBT: Persistent, bioaccumulable and toxic.

vPvB : Very persistent, very bioaccumulable.

SVHC : Substances of very high concern.