



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Trade name or designation of the mixture Spent Precious Metal Digestion Solution
Registration number -
Document number G63
Synonyms None.
Issue date 14-October-2019
Version number 01

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

Identified uses Industrial uses: Uses of substances as such or in preparations at industrial sites

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Materials Germany GmbH
Address Borsigstrasse 10
63755 Alzenau
DE
Division
Telephone 49.60.23.91.82.0
e-mail Materion.Germany@materion.com
Contact person Hermann Schmiing

1.4. Emergency telephone number 49.60.23.91.82.0

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

Uses advised against Consumer uses: Private households (= general public = consumers) Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

1.3. Details of the supplier of the product information sheet

Supplier

Company name Materion Advanced Materials Germany GmbH
Address Borsigstrasse 10
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1.4. Emergency telephone number 49.60.23.91.82.0

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards

Oxidising liquids Category 2 H272 - May intensify fire; oxidiser.

Health hazards

Acute toxicity, oral Category 4 H302 - Harmful if swallowed.

Acute toxicity, inhalation Category 3 H331 - Toxic if inhaled.

Skin corrosion/irritation Category 1A H314 - Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Category 1 H318 - Causes serious eye damage.

Hazard summary

Strong oxidizer. Harmful if inhaled. Causes severe skin burns and eye damage. Corrosive. May cause damage to organs through prolonged or repeated exposure.

2.2. Label elements**Label according to Regulation (EC) No. 1272/2008 as amended**

Contains: Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid), Nitric acid, Water

Hazard pictograms**Signal word**

Danger

Hazard statements

H272 May intensify fire; oxidiser.
 H302 Harmful if swallowed.
 H314 Causes severe skin burns and eye damage.
 H318 Causes serious eye damage.
 H331 Toxic if inhaled.
 H335 May cause respiratory irritation.

Precautionary statements**Prevention**

P233 Keep container tightly closed.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P284 Wear respiratory protection.

Response

P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
 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.
 P310 Immediately call a POISON CENTRE/doctor.
 P363 Wash contaminated clothing before reuse.
 P370 + P378 In case of fire: Use appropriate media to extinguish.

Storage

P235 Keep cool.
 P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.

Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information

For further information, please contact the Product Stewardship Department at +1.216.383.4019.

2.3. Other hazards

Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients**3.2. Mixtures****General information**

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)	30 - 35	7647-01-0 231-595-7	-	017-002-01-X	#
Classification:	Acute Tox. 4;H302, Acute Tox. 4;H312, Skin Corr. 1A;H314, Eye Dam. 1;H318, Acute Tox. 3;H331, STOT SE 3;H335				5,U
Nitric acid	30 - 35	7697-37-2 231-714-2	-	007-004-00-1	#
Classification:	Ox. Liq. 2;H272, Skin Corr. 1A;H314, Eye Dam. 1;H318				B

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Water	30 - 35	7732-18-5 231-791-2	-	-	
Classification: -					

SECTION 4: First aid measures

General information	Take off all contaminated clothing immediately. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.
4.1. Description of first aid measures	
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a poison center or doctor/physician.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control centre immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately.
Ingestion	Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
4.2. Most important symptoms and effects, both acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Coughing.
4.3. Indication of any immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards	May intensify fire; oxidiser.
5.1. Extinguishing media	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
5.2. Special hazards arising from the substance or mixture	May intensify fire; oxidiser.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special firefighting procedures	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapours. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
For emergency responders	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

For personal protection, see section 8. For waste disposal, see section 13.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist/vapours. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

Components	Type	Value
Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)	TWA	8 mg/m ³
		5 ppm
Nitric acid (CAS 7697-37-2)	TWA	2,6 mg/m ³
		1 ppm

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Components	Type	Value
Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)	STEL	15 mg/m ³
		10 ppm
	TWA	8 mg/m ³
		5 ppm
Nitric acid (CAS 7697-37-2)	STEL	2,6 mg/m ³
		1 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures

Follow standard monitoring procedures.

Derived no effect levels (DNELs)

Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

General information

Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection

Wear safety glasses with side shields (or goggles) and a face shield.

Skin protection

- Hand protection

Wear appropriate chemical resistant gloves.

- Other

Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Chemical respirator with organic vapour cartridge.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

Hygiene measures

When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state

Liquid.

Form

Liquid.

Colour

Yellow-orange.

Odour

Pungent.

Odour threshold

Not applicable.

pH

< 2

Melting point/freezing point

Not applicable. / -114,22 °C (-173,6 °F) estimated

Initial boiling point and boiling range

85,05 °C (185,09 °F) estimated

Flash point

Not applicable.

Evaporation rate

Not available.

Flammability (solid, gas)

Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not applicable.

Flammability limit - upper (%)

Not applicable.

Flammability limit - upper (%) temperature

Not applicable.

Explosive limit - lower (%)

Not applicable.

Explosive limit - upper (%)

Not applicable.

Vapour pressure

0,00001 hPa estimated

Vapour density

Not available.

Relative density	Not available.
Solubility(ies)	
Solubility (water)	Soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not applicable.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	May intensify fire; oxidiser.

9.2. Other information

Density	1,35 g/cm ³ estimated
Miscible (water)	Yes.
Percent volatile	35 % estimated
Specific gravity	Not applicable.

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidising agents. Alcohols. Amines.
10.6. Hazardous decomposition products	Nitrogen oxides (NO _x).

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	Toxic if inhaled.
Skin contact	Causes severe skin burns.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns. Harmful if swallowed.

Symptoms Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Coughing.

11.1. Information on toxicological effects

Acute toxicity Toxic if inhaled. Harmful if swallowed.

Components	Species	Test Results
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Nitric acid (CAS 7697-37-2)

Acute

Inhalation

LC50	Rat	65 mg/l, 4 Hours
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Skin corrosion/irritation Causes severe skin burns and eye damage.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory sensitisation Due to partial or complete lack of data the classification is not possible.

Skin sensitisation Due to partial or complete lack of data the classification is not possible.

Germ cell mutagenicity Due to partial or complete lack of data the classification is not possible.

Carcinogenicity Due to partial or complete lack of data the classification is not possible.

IARC Monographs. Overall Evaluation of Carcinogenicity

Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)	3 Not classifiable as to carcinogenicity to humans.
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Reproductive toxicity Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.
Aspiration hazard	Due to partial or complete lack of data the classification is not possible.
Mixture versus substance information	No information available.
Other information	Not available.

SECTION 12: Ecological information

12.1. Toxicity Based on available data, the classification criteria are not met for hazardous to the aquatic environment.

Product	Species	Test Results
Spent Precious Metal Digestion Solution		
Aquatic		
Fish	LC50	805,7143 mg/l, 96 hours estimated

Components	Species	Test Results
Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)		
Aquatic		
Fish	LC50	Western mosquitofish (<i>Gambusia affinis</i>) 282 mg/l, 96 hours

12.2. Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

12.3. Bioaccumulative potential No data available.

Partition coefficient n-octanol/water (log Kow) Not available.

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	UN3264
14.2. UN proper shipping name	CORROSIVE LIQUID, N.O.S. (Nitric acid, Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid))
14.3. Transport hazard class(es)	
Class	8
Subsidiary risk	5.1
Label(s)	8
	+3
Hazard No. (ADR)	83
Tunnel restriction code	D/E
14.4. Packing group	II
14.5. Environmental hazards	No.

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number UN3264
14.2. UN proper shipping name Corrosive liquid, n.o.s. (Nitric acid, Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid))
14.3. Transport hazard class(es)
 Class 8
 Subsidiary risk 5.1
 Label(s) 8+3
14.4. Packing group II
14.5. Environmental hazards No.
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number UN3264
14.2. UN proper shipping name Corrosive liquid, n.o.s. (Nitric acid, Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid))
14.3. Transport hazard class(es)
 Class 8
 Subsidiary risk 5.1
 Label(s) 8+3
14.4. Packing group II
14.5. Environmental hazards No.
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number UN3264
14.2. UN proper shipping name Corrosive liquid, n.o.s. (Nitric Acid, Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid))
14.3. Transport hazard class(es)
 Class 8
 Subsidiary risk 5.1
14.4. Packing group II
14.5. Environmental hazards Yes
ERG Code 8F
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
 Passenger and cargo aircraft Allowed with restrictions.
 Cargo aircraft only Allowed with restrictions.

IMDG

14.1. UN number UN3264
14.2. UN proper shipping name CORROSIVE LIQUID, N.O.S. (Nitric Acid, Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid)), MARINE POLLUTANT
14.3. Transport hazard class(es)
 Class 8
 Subsidiary risk 5.1
14.4. Packing group II
14.5. Environmental hazards
 Marine pollutant Yes
EmS F-E, S-C
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ADN; ADR; IATA; IMDG; RID



Marine pollutant



General information

IMDG Regulated Marine Pollutant.

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) (CAS 7647-01-0)

Nitric acid (CAS 7697-37-2)

Other regulations	The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.
National regulations	Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended. Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.
15.2. Chemical safety assessment	No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations	Not available.
References	Not available.
Training information	Not available.
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