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HYDRAZINE HYDRATE 55%

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 20/03/2023 Revision date: 03/06/2024 Supersedes version of: 22/03/2023 Version: 5.0

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

1.1. Product identifier

Product form	:	Mixture
Trade name	:	HYDRAZINE HYDRATE 55%
EC Index-No.	:	007-008-00-3
EC-No.	:	206-114-9
CAS-No.	:	10217-52-4
Product code	:	HH55
Type of product	:	Pure substance
Formula	:	N2H4.xH2O
Product group	:	Raw material

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

Relevant identified uses

Main use category	:	Industrial use
Use of the substance/mixture	:	Hydrazine. Use as corrosion inhibitor in steam generating and heating systems. (Industrial) Use as intermediate in closed systems. Use as monomer in closed systems. (Industrial) Hydrazine. Use as laboratory chemical. (Industrial) Use as monomer in closed industrial systems under controlled conditions. Use as reducing agent in closed industrial systems under controlled conditions. Hydrazine. Use as reducing agent to remove nitrosyl kations contained in sulphuric acid. (Industrial) Hydrazine. Distribution, formulation and (re)packing of substances and mixtures (Industrial) Hydrazine. Use as reducing agent for metal-based chemicals in closed industrial systems under controlled conditions (Industrial) Hydrazine. Use as stabilising reagent in aromatic amines to be further used in synthesis of dyestuffs. (Industrial)

Title	Life cycle stage	Use descriptors
HYDRAZINE - USE AS AN INTERMEDIATE IN CLOSED SYSTEMS. USE AS A MONOMER IN CLOSED SYSTEMS (ES Ref.: ES1)	Industrial	SU3, SU8, SU9, SU10, PC19, PC32, PROC1, PROC3, PROC8b, PROC9, ERC6a, ERC6c
HYDRAZINE - USE AS A CORROSION INHIBITOR IN STEAM GENERATING AND HEATING SYSTEMS (ES Ref.: ES2)	Industrial, Professional	SU3, SU22, SU23, PC37, PROC1, PROC8b, PROC9, ERC7, ERC9a
HYDRAZINE - USE AS REDUCING AGENT TO REMOVE NITROSYL CATIONS CONTAINED IN SULPHURIC ACID (ES Ref.: ES3)	Industrial	SU3, SU8, SU9, PROC1, PROC8b, PROC9, ERC6b
HYDRAZINE - USE AS A STABILISING REAGENT IN AROMATIC AMINES TO BE FURTHER USED IN SYNTHESIS OF DYESTUFFS (ES Ref.: ES4)	Industrial	SU3, SU8, SU9, PC0, PROC1, PROC8b, PROC9, ERC6b
HYDRAZINE - USE AS LABORATORY CHEMICAL (ES Ref.: ES5)	Industrial, Professional	SU3, SU22, PC21, PROC15, ERC6a, ERC6b
HYDRAZINE - DISTRIBUTION, FORMULATION AND (RE)PACKING OF SUBSTANCES AND MIXTURES (ES Ref.: ES6)	Industrial	SU3, PROC1, PROC3, PROC8b, PROC9, ERC2
HYDRAZINE - USE AS REDUCING AGENT FOR METAL-BASED CHEMICALS IN CLOSED INDUSTRIAL SYSTEMS UNDER CONTROLLED CONDITIONS	Industrial	SU3, PC0, PROC1, PROC3, PROC8b, ERC4, ERC6b

Title	Life cycle stage	Use descriptors
(ES Ref.: ES7)		
HYDRAZINE - USE AS A MONOMER IN CLOSED INDUSTRIAL SYSTEMS UNDER CONTROLLED CONDITIONS (ES Ref.: ES8)	Industrial	SU3, SU8, SU9, PC32, PROC1, PROC3, PROC8b, ERC6a
HYDRAZINE - USE AS REDUCING AGENT IN CLOSED INDUSTRIAL SYSTEMS UNDER CONTROLLED CONDITIONS (ES Ref.: ES9)	Industrial	SU3, SU8, SU9, PROC1, PROC2, PROC8b, ERC6b

Full text of use descriptors: see section 16

1.3. Details of the supplier of the safety data sheet

Supplier
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Email: enquiry@sg.megachem.com
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1.4. Emergency telephone number

Emergency number : +65 6933 9999

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (oral), Category 4	H302
Acute toxicity (dermal), Category 4	H312
Acute toxicity (inhal.), Category 3	H331
Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
Serious eye damage/eye irritation, Category 1	H318
Skin sensitisation, Category 1	H317
Carcinogenicity, Category 1B	H350
Hazardous to the aquatic environment – Acute Hazard, Category 1	H400
Hazardous to the aquatic environment – Chronic Hazard, Category 1	H410

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

May cause cancer. Toxic in contact with skin. Toxic if inhaled. Toxic if swallowed. Causes severe skin burns and eye damage. May cause an allergic skin reaction. Very toxic to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS05 GHS06 GHS08 GHS09

Signal word (CLP) : Danger

Contains : hydrazine

Hazard statements (CLP)	:	H302+H312 - Harmful if swallowed or in contact with skin. H314 - Causes severe skin burns and eye damage. H317 - May cause an allergic skin reaction. H331 - Toxic if inhaled. H350 - May cause cancer. H410 - Very toxic to aquatic life with long lasting effects.
Precautionary statements (CLP)	:	P201 - Obtain special instructions before use. P280 - Wear protective gloves, protective clothing, eye protection, face protection. P303+P361+P353+P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor. P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. P308+P313 - IF exposed or concerned: Get medical advice/attention. P321 - Specific treatment (see supplemental first aid instruction on this label).

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Contains no PBT and/or vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	hydrazine (302-01-2)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	hydrazine (302-01-2)

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

Component	
Substance(s) not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605	hydrazine (302-01-2)

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Water substance with national workplace exposure limit(s) (LV)	CAS-No.: 7732-18-5 EC-No.: 231-791-2	64.8	Not classified

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
hydrazine substance listed on REACH Candidate List substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, IS, NO, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 302-01-2 EC-No.: 206-114-9 EC Index-No.: 007-008-00-3	35.2	Flam. Liq. 3, H226 Carc. 1B, H350 Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Oral), H301 Skin Corr. 1B, H314 Skin Sens. 1, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Specific concentration limits:		
Name	**Product identifier**	**Specific concentration limits (%)**
hydrazine	CAS-No.: 302-01-2 EC-No.: 206-114-9 EC Index-No.: 007-008-00-3	(3 ≤ C < 10) Skin Irrit. 2; H315 (3 ≤ C < 10) Eye Irrit. 2; H319 (10 ≤ C ≤ 100) Skin Corr. 1B; H314

Comments : Hydrazine Hydrate is also known as CAS 7803-57-8

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Keep the victim calm, avoid physical strain. Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Depending on the victim's condition: doctor/hospital.

First-aid measures after inhalation : Remove the victim into fresh air. Immediately consult a doctor/medical service.

First-aid measures after skin contact : Do not apply (chemical) neutralizing agents without medical advice. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice.

First-aid measures after ingestion : Rinse mouth with water. Give activated charcoal. Immediately consult a doctor/medical service. Call Poison Information Centre (www.big.be/antigif.html). Take the container/vomit to the doctor/hospital. Ingestion of large quantities: immediately to hospital. Doctor: administration of chemical antidote. Doctor: gastric lavage.

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

Symptoms/effects after inhalation : Dry/sore throat. Coughing. Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema. Symptoms similar to those listed under ingestion.

Symptoms/effects after skin contact : Caustic burns/corrosion of the skin. Symptoms similar to those listed under ingestion.

Symptoms/effects after eye contact : Corrosion of the eye tissue.

Symptoms/effects after ingestion : Vomiting. Disturbances of consciousness. Respiratory difficulties. Disturbances of heart rate. Dilated pupils. Change in the haemogramme/blood composition. FOLLOWING SYMPTOMS MAY APPEAR LATER: Impairment of the nervous system. Disturbed tactile sensibility. Movement disturbances. Coordination disorders. Enlargement/affection of the liver. Affection of the renal tissue.

Chronic symptoms	:	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Skin rash/inflammation. Possible inflammation of the respiratory tract. Feeling of weakness. Body temperature rise. Tremor. Vomiting. Abdominal pain. Diarrhoea. Enlargement/affection of the liver. Affection of the renal tissue. Risk of lung oedema. Risk of pneumonia. Degeneration of heart tissue. Change in the haemogramme/blood composition. Impairment of the nervous system. Impaired memory. Impaired concentration.

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

Treat symptomatically. Medical considerations: Skin disorders and allergies. Liver damage. Kidney damage. Convulsions. CNS depression.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (alcohol-resistant). Water spray if puddle cannot expand.
Unsuitable extinguishing media	:	Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	DIRECT FIRE HAZARD: Material presenting a fire hazard. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	:	INDIRECT EXPLOSION HAZARD: Reactions with explosion hazards: see "Reactivity Hazard".
Reactivity in case of fire	:	May explode: flames or sparks. Vapour explosion and toxic hazard indoors, outdoors and in sewers.
Hazardous decomposition products in case of fire	:	Toxic fumes may be released. Corrosive vapours are released.

5.3. Advice for firefighters

Precautionary measures fire	:	Eliminate all ignition sources if safe to do so. Evacuate the danger area.
Firefighting instructions	:	Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	:	Avoid inhalation of dust and contact with skin and eyes. No open flames. No smoking. Eliminate every possible source of ignition.

For non-emergency personnel

Protective equipment	:	Gas-tight suit (EN 943). Corrosion-proof suit (EN 14605).
Emergency procedures	:	Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. No naked flames. Corrosion-proof appliances. Keep containers closed. Wash contaminated clothes.

For emergency responders

Protective equipment	:	Self-contained breathing apparatus (EN 136 + EN 137).

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Dilute toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Heating: dilute combustible gas/vapour with water curtain.
Methods for cleaning up	:	Large Spillages: Dilute Hydrazine Hydrate with water so the concentration of Hydrazine is less than 5% w/w. Neutralise using either <5% calcium hypochlorite or <5% sodium hypochlorite by a ratio of 1:1. Collect and place in suitable waste disposal containers and seal securely. Dispose of via a licensed hazardous waste contractor.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". See section 11 for additional information on health hazards. See section 12 for additional information on ecological hazards. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	:	Avoid any direct contact with the product. Avoid inhalation of vapours.
Precautions for safe handling	:	Keep away from naked flames/heat. At temperature > flashpoint: use spark-/explosionproof appliances. In finely divided state: use spark-/explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Exhaust gas must be neutralised. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Use corrosionproof equipment. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Keep container tightly closed.
Hygiene measures	:	Observe very strict hygiene - avoid contact.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Ground/bond container and receiving equipment.
Storage conditions	:	Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up. Protect from sunlight.
Incompatible products	:	Nitrates. Nitrites. Oxidising agents. Heavy metals (Salts). Metals. Metal oxides.
Incompatible materials	:	Heat sources.
Heat and ignition sources	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Information on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. metals. metallic salts. organic materials. water/moisture.
Storage area	:	Store in a cool area. Store in a dry area. Ventilation at floor level. Keep locked up. Provide for a tub to collect spills. Unauthorized persons are not admitted. May be stored under inert gas. Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials	:	SUITABLE MATERIAL: stainless steel. Epoxy resin coated steel. aluminium. polyethylene. polypropylene. MATERIAL TO AVOID: monel steel. lead. iron. copper. zinc. nickel. bronze. glass.

7.3. Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure and biological limit values

HYDRAZINE HYDRATE 55% (10217-52-4)	
United Kingdom - Occupational Exposure Limits	
WEL TWA (OEL TWA)	0.013 mg/m³
	0.01 ppm
WEL STEL (OEL STEL)	0.13 mg/m³
	0.1 ppm

hydrazine (302-01-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
IOEL TWA	0.013 mg/m³
	0.01 ppm
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Hydrazine
BOEL TWA	0.013 mg/m³
	0.01 ppm
Notes	Skin (Substantial contribution to the total body burden via dermal exposure possible)
Regulatory reference	DIRECTIVE (EU) 2019/130 (amending Directive 2004/37/EC)
United Kingdom - Occupational Exposure Limits	
Local name	Hydrazine
WEL TWA (OEL TWA)	0.013 mg/m³
	0.01 ppm
WEL STEL (OEL STEL)	0.13 mg/m³
	0.1 ppm
Remark	Carc (Capable of causing cancer and/or heritable genetic damage), Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

DNEL and PNEC

HYDRAZINE HYDRATE 55% (10217-52-4)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	6.4 µg/kg dw
Acute - systemic effects, inhalation	0.133 mg/m³
Acute - local effects, inhalation	0.133 mg/m³
Long-term - systemic effects, dermal	6.4 µg/kg dw
Long-term - systemic effects, inhalation	0.013 mg/m³
Long-term - local effects, inhalation	0.013 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.6 µg/l
PNEC aqua (marine water)	0.06 µg/l
PNEC (STP)	
PNEC sewage treatment plant	0.055 mg/l

hydrazine (302-01-2)	
PNEC (Water)	
PNEC aqua (freshwater)	0.6 µg/l
PNEC aqua (marine water)	0.06 µg/l
PNEC aqua (intermittent, freshwater)	0.00017 mg/l
PNEC (STP)	
PNEC sewage treatment plant	0.055 mg/l

8.2. Exposure controls

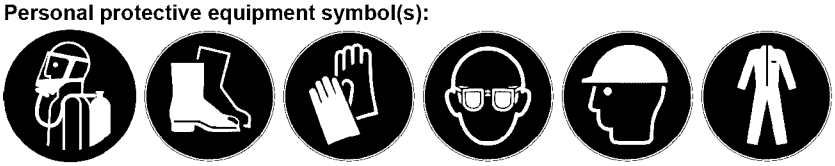
Appropriate engineering controls

Appropriate engineering controls:
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Observe any occupational exposure limits for the product or ingredients. As this product contains ingredients with exposure limits, process enclosures, local exhaust ventilation or other engineering controls should be used to keep worker exposure below any statutory or recommended limits, if use generates dust, fumes, gas, vapour or mist.

Personal protection equipment

Personal protective equipment:
Self-contained breathing apparatus. Wear foot protection. Eyewash station. Wear suitable gloves tested to EN374. Standard EN 166 - Personal eye-protection.

Personal protective equipment symbol(s):



Eye and face protection

Eye protection:
Protective goggles (EN 166)

Skin protection

Skin and body protection:
Head/neck protection. Corrosion-proof clothing (EN 14605)

Hand protection:
Protective gloves against chemicals (EN 374). This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticpated use of the user. It must not be construed as offering an approval for any specific use scenario.

Hand protection					
Type	**Material**	**Permeation**	**Thickness (mm)**	**Penetration**	**Standard**
Reusable gloves	Neoprene rubber (HNBR)	6 (> 480 minutes)			EN ISO 374
Reusable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)			EN ISO 374
Reusable gloves	Butyl rubber	6 (> 480 minutes)			EN ISO 374

Other skin protection
Materials for protective clothing:
Good resistance: Butyl rubber. Polyvinylchloride (PVC). Nitrile rubber. neoprene (chloroprene rubber)

Respiratory protection

Respiratory protection:
Full face mask with filter type K at conc. in air > exposure limit. High vapour/gas concentration: self-contained breathing apparatus (EN 136 + EN 137)

Environmental exposure controls

Environmental exposure controls:
Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Colour	:	Colourless.
Appearance	:	Liquid.
Odour	:	Ammonia odour. penetrating.
Odour threshold	:	Not available
Melting point	:	-31 – -62 °C
Freezing point	:	Not available
Boiling point	:	110 – 120 °C
Flammability	:	 Not applicable
Explosive properties	:	Not explosive.
Oxidising properties	:	Based on its structural properties the product is not classified as oxidizing.
Lower explosion limit	:	4.7 vol %
Upper explosion limit	:	100 vol %
Flash point	:	73 – 91 °C open cup
Auto-ignition temperature	:	290 °C for hydrazine
Decomposition temperature	:	Not available
pH	:	10.6 – 10.7
pH solution concentration	:	1 %
Viscosity, kinematic	:	Not available
Solubility	:	Soluble in water. Soluble in ethanol. Water: miscible
Partition coefficient n-octanol/water (Log Kow)	:	Not available
Partition coefficient n-octanol/water (Log Pow)	:	-0.16 (Anhydrous form, Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Vapour pressure	:	15 – 20 mbar
Vapour pressure at 50°C	:	Not available
Density	:	Not available
Relative density	:	Not available
Relative vapour density at 20°C	:	1010 – 1020
Particle characteristics	:	Not applicable

9.2. Other information

Other safety characteristics

VOC content	:	Not applicable (inorganic)
Other properties	:	Gas/vapour heavier than air at 20°C,Clear,Hygroscopic,Producing fumes/mist,Contains volatile component(s),Basic reaction

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts violently with many compounds e.g.: with (strong) oxidizers and with (some) acids with (increased) risk of fire/explosion.

10.2. Chemical stability

Unstable on exposure to heat. Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

Oxidizing agent. Metal oxides. Nitrates. Heavy metals (Salts). Metals.

10.6. Hazardous decomposition products

Decomposes on exposure to temperature rise: release of toxic/corrosive/combustible gases/vapours (hydrogen, ammonia, nitrous vapours).

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Harmful in contact with skin.
Acute toxicity (inhalation) : Toxic if inhaled.

HYDRAZINE HYDRATE 55% (10217-52-4)	
LD50 oral rat	165 – 262 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LC50 Inhalation - Rat	0.75 mg/l (4 h, Rat, Male, Experimental value, Anhydrous form, Inhalation (vapours), 14 day(s))
ATE CLP (dermal)	1157.407 mg/kg bodyweight
ATE CLP (vapours)	3 mg/l/4h
ATE CLP (dust,mist)	0.5 mg/l/4h

hydrazine (302-01-2)	
LD50 oral rat	108 – 173 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LC50 Inhalation - Rat	0.759 mg/l (4 h, Rat, Male, Experimental value, Inhalation (vapours), 14 day(s))
LC50 Inhalation - Rat (Vapours)	0.75 mg/l Source: ECHA

Water (7732-18-5)	
LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rabbit	> 2000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

Skin corrosion/irritation : Causes severe skin burns.
pH: 10.6 – 10.7

hydrazine (302-01-2)	
pH	No data available in the literature

Water (7732-18-5)	
pH	7

Serious eye damage/irritation : Causes serious eye damage.
pH: 10.6 – 10.7

hydrazine (302-01-2)	
pH	No data available in the literature

Water (7732-18-5)	
pH	7

Respiratory or skin sensitisation : May cause an allergic skin reaction.

Germ cell mutagenicity : Not classified

Carcinogenicity : May cause cancer.

hydrazine (302-01-2)	
IARC group	2A - Probably carcinogenic to humans

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified.

HYDRAZINE HYDRATE 55% (10217-52-4)	
NOAEL (oral, rat, 90 days)	3 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)

hydrazine (302-01-2)	
NOAEL (oral, rat, 90 days)	3 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)

Water (7732-18-5)	
NOAEL (oral, rat, 90 days)	1000 mg/kg bodyweight Animal: rat, Guideline: EU Method B.26 (Sub-Chronic Oral Toxicity Test: Repeated Dose 90-Day Oral Toxicity Study in Rodents)

Aspiration hazard : Not classified

hydrazine (302-01-2)	
Viscosity, kinematic	No data available in the literature

11.2. Information on other hazards

Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Other information

Potential adverse human health effects and symptoms : Odour threshold is well above one of the exposure limits,Produces effects on the nervous system,Toxic if swallowed,Causes severe skin burns,Toxic in contact with skin,Fatal if inhaled,Causes serious eye damage,Caution! Substance is absorbed through the skin

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment.

Ecology - air : Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Photolysis in the air. Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water : Very toxic to crustacea. Very toxic to crustacea with long lasting effects. Very toxic to fishes. Groundwater pollutant. Inhibition of activated sludge. Very toxic to algae. pH shift. Autooxidation in water. Hydrolysis in water.

Hazardous to the aquatic environment, short–term (acute) : Very toxic to aquatic life.

Hazardous to the aquatic environment, long–term (chronic) : Very toxic to aquatic life with long lasting effects.

HYDRAZINE HYDRATE 55% (10217-52-4)	
LC50 - Fish [1]	0.61 mg/l (Other, 96 h, Lebistes reticulatus, Static system, Fresh water, Experimental value, Anhydrous form)

HYDRAZINE HYDRATE 55% (10217-52-4)	
EC50 - Crustacea [1]	0.16 mg/l (EPA 600/3-75/009, 48 h, Daphnia pulex, Semi-static system, Fresh water, Experimental value, Anhydrous form)
EC50 - Crustacea [2]	0.16 mg/l Test organisms (species): Daphnia pulex
ErC50 algae	0.017 mg/l (EU Method C.3, 48 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, Anhydrous form)

hydrazine (302-01-2)	
LC50 - Fish [1]	0.61 mg/l Test organisms (species): Lebistes reticulatus
EC50 - Crustacea [1]	0.19 mg/l Test organisms (species): Daphnia pulex
EC50 - Crustacea [2]	0.16 mg/l Test organisms (species): Daphnia pulex
ErC50 algae	0.017 mg/l Source: ECHA

Water (7732-18-5)	
LC50 - Fish [1]	2.95 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
LC50 - Fish [2]	5.9 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	7 mg/l Test organisms (species): Daphnia magna
EC50 - Crustacea [2]	14 mg/l Test organisms (species): Daphnia magna

12.2. Persistence and degradability

HYDRAZINE HYDRATE 55% (10217-52-4)	
Persistence and degradability	Biodegradable in the soil. Inherently biodegradable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)
Biodegradation	100 % 1 day

hydrazine (302-01-2)	
Persistence and degradability	Biodegradable in the soil, Inherently biodegradable.
Chemical oxygen demand (COD)	Not applicable (inorganic)
ThOD	Not applicable (inorganic)

Water (7732-18-5)	
Persistence and degradability	Not rapidly degradable

12.3. Bioaccumulative potential

HYDRAZINE HYDRATE 55% (10217-52-4)	
BCF - Fish [1]	0.25 – 0.5 (96 h, Poecilia reticulata, Literature study, Anhydrous form)
Partition coefficient n-octanol/water (Log Pow)	-0.16 (Anhydrous form, Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

hydrazine (302-01-2)	
BCF - Fish [1]	0.5 (96 h, Poecilia reticulata, Literature study, Hard water)
BCF - Fish [2]	0.25 (96 h, Poecilia reticulata, Literature study, Soft water)
Partition coefficient n-octanol/water (Log Pow)	-0.16 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)

hydrazine (302-01-2)	
Bioaccumulative potential	Not bioaccumulative.

Water (7732-18-5)	
Partition coefficient n-octanol/water (Log Pow)	-1.38

12.4. Mobility in soil

HYDRAZINE HYDRATE 55% (10217-52-4)	
Ecology - soil	No (test)data on mobility of the substance available. May be harmful to plant growth, blooming and fruit formation.

hydrazine (302-01-2)	
Surface tension	66.7 mN/m (25 °C)
Ecology - soil	No (test)data on mobility of the substance available. May be harmful to plant growth, blooming and fruit formation.

12.5. Results of PBT and vPvB assessment

HYDRAZINE HYDRATE 55% (10217-52-4)
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	hydrazine (302-01-2)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	hydrazine (302-01-2)

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The substance is included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

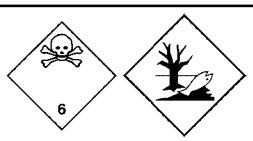
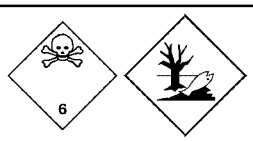
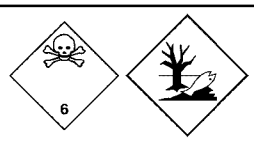
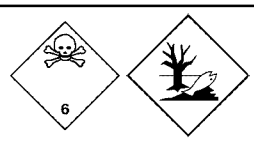
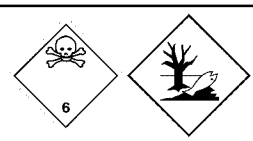
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions. Do not allow product to spread into the environment. Dilute Hydrazine hydrate with water until the concentration of Hydrazine is less than 5% w/w/ neutalise with either sodium hypochlorite <5% w/w or calcium hypochlorite < 5% w/w.

Product/Packaging disposal recommendations : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery.

Additional information	:	Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
European List of Waste (LoW, EC 2000/532)	:	Waste code can't be determined according to the European Waste Catalogue (EWC), since it depends on the use of the product

SECTION 14: Transport information

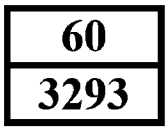
In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3293	UN 3293	UN 3293	UN 3293	UN 3293
14.2. UN proper shipping name				
HYDRAZINE, AQUEOUS SOLUTION	HYDRAZINE, AQUEOUS SOLUTION	Hydrazine, aqueous solution	HYDRAZINE, AQUEOUS SOLUTION	HYDRAZINE, AQUEOUS SOLUTION
Transport document description				
UN 3293 HYDRAZINE, AQUEOUS SOLUTION, 6.1, III, (E), ENVIRONMENTALLY HAZARDOUS	UN 3293 HYDRAZINE, AQUEOUS SOLUTION, 6.1, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 3293 Hydrazine, aqueous solution, 6.1, III, ENVIRONMENTALLY HAZARDOUS	UN 3293 HYDRAZINE, AQUEOUS SOLUTION, 6.1, III, ENVIRONMENTALLY HAZARDOUS	UN 3293 HYDRAZINE, AQUEOUS SOLUTION, 6.1, III, ENVIRONMENTALLY HAZARDOUS
14.3. Transport hazard class(es)				
6.1	6.1	6.1	6.1	6.1
				
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes EmS-No. (Fire): F-A EmS-No. (Spillage): S-A	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
Environmentally hazardous				

14.6. Special precautions for user

Overland transport

Transport regulations (ADR)	:	Subject to the provisions
Classification code (ADR)	:	T4
Special provisions (ADR)	:	566
Limited quantities (ADR)	:	5l
Excepted quantities (ADR)	:	E1
Packing instructions (ADR)	:	P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	:	MP19
Portable tank and bulk container instructions (ADR)	:	T4
Portable tank and bulk container special provisions (ADR)	:	TP1
Tank code (ADR)	:	L4BH
Tank special provisions (ADR)	:	TU15, TE19
Vehicle for tank carriage	:	AT
Transport category (ADR)	:	2

Special provisions for carriage - Packages (ADR)	:	V12
Special provisions for carriage - Loading, unloading and handling (ADR)	:	CV13, CV28
Special provisions for carriage - Operation (ADR)	:	S9
Hazard identification number (Kemler No.)	:	60
Orange plates	:	
Tunnel restriction code (ADR)	:	E
EAC code	:	•2X

Transport by sea

Transport regulations (IMDG)	:	Subject to the provisions
Special provisions (IMDG)	:	223
Limited quantities (IMDG)	:	5 L
Excepted quantities (IMDG)	:	E1
Packing instructions (IMDG)	:	P001, LP01
IBC packing instructions (IMDG)	:	IBC03
Tank instructions (IMDG)	:	T4
Tank special provisions (IMDG)	:	TP1
Stowage category (IMDG)	:	A
Segregation (IMDG)	:	SGG18, SG35
Properties and observations (IMDG)	:	Colourless liquid. Reacts violently with acids. Toxic if swallowed, by skin contact or by inhalation.

Air transport

Transport regulations (IATA)	:	Subject to the provisions
PCA Excepted quantities (IATA)	:	E1
PCA Limited quantities (IATA)	:	Y642
PCA limited quantity max net quantity (IATA)	:	2L
PCA packing instructions (IATA)	:	655
PCA max net quantity (IATA)	:	60L
CAO packing instructions (IATA)	:	663
CAO max net quantity (IATA)	:	220L
Special provisions (IATA)	:	A3
ERG code (IATA)	:	6L

Inland waterway transport

Classification code (ADN)	:	T4
Special provisions (ADN)	:	566, 802
Limited quantities (ADN)	:	5 L
Excepted quantities (ADN)	:	E1
Equipment required (ADN)	:	PP, EP, TOX, A
Ventilation (ADN)	:	VE02
Number of blue cones/lights (ADN)	:	0

Rail transport

Transport regulations (RID)	:	Subject to the provisions
Classification code (RID)	:	T4
Special provisions (RID)	:	566
Limited quantities (RID)	:	5L
Excepted quantities (RID)	:	E1
Packing instructions (RID)	:	P001, IBC03, LP01, R001
Mixed packing provisions (RID)	:	MP19
Portable tank and bulk container instructions (RID)	:	T4
Portable tank and bulk container special provisions (RID)	:	TP1
Tank codes for RID tanks (RID)	:	L4BH
Special provisions for RID tanks (RID)	:	TU15
Transport category (RID)	:	2
Special provisions for carriage – Packages (RID)	:	W12

Special provisions for carriage - Loading, unloading and handling (RID) : CW13, CW28, CW31

Colis express (express parcels) (RID) : CE8

Hazard identification number (RID) : 60

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	**Applicable on**	**Entry title or description**
28.	HYDRAZINE HYDRATE 55% ; hydrazine	Substances which are classified as carcinogen category 1A or 1B in Part 3 of Annex VI to Regulation (EC) No 1272/2008 and are listed in Appendix 1 or Appendix 2, respectively.
3(a)	hydrazine	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	HYDRAZINE HYDRATE 55% ; hydrazine	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	HYDRAZINE HYDRATE 55% ; hydrazine	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1
40.	hydrazine	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains substance(s) listed on the REACH Candidate List in concentrations ≥ 0.1 % or SCL: Hydrazine (EC 206-114-9, CAS 302-01-2)

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

VOC Directive (2004/42)

VOC content : Not applicable (inorganic)

Seveso Directive (Disaster Risk Reduction)

Seveso III Part II (Named dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
The following CARCINOGENS or the mixtures containing the following carcinogens at concentrations above 5 % by weight: 4-Aminobiphenyl and/or its salts, Benzotrichloride, Benzidine and/or salts, Bis (chloromethyl) ether, Chloromethyl methyl ether, 1,2-Dibromoethane, Diethyl sulphate, Dimethyl sulphate, Dimethylcarbamoyl chloride, 1,2-Dibromo-3-chloropropane, 1,2-Dimethylhydrazine, Dimethylnitrosamine, Hexamethylphosphoric triamide, Hydrazine, 2- Naphthylamine and/or salts, 4-Nitrodiphenyl, and 1,3 Propanesultone	0.5	2

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.2. Chemical safety assessment

A chemical safety assessment has been carried out
Annex to the eSDS for Hydrazine Hydrate (all grades) Information refers the substance Hydrazine CAS 302-01-2 EC 206-114-9 (dilution activities are exempt from REACH)
For the following substances of this mixture a chemical safety assessment has been carried out:
hydrazine

SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
	Supersedes version of	**Modified**
	Revision date	**Modified**
1.1	Trade name	**Removed**
1.1	Product code	**Removed**
1.1	Name	**Modified**
3	Composition/information on ingredients	**Modified**
5.2	Reactivity in case of fire	**Added**
7.1	Additional hazards when processed	**Added**
8.2	Hand protection	**Modified**
9.1	Upper explosion limit	**Added**
9.1	Lower explosion limit	**Added**
9.1	Flammability	**Added**
9.1	Melting point	**Modified**
9.1	Odour	**Modified**
11.1	LC50 Inhalation - Rat	**Modified**
11.1	LD50 oral rat	**Modified**