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

1.1 Product identifier
Material Name/Substance Name
Hydrochloric Acid 0.36% - 38%
Synonyms
HCl, HCl FCC, HCl NF, Hydrochloric acid, Chlorohydric acid, Muriatic acid, hydrogen chloride anhydrous, hydrochloric acid anhydrous
EC No.: 231-595-7
REACH Registration No.: 01-2119484862-27-XXXX
CAS No.: 7647-01-0
1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses
Formulation: Distribution of the substance (industrial)(F-3) ; Formulation & (re)packing of substances and mixtures (Industrial) (F-5)
Uses at industrial sites: Intermediate (IW-4); Use as a pH-regulator, flocculant, precipitant, neutralization agent (IW-6); Use as a pH regulator, flocculant, precipitant, neutralization agent, etc. in the mining & offshore industry (IW-7); Use as washing and cleaning agent (IW-8); Use as washing & cleaning product (IW-9); Use as water treatment chemical (IW-10); Use as a laboratory chemical (IW-11)
Uses by professional workers: Formulation & (re)packing of substances and mixtures (PW-5); Use as pH-regulator, flocculant, precipitant, neutralization agent, etc. by Health Services (PW-12); Use as cleaning agent (PW-13); Use as a cleaning agent (sanitary cleaner, etc.) (PW-14); Use for water treatment by professionals/public domain (PW-15); Use as pH-regulator, flocculant, precipitant, etc. (PW-16); Use as a laboratory chemical (PW-17)
Consumer Uses: Use for water treatment (for swimming pools) (C-18); Use as pH-regulator, flocculant, precipitant, neutralization agent, etc. (C-19); Use as a cleaning agent (C-20); Use as a cleaning agent (sanitary cleaner, etc.) (c-21); Use as reagent in experimental kits (C-22); Use in welding and soldering products (C-23)
Food and drug manufacturing; Water purification
Uses advised against
Avoid aerosol formation or vapor release in excess of 10ppm where workers are exposed without respiratory protection. Avoid any uses carrying a risk of splashes to eyes/skin where workers are exposed without eye/skin protection.
1.3 Details of the supplier of the safety data sheet

Detrex Chemicals Division
1100 North State Road
Ashtabula, Ohio 44004
Phone: 216-749-2605, 8:00am - 4:30pm
E-mail: SDSrequests@elcocorp.com
Fax: 216-749-7462

1.4 Emergency telephone number
(CHEMTREC) US/CAN: +1 800-424-9300, (CHEMTREC) International: +1 703-527-3887
Opening hours: 24 hours-a-day, 365 days-a-year

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008 [CLP]
Corrosive to Metals - Category 1
Skin Corrosion/Irritation - Category 1
Serious Eye Damage/Eye Irritation - Category 1
Specific Target Organ Toxicity - Single Exposure - Category 3

2.2 Label elements
Labeling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard symbols

Signal word
Danger
Hazard statements
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
Precautionary statements
Prevention
P234 Keep only in original packaging.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
Response
P390 Absorb spillage to prevent material damage.
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.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363 Wash contaminated clothing before reuse.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P310 Immediately call a POISON CENTER or doctor.
P321 Specific treatment (see label).
Storage
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P406 Store in corrosive resistant container with a resistant inner liner.
Disposal
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
2.3 Other hazards
None.

SECTION 3: Composition / information on ingredients

CAS EC No Registration No	Component Name Synonyms	1272/2008 (CLP)	Percent
7732-18-5	Water	Not classified	62-99.64

231-791-2 Not available			
7647-01-0 231-595-7 01-2119484862-27-XXXX	Hydrochloric acid	Met. Corr. 1 - H290 Skin Corr. 1A - H314 Eye Dam. 1 STOT SE 3 - H335 Note(s): U, 5	0.36-38

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation

Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration. Call a POISON CENTER or doctor/physician.

Skin

Remove/take off immediately all contaminated clothing. Wash with plenty of soap and water. Call a POISON CENTER or doctor/physician. Wash contaminated clothing before reuse.

Eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical advice immediately.

Ingestion

Do NOT induce vomiting. Do not give anything by mouth to unconscious or convulsive person. Rinse mouth thoroughly with water. Call a POISON CENTER or doctor/physician.

4.2 Most Important Symptoms/Effects

Acute

Causes severe skin burns and eye damage. May cause respiratory irritation.

Delayed

No information on significant adverse effects.

4.3 Indication of Immediate Medical Attention and Special Treatment

IF exposed or concerned: Get medical advice/attention.

Note to Physicians

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water mist, alcohol resistant foam, regular dry chemical, Carbon dioxide (CO2), Co-ordinate fire-fighting measures to the fire surroundings. Use water spray/stream to protect personnel and to cool endangered containers.

Unsuitable Extinguishing Media

Strong water jet.

5.2 Special hazards arising from the substance or mixture

SECTION 9: Physical and chemical properties.

Combustion

Hydrogen chloride (liquefied gas).

Fire Fighting Measures

Co-ordinate fire-fighting measures to the fire surroundings.

Protective Equipment and Precautions for Firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. Wear fire/flame resistant/retardant clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Evacuate area. Avoid release to the environment. Wear personal protection equipment (refer to section 8). Do not breathe dust/fume/gas/mist/vapors/spray. Take care that activity is executed only by specialists or authorised personnel.
6.2 Environmental precautions
Avoid release to the environment. Do not allow to enter into ground-water, surface water or drains. Collect spillage.
6.3 Methods and Materials for Containment and Cleaning Up
Dike for later disposal. Stop leak if safe to do so. Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Collect in closed and suitable containers for disposal.
6.4 Reference to other sections
Safe handling: see section 7, Personal protection equipment (PPE): see section 8, Disposal: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep only in original container. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing and eye/face protection. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Do not ingest. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.
7.2 Conditions for safe storage, including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Keep in a cool, well-ventilated place away from highly flammable substances. Keep container tightly closed.
Incompatible Materials
bases, Amines, Alkali metals, metals, Fluorine, Mixtures of sodium hypochlorite, Ammonia. Never add water to this product.
7.3 Specific end use(s)
1.2 Relevant identified uses of the substance or mixture and uses advised against.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Component Exposure Limits

Hydrochloric acid	**7647-01-0**
EU (IOELV):	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
ACGIH:	A4 - Not Classifiable as a Human Carcinogen
	2 ppm Ceiling

Austria:	5 ppm TWA [TMW]; 8 mg/m3 TWA [TMW]
	10 ppm STEL [KZW] 8 X 5 min ; 15 mg/m3 STEL [KZW] 8 X 5 min
Belgium:	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Bulgaria	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Croatia	5 ppm TWA [GVI]; 8 mg/m3 TWA [GVI]
	10 ppm STEL [KGVI]; 15 mg/m3 STEL [KGVI]
Cyprus	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Czech Republic	8 mg/m3 TWA
	15 mg/m3 Ceiling
Denmark:	5 ppm Ceiling ; 8 mg/m3 Ceiling
Estonia	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Finland:	5 ppm STEL (including solution); 7.6 mg/m3 STEL (including solution)
France:	5 ppm STEL [VLCT] (restrictive limit); 7.6 mg/m3 STEL [VLCT] (restrictive limit)
Germany (TRGS):	2 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2 ; 3 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2
Germany (DFG):	2 ppm TWA MAK ; 3 mg/m3 TWA MAK
	4 ppm Peak ; 6 mg/m3 Peak
Greece:	5 ppm TWA ; 7 mg/m3 TWA
	5 ppm STEL ; 7 mg/m3 STEL
Hungary	8 mg/m3 TWA [AK]
	16 mg/m3 STEL [CK]

Ireland:	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Italy:	5 ppm TWA Media Ponderata nel Tempo ; 8 mg/m3 TWA Media Ponderata nel Tempo
	10 ppm STEL Breve termine ; 15 mg/m3 STEL Breve termine
	2 ppm Ceiling ; 2.9 mg/m3 Ceiling
Latvia	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Lithuania	5 ppm TWA [IPRD]; 8 mg/m3 TWA [IPRD]
	10 ppm STEL [TPRD]; 15 mg/m3 STEL [TPRD]
Luxembourg	5 ppm TWA; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Malta	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
Netherlands:	8 mg/m3 TWA
	15 mg/m3 STEL
Poland	5 mg/m3 TWA [NDS]
	10 ppm STEL ; 15 mg/m3 STEL
Portugal:	5 ppm TWA [VLE-MP] (indicative limit value); 8 mg/m3 TWA [VLE-MP] (indicative limit value)
	10 ppm STEL [VLE-CD (indicative limit value); 15 mg/m3 STEL [VLE-CD (indicative limit value)
	2 ppm Ceiling [VLE-CM]
Romania	5 ppm TWA ; 8 mg/m3 TWA
	10 ppm STEL ; 15 mg/m3 STEL
	5 ppm TWA ; 8 mg/m3 TWA
Slovak Republic	5 ppm TWA ; 8 mg/m3 TWA
	15 mg/m3 Ceiling

Slovenia	5 ppm TWA (anhydrous); 8 mg/m3 TWA (anhydrous)
	10 ppm STEL (anhydrous); 16 mg/m3 STEL (anhydrous)
Spain:	5 ppm TWA [VLA-ED] (indicative limit value); 7.6 mg/m3 TWA [VLA-ED] (indicative limit value)
	10 ppm STEL [VLA-EC]; 15 mg/m3 STEL [VLA-EC]
Sweden:	2 ppm LLV ; 3 mg/m3 LLV
	4 ppm Binding STLV ; 6 mg/m3 Binding STLV
United Kingdom:	1 ppm TWA aerosol mist and gas ; 2 mg/m3 TWA aerosol mist and gas
	5 ppm STEL aerosol mist and gas ; 8 mg/m3 STEL aerosol mist and gas

Component Biological Exposure Limits

Hydrochloric acid	**7647-01-0**
Germany (DFG)	4 ppm Peak ; 6 mg/m3 Peak

Derived No Effect Levels (DNELs)

	Workers			
Route of exposure	Short-term local	Short-term systemic	Long-term local	Long-term systemic
Oral	Not required			
Inhalation	15 mg/m^3	iii	8 mg/m^3	iii
Dermal	i	iii	i	iii
Note: (i) hazard identified but no DNEL available, (ii) no exposure expected, (iii) no hazard identified				

Predicted No Effect Concentrations (PNECs)

It is not considered useful to calculate a PNEC for hydrochloric acid because factors such as the buffer capacity, the natural pH and the fluctuation of the pH are very specific for a certain ecosystem. Moreover HCl is not classified for the environment compartment based on its dissociation in the environment, lack of bioaccumulation and lack of adsorption to particulate matter or surfaces.

8.2 Exposure Controls

Engineering controls

Keep good industrial hygiene. Provide eye shower and label its location conspicuously. Provide adequate ventilation. Wash thoroughly after handling.

Eye/face protection

Wear splash resistant safety goggles with a face-shield. Use eye protection according to EN 166, designed to protect against liquid splashes.

Skin Protection

Wear full chemical protective clothing. Wear protective gloves and protective clothing.

Respiratory Protection

In case of inadequate ventilation wear respiratory protection.

Glove Recommendations

Wear protective gloves. DIN EN 374. FKM (fluoro rubber), NBR (Nitrile rubber), CR (polychloroprene, chloroprene rubber), PVC (Polyvinyl chloride), latex.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	light yellow. liquid.	**Physical State**	liquid
Odor	Sharp, irritating odor.	**Color**	light yellow.
Odor Threshold	Not available	**pH**	2, conc: 0.2% solution
Melting Point	Not available	**Boiling Point**	Not available
Boiling Point Range	Not available	**Freezing point**	Not available
Evaporation Rate	Not available	**Flammability (solid, gas)**	Not available
Autoignition Temperature	Not available	**Flash Point**	Not available
Lower Explosive Limit	Not available	**Decomposition temperature**	Not available
Upper Explosive Limit	Not available	**Vapor Pressure**	Not available
Vapor Density (air=1)	1.3 (@ 20 C)	**Specific Gravity (water=1)**	Not available
Water Solubility	Not available	**Partition coefficient: n-octanol/water**	Not available
Viscosity	Not available	**Solubility (Other)**	Not available
Density	Not available	**Molecular Weight**	Not available

SECTION 10: Stability and reactivity

10.1 Reactivity
Reacts violently with water. Never add water to this product. Do not mix with incompatible materials. 10.5 Incompatible materials.
10.2 Chemical stability
The product is chemically stable under recommended conditions of storage, use and temperature.
10.3 Possibility of hazardous reactions
No hazardous reaction when handled and stored according to provisions.
10.4 Conditions to avoid
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
10.5 Incompatible materials
bases, Amines, Alkali metals, metals, Fluorine, Mixtures of sodium hypochlorite, Ammonia. Never add water to this product.
10.6 Hazardous decomposition products
Hydrogen chloride (liquefied gas). Keep away from heat.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:
Water (7732-18-5)
Oral LD50 Rat >90 mL/kg
Hydrochloric acid (7647-01-0)
Oral LD50 Rat 238 - 277 mg/kg
Dermal LD50 Rabbit >5010 mg/kg
Inhalation LC50 Rat 1.68 mg/L 1 h
Product Toxicity Data
Acute Toxicity Estimate

Dermal	> 2000 mg/kg
Inhalation - Vapor	2.2105 mg/L
Oral	626.3157 mg/kg

Irritation/Corrosivity Data
Causes severe skin burns and eye damage. May cause respiratory irritation.
Respiratory Sensitization
No information on significant adverse effects.
Dermal Sensitization
No information on significant adverse effects.
Germ Cell Mutagenicity
No information on significant adverse effects.
Tumorigenic Data
No information on significant adverse effects.
Component Carcinogenicity

Hydrochloric acid	**7647-01-0**
IARC:	Monograph 54 [1992] (Group 3 (not classifiable))

Reproductive toxicity
No information on significant adverse effects.
Specific Target Organ Toxicity - Single Exposure
Inhalation of dust may cause irritation of the respiratory system.
Specific Target Organ Toxicity - Repeated Exposure
No information on significant adverse effects.
Aspiration hazard
No information on significant adverse effects.
Additional Data
No information available.

SECTION 12: Ecological information

12.1 Toxicity
Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product's components
12.2 Persistence and degradability
No data available.
12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

Bioconcentration factor (BCF)

No data available.

Biodegradation

No data available.

12.5 Results of PBT and vPvB assessment

12.6 Other adverse effects

May be harmful to aquatic organisms due to the shift of the pH. Do not empty into drains.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose contents/container as disposal of hazardous materials. Dispose of contents/container in accordance with local/regional/national/international regulations. Waste code:

SECTION 14: Transport information

		ADR	RID	ICAO	IATA	ADN	IMDG
14.1	UN Number	1789	1789	1789	1789	1789	1789
14.2	UN Proper Shipping Name	Hydrochloric acid	Hydrochloric acid	Hydrochloric acid	Hydrochloric acid	Hydrochloric acid	Hydrochloric acid
14.3	Transport Hazard Class(es)	8	8	8	8	8	8
14.4	Packing Group	II	II	II	II	II	II
14.5	Environmental Hazards	No	No	No	No	No	No
14.6	Special Precautions For User	Not available	Not available	Not available	Not available	Not available	Not available
14.7	Transport in Bulk According to Annex II of MARPOL and the IBC Code	No	No	No	No	No	No
14.8	Additional information	Hazard ID No: 80 TREM-Card or ERG number: CEFIC TEC®-80GC1-II+III	No data available.	Labels: CORROSIVE	Labels: CORROSIVE	No data available.	EmS Number: F-A, S-B

Component Marine Pollutants (IMDG)
Not regulated as dangerous goods.
International Bulk Chemical Code
This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Hydrochloric acid	**7647-01-0**
IBC Code:	Category Z

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorization
No components of this material are listed.
EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances Subject to Authorization
No components of this material are listed.
EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles
No components of this material are listed.
EU - Substances Depleting the Ozone layer (1005/2009)
No components of this material are listed
EU - Persistent Organic Pollutants (850/2004)
No components of this material are listed
EU - Export and Import Restrictions (689/2008) - Chemicals and Articles Subject to Export Ban
No components of this material are listed
EU - Seveso III Directive (2012/18/EU) - Qualifying Quantities of Dangerous Substances

Hydrochloric acid	**7647-01-0**
Lower-Tier Requirements	25 tonne (liquefied gas)
Higher-Tier Requirements	250 tonne (liquefied gas)

EU - Plant Protection Products (1107/2009/EC)
No components of this material are listed
EU - Biocides (528/2012/EU)

Hydrochloric acid	**7647-01-0**
Active Substances - Product Type	Product type 2

EU – Water Framework Directive (2000/60/EC)
No components of this material are listed
EU - Limitation of Emissions of Volatile Organic Compounds Due to the Use of Organic Solvents in Certain Activities and Installations (1999/13/EC)
No components of this material are listed
EU - Detergent Regulation (648/2004/EC)
No components of this material are listed
Germany Regulations
Germany Water Classification - Product
hazard class 1 - low hazard to waters
* Self-classification
Germany Water Classification - Component

Hydrochloric acid (7647-01-0)
ID Number 238 , hazard class 1 - low hazard to waters (footnote 8)
Denmark Regulations
No components of this material are listed.
Component Analysis - Inventory
Water (7732-18-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes

Hydrochloric acid (7647-01-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes

15.2 Chemical Safety Assessment
No chemical safety assessment has been carried out for the substance/mixture.

SECTION 16: Other information

16.1 Indication of changes
Revised: 30 August 2017
16.2 Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CFR - Code of Federal Regulations (US); CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; NDSL – Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport;

SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); WHMIS - Workplace Hazardous Materials Information System (Canada)

16.3 Key literature references and sources for data

Available upon request.

16.4 Methods Used for Classification of Mixture According to Regulation (EC) No 1272/2008

Available upon request.

16.5 Relevant H- and EUH-phrases (Number and full text) and Notes

H290 May be corrosive to metals

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

NOTE 5: The concentration limits for gaseous mixtures are expressed as volume per volume percentage.

NOTE U: When put on the market gases have to be classified as ‘Gases under pressure’, in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

16.6 Training advice

Read the Safety Data Sheet before handling product.

16.7 Further Information

Disclaimer:

Reasonable care has been taken in the preparation of this information; however, the manufacturer makes no warranty whatsoever including the warranty of merchantability, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental, consequential, or other such damages resulting from its use or misuse..