

Danger



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

1.1. Product identifier

Trade name : ARCAL F10
SDS no : 302-10-002ALBNL-ARC
UFI : C1C0-S2XW-300R-7RA3

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

Relevant identified uses : Contact supplier for more information on uses.
Industrial and professional use for chemical analysis, calibration, (routine) quality control, laboratory use, under controlled conditions.

Uses advised against : Consumer use.
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

THE NETHERLANDS:

AIR LIQUIDE BV
De Witbogt 1
5652 AG Eindhoven
the Netherlands-Nederland
Tel: +31 (0)40 250 35 03

BELGIUM:

L'AIR LIQUIDE BELGE S.A./N.V.
Hermeslaan 11
1932 Zaventem
Belgium-Belgique-België
Tel: +32 (0)2 540 86 60

LUXEMBURG:

L'AIR LIQUIDE LUXEMBOURG S.A.
ZONE P.E.D.-B.P.20
L-4801 RODANGE Luxembourg
Tel: +352 26 30 29 03

infosafetydatasheet.albv@airliquide.com
www.airliquide-benelux.com

1.4. Emergency telephone number

Country/Area	Organisation/Company	Address	Emergency number	Comment
Belgium	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Militaire Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+32 70 245 245	Please dial: 070 245 245 for any urgent questions about intoxication (free of charge 24/7), if not accessible, dial: 02 264 96 30 (standard fee)
Luxembourg	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Militaire Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+352 8002 5500	Free telephone number with a 24/7 access. Experts answer all urgency questions on dangerous products in French, Dutch and English
Netherlands	Nationaal Vergiftigingen Informatie Centrum	Huispostnummer Q03.2.315 Postbus 85500 3508 GA Utrecht	+31 88 755 80 00	Only for the purpose of informing medical personnel in cases of acute intoxications (24 hours a day, 7 days a week)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

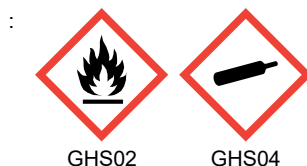
Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 1B	H221
	Gases under pressure : Compressed gas	H280

2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H221 - Flammable gas.
H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

Asphyxiant in high concentrations.
None.
These high concentrations are within the flammability range.
Mixture does not contain substance (s) classified as PBT or vPvB in concentrations above 0,1 weight %.
The substance/mixture has no endocrine disrupting properties.
The 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.
Mixture does not contain substance(s) classified as PMT or vPvM in concentrations above 0.1 weight %.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP] ATE, EUH-statements, M-Factors
Nitrogen	CAS-No.: 7727-37-9 EC-No.: 231-783-9 EC Index-No.: --- REACH-no: *1	90	Press. Gas (Comp.), H280
Hydrogen	CAS-No.: 1333-74-0 EC-No.: 215-605-7 EC Index-No.: 001-001-00-9 REACH-no: *1	10	Flam. Gas 1A, H220 Press. Gas (Comp.), H280

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

Contains no other components or impurities which will influence the classification of the product.

*1: Listed in Annex IV / V REACH, exempted from registration.

*3: Registration not required: Substance manufactured or imported < 1t/y.

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Allow affected person to breathe fresh air.
Allow the victim to rest.
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : Adverse effects not expected from this product.
Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.
- Eye contact : Adverse effects not expected from this product.
Rinse immediately with plenty of water.
Obtain medical attention if pain, blinking or redness persists.
- Ingestion : Rinse mouth.
Do NOT induce vomiting.
Obtain emergency medical attention.
Ingestion is not considered a potential route of exposure.

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

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
See section 11.

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

None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
Foam.
Dry powder.
Carbon dioxide.
Water spray.
Sand.
Shutting off the source of the gas is the preferred method of control.
- Unsuitable extinguishing media : Carbon dioxide.
Do not use a heavy water stream.
Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products : None.

5.3. Advice for firefighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Move containers away from the fire area if this can be done without risk.
- Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters. EN 15090 Footwear for firefighters. EN 443 Helmets for fire fighting in buildings and other structures.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel : Act in accordance with local emergency plan.
Evacuate unnecessary personnel.
Try to stop release.
Evacuate area.
Eliminate ignition sources.
Ensure adequate air ventilation.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment.

For emergency responders

- : Ventilate area.
- Monitor concentration of released product.
- Consider the risk of potentially explosive atmospheres.
- Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
- See section 5.3 of the SDS for more information.

6.2. Environmental precautions

- Prevent entry to sewers and public waters.
- Notify authorities if liquid enters sewers or public waters.
- Try to stop release.

6.3. Methods and material for containment and cleaning up

- Ventilate area.

6.4. Reference to other sections

- See Section 8.
- Exposure controls and personal protection.
- See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product

- : Do not breathe gas.
- Avoid release of product into atmosphere.
- The product must be handled in accordance with good industrial hygiene and safety procedures.
- Only experienced and properly instructed persons should handle gases under pressure.
- Consider pressure relief device(s) in gas installations.
- Ensure the complete gas system was (or is regularly) checked for leaks before use.
- Do not smoke while handling product.
- Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
- Avoid suck back of water, acid and alkalis.
- Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
- Purge air from system before introducing gas.
- Take precautionary measures against static discharge.
- Keep away from ignition sources (including static discharges).
- Consider the use of only non-sparking tools.
- Ensure equipment is adequately earthed.

Safe handling of the gas receptacle

- : Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps, when provided, in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

- Observe all regulations and local requirements regarding storage of containers.
- Containers should not be stored in conditions likely to encourage corrosion.
- Container valve guards or caps, when provided, should be in place.
- Containers should be stored in the vertical position and properly secured to prevent them from falling over.
- Stored containers should be periodically checked for general condition and leakage.
- Keep container below 50°C in a well ventilated place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible materials.
- Segregate from oxidant gases and other oxidants in store.
- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

- OEL (Occupational Exposure Limits) : None available.
- DNEL (Derived-No Effect Level) : None available.
- PNEC (Predicted No-Effect Concentration) : None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Provide adequate general and local exhaust ventilation.
- Product to be handled in a closed system.
- Systems under pressure should be regularly checked for leakages.
- Ensure exposure is below occupational exposure limits (where available).
- Gas detectors should be used when flammable gases/vapours may be released.
- Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

- A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.
- Eye/face protection : Wear safety glasses with side shields.
Chemical goggles or safety glasses.
Standard EN 166 - Personal eye-protection - specifications.
 - Skin protection
 - Hand protection : Wear protective gloves.
Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.
 - Other : Do not eat, drink or smoke during use.
Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN 1149-5 - Protective clothing: Electrostatic properties.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
 - Respiratory protection : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Wear appropriate mask.
Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
When indicated by a risk assessment, Respiratory Protective Equipment must be used. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.
Gas filters do not protect against oxygen deficiency.
Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
 - Thermal hazards : None in addition to the above sections.

8.2.3. Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Appearance
- Physical state at 20°C / 101.3kPa : Gas.
 - Colour : Colourless.
- Odour : characteristic.
- Melting point / Freezing point : Not applicable for gas mixtures.
- Boiling point : Not applicable for gas mixtures.
It is technically not possible to determine the boiling point or range of this mixture.
Component with lowest boiling point: Hydrogen -253 °C
- Flammability : Extremely flammable gas, Non flammable, Flammable gas.
- Lower explosion limit : Calculated value: 40%
- Upper explosion limit : No test data or calculation method available.
- Flash point : Not applicable for gases and gas mixtures.
- Auto-ignition temperature : Not known.
Auto ignition temperature for mixtures is not available. Component with lowest auto-ignition temperature: Hydrogen 560 °C

Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: No reliable data available.
Water solubility [20°C]	: No reliable data available.
Partition coefficient n-octanol/water (Log Kow)	: Not applicable for gas mixtures.
Vapour pressure [20°C]	: Not applicable.
Vapour pressure [50°C]	: Not applicable.
Density and/or relative density	: Not applicable for gases and gas mixtures.
Relative vapour density (air=1)	: Lighter or similar to air.
Particle characteristics	: Not applicable for gases and gas mixtures. Nanoforms are not relevant for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	: Not applicable.
Flammability properties	: Flammability range not available.
Oxidising properties	: Not applicable.

9.2.2. Other safety characteristics

Molar mass	: Not applicable for gas mixtures.
Evaporation rate	: Not applicable for gases and gas mixtures.
Other data	: None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Data for mixtures are not available.
This mixture contains components with the following reactivity : Can form explosive mixture with air. May react violently with oxidants.

10.2. Chemical stability

Stable under normal conditions.
Not established.

10.3. Possibility of hazardous reactions

Not established.
Can form explosive mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

Direct sunlight.
Extremely high or low temperatures.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Avoid moisture in installation systems.

10.5. Incompatible materials

Strong acids.
Strong bases.
Air, Oxidisers.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

fume.
Carbon monoxide.
Carbon dioxide.
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

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

Acute toxicity	: Toxicological effects not expected by inhalation from this product if occupational exposure limit values are not exceeded.
Skin corrosion/irritation	: No known effects from this product.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.

11.2. Information on other hazards

Potential adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Other information	: The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment	: No ecological damage caused by this product.
EC50 48h - Daphnia magna [mg/l]	: No data available.
EC50 72h - Algae [mg/l]	: No data available.
LC50 96 h - Fish [mg/l]	: No data available.

Nitrogen (7727-37-9)

EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

Hydrogen (1333-74-0)

EC50 48h - Daphnia magna [mg/l]	No data available.
EC50 72h - Algae [mg/l]	No data available.
LC50 96 h - Fish [mg/l]	No data available.

12.2. Persistence and degradability

Assessment	: No ecological damage caused by this product. Not established.
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12.3. Bioaccumulative potential

Assessment	: No data available. Not established.
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12.4. Mobility in soil

Assessment	: Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
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12.5. Results of PBT and vPvB assessment

Assessment	: Not classified as PBT or vPvB.
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12.6. Endocrine disrupting properties

Assessment : The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : No known effects from this product.
Not classified as PMT or vPvM.

Effect on the ozone layer : None.

Effect on global warming : Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Do not discharge into areas where there is a risk of forming an explosive mixture with air.
Waste gas should be flared through a suitable burner with flash back arrestor.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.org> for more guidance on suitable disposal methods.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN
UN-No. : 1954

14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen, Nitrogen)

Transport by air (ICAO-TI / IATA-DGR) : Compressed gas, flammable, n.o.s. (Hydrogen, Nitrogen)

Transport by sea (IMDG) : COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen, Nitrogen)

14.3. Transport hazard class(es)

Labelling



2.1 : Flammable gases.

Transport by road/rail/inland waterways (ADR/RID/ADN)

Class : 2
Classification code : 1F
Hazard identification number : 23
Tunnel Restriction : B/D - Tank carriage: Passage forbidden through tunnels of category B, C, D and E. Other carriage: Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 2.1

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.1

Emergency Schedule (EmS) - Fire : F-D
Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail/inland waterways (ADR/RID/ADN) : Not applicable.
Transport by air (ICAO-TI / IATA-DGR) : Not applicable.
Transport by sea (IMDG) : Not applicable.

14.5. Environmental hazards

Transport by road/rail/inland waterways (ADR/RID/ADN) : None.
Transport by air (ICAO-TI / IATA-DGR) : None.
Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail/inland waterways (ADR/RID/ADN) : P200.
Transport by air (ICAO-TI / IATA-DGR)
 Passenger and Cargo Aircraft : Forbidden.
 Cargo Aircraft only : 200.
Transport by sea (IMDG) : P200.

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

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

Restrictions on use : None.
Contains no substance(s) listed on the REACH Candidate List.
Other information, restriction and prohibition regulations : Ensure all national/local regulations are observed.
Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals).
Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants).
Seveso Directive : 2012/18/EU (Seveso III) : Covered.

Seveso III Part I (Categories of dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
P2 FLAMMABLE GASES Flammable gases, Category 1 or 2	10	50

National regulations

Regulatory reference : Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A CSA does not need to be carried out for this product.
No chemical safety assessment has been carried out.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.

Section	Changed item	Comments
1.1	UFI on SDS 1.1	Added
1.2	Industrial/Professional use spec	Added
2.3	Other hazards which do not result in classification	Modified
4.1	First-aid measures general	Added
4.1	First-aid measures after skin contact	Modified
4.1	First-aid measures after inhalation	Modified
4.1	First-aid measures after ingestion	Modified
4.1	First-aid measures after eye contact	Modified
4.2	Symptoms/effects	Added
5.1	Unsuitable extinguishing media	Modified
5.1	Suitable extinguishing media	Modified
5.3	Protection during firefighting	Added
5.3	Firefighting instructions	Added
6.1	Protective equipment	Added
6.1	Emergency procedures	Modified
6.1	Emergency procedures	Modified
6.2	Environmental precautions	Modified
6.3	Methods for cleaning up	Added
6.4	Reference to other sections (8, 13)	Modified
7.1	Precautions for safe handling	Added
7.2	Storage conditions	Added
7.2	Incompatible materials	Added
7.2	Incompatible products	Added
7.2	Storage area	Added
8.2	Other information	Modified
8.2	Respiratory protection	Modified
8.2	Personal protective equipment	Modified
8.2	Hand protection	Modified
8.2	Eye protection	Modified

9	Solubility in water	Added
9	Density	Added
9	Odour	Added
9	Flammability (solid, gas)	Modified
10.2	Chemical stability	Modified
10.3	Possibility of hazardous reactions	Modified
10.4	Conditions to avoid	Modified
10.5	Incompatible materials	Modified
10.6	Hazardous decomposition products	Modified
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Potential adverse human health effects and symptoms	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
11.1	Additional information	Added
12.2	Persistence and degradability	Modified
12.3	Bioaccumulative potential	Modified
12.7	Other information	Added
12.7	Other adverse effects	Modified
13.1	Ecological waste information	Added
13.1	Product/Packaging disposal recommendations	Added
14	Special provisions for carriage - Operation (ADR)	Added
14	Special provisions for carriage - Loading, unloading and handling (ADR)	Added
14	Tank special provisions (ADR)	Added
14	Tank code (ADR)	Added
14	Portable tank and bulk container instructions (ADR)	Added
14	Mixed packing provisions (ADR)	Added
14	Transport category (RID)	Added
14	Special provisions for RID tanks (RID)	Added
14	Tank codes for RID tanks (RID)	Added
14	Special provisions (RID)	Added

14	Portable tank and bulk container instructions (RID)	Added
14	Proper Shipping Name (RID)	Added
14	Special provisions for carriage - Loading, unloading and handling (RID)	Added
14	Packing instructions (RID)	Added
14	Mixed packing provisions (RID)	Added
14	Limited quantities (RID)	Added
14	Hazard identification number (RID)	Added
14	Excepted quantities (RID)	Added
14	Colis express (express parcels) (RID)	Added
14	Classification code (RID)	Added
14	Ventilation (ADN)	Added
14	Limited quantities (ADN)	Added
14	Danger labels (ADN)	Added
14	Excepted quantities (ADN)	Added
14	Equipment required (ADN)	Added
14	Classification code (ADN)	Added
14	Number of blue cones/lights (ADN)	Added
14.1	UN-No. (ADN)	Added
14.2	Proper Shipping Name (ADN)	Added
14.6	Special provisions (ADN)	Added
14.6	Special provisions (ADR)	Modified
15.2	Chemical safety assessment	Modified
16	Data sources	Added
16	Abbreviations and acronyms	Modified

Data sources

: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Abbreviations and acronyms

- : ATE - Acute Toxicity Estimate.
- CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.
- REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
- EINECS - European Inventory of Existing Commercial Chemical Substances.
- CAS# - Chemical Abstract Service number.
- PPE - Personal Protection Equipment.
- LC50 - Lethal Concentration to 50 % of a test population.
- RMM - Risk Management Measures.
- PBT - Persistent, Bioaccumulative and Toxic.
- vPvB - Very Persistent and Very Bioaccumulative.
- STOT- SE : Specific Target Organ Toxicity - Single Exposure.
- CSA - Chemical Safety Assessment.
- EN - European Standard.
- UN - United Nations.
- ADR - Agreement concerning the International Carriage of Dangerous Goods by Road.
- IATA - International Air Transport Association.
- IMDG code - International Maritime Dangerous Goods.
- RID - Regulations concerning the International Carriage of Dangerous Goods by Rail.
- WGK - Water Hazard Class.
- STOT - RE : Specific Target Organ Toxicity - Repeated Exposure.
- UFI : Unique Formula Identifier.
- ADN -International Carriage of Dangerous Goods by Inland Waterways.
- PROC -Process category
- .
- ERC – Environmental release category.
- PMT - Persistent, Mobile and Toxic.
- vPvM – very Persistent and very Mobile.

Training advice

- : Ensure operators understand the flammability hazard.

Further information

- : Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at : <http://www.eiga.eu>.
- Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Full text of H- and EUH-statements	
Flam. Gas 1A	Flammable gases, Category 1A
Flam. Gas 1B	Flammable gases, Category 1B
Press. Gas (Comp.)	Gases under pressure : Compressed gas
H220	Extremely flammable gas.
H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.

DISCLAIMER OF LIABILITY

- : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
- Details given in this document are believed to be correct at the time of going to press.
- Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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