

AERON D mixture

Version number: 1.2

Date of compilation: 2016-08-25

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

1.1 Product identifier

Trade name **AERON D mixture**
Registration number (REACH) Not relevant (mixture)

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

Relevant identified uses Propellant

1.3 Details of the supplier of the safety data sheet

SCHARR CPC GmbH
Hentrichstraße 65
47809 Krefeld
Germany

Telephone: +49 (0)2151 5219-0
Telefax: +49 (0)2151 5219-22
e-mail: info@scharr-cpc.de
Website: www.scharr-cpc.de

e-mail (competent person) produktsicherheit@scharr-cpc.de (Technik)

1.4 Emergency telephone number

Emergency information service +49 (0)2151 5219-0
This number is only available during the following office hours: Mon - Thu 08:00 - 17:00, Fri 08:00 - 16:00

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Hazard class	Category	Hazard class and category	Hazard statement
flammable gas	1	Flam. Gas 1	H220
gases under pressure	L	Press. Gas L	H280

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

May displace oxygen and cause rapid suffocation. Victim may not be aware of asphyxiation. Contains gas under pressure; may explode if heated.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP) Labelling:

- signal word danger
- pictograms

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GHS02, GHS04



- hazard statements

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.

- precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards

of no significance

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture)

3.2 Mixtures




Description of the mixture

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
butane	CAS No 106-97-8 EC No 203-448-7 Index No 601-004-00-0 REACH Reg. No 01-2119474691-32- xxxx	≤ 95	Flam. Gas 1 / H220 Press. Gas C / H280	
dimethyl ether	CAS No 115-10-6 EC No 204-065-8 Index No 603-019-00-8 REACH Reg. No 01-2119472128-37- xxxx	≤ 95	Flam. Gas 1 / H220 Press. Gas C / H280	
propane	CAS No 74-98-6 EC No 200-827-9 Index No 601-003-00-5 REACH Reg. No 01-2119486944-21- xxxx	≤ 95	Flam. Gas 1 / H220 Press. Gas C / H280	

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Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
isobutane	CAS No 75-28-5 EC No 200-857-2 Index No 601-004-00-0 REACH Reg. No 01-2119485395-27- xxxx	≤ 95	Flam. Gas 1 / H220 Press. Gas C / H280	
isopentane	CAS No 78-78-4 EC No 201-142-8 Index No 601-085-00-2 REACH Reg. No 01-2119475602-38- xxxx	≤ 2	Flam. Liq. 1 / H224 STOT SE 3 / H336 Asp. Tox. 1 / H304 Aquatic Chronic 2 / H411	
ethane	CAS No 74-84-0 EC No 200-814-8 Index No 601-002-00-X REACH Reg. No 01-2119486765-21- xxxx	≤ 2	Flam. Gas 1 / H220 Press. Gas C / H280	

For full text of abbreviations: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth. Self-protection of the first aider.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Thaw frosted parts with lukewarm water. Do not rub affected area.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

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Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a doctor.

4.2 Most important symptoms and effects, both acute and delayed

Breathing difficulties. Frostbite. Headache. Vertigo.

4.3 Indication of any immediate medical attention and special treatment needed

Subsequent observance for pneumonia and pulmonary oedema. Supervise the blood circulation.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, Alcohol resistant foam, BC-powder, Carbon dioxide (CO₂)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

Contact with the product can cause burns and/or frostbite. Contains gas under pressure; may explode if heated. Danger of bursting container.

Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO₂)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Provision of sufficient ventilation. Avoidance of ignition sources.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Provision of sufficient ventilation.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

- specific designs for storage rooms or vessels

- Lagerklasse (storage class according to TRGS 510, 2 A (gases (except aerosol dispensers and lighters)))

- packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)								
Country	Name of substance	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Source
EU	dimethyl ether	115-10-6	IOELV	1,000	1,920			2000/39/EC
EU	iso-pentane	78-78-4	IOELV	1,000	3,000			2006/15/EC
GB	butane	106-97-8	WEL	600	1,450	750	1,810	EH40/2005
GB	dimethyl ether	115-10-6	WEL	400	766	500	958	EH40/2005
GB	iso-pentane	78-78-4	WEL	600	1,800			EH40/2005

Notation

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

Relevant DNELs of components of the mixture						
Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
dimethyl ether	115-10-6	DNEL	1,894 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects

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Relevant DNELs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
isopentane	78-78-4	DNEL	432 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
isopentane	78-78-4	DNEL	3,000 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
dimethyl ether	115-10-6	PNEC	0.155 mg/l	aquatic organisms	freshwater	short-term (single instance)
dimethyl ether	115-10-6	PNEC	0.016 mg/l	aquatic organisms	marine water	short-term (single instance)
dimethyl ether	115-10-6	PNEC	160 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
dimethyl ether	115-10-6	PNEC	0.681 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
dimethyl ether	115-10-6	PNEC	0.069 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
dimethyl ether	115-10-6	PNEC	0.045 mg/kg	terrestrial organisms	soil	short-term (single instance)
dimethyl ether	115-10-6	PNEC	1.549 mg/l	aquatic organisms	water	intermittent release

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- hand protection

Wear protective gloves.

- other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

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Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	gaseous (liquefied)
Colour	colourless
Odour	characteristic

Other safety parameters

pH (value)	
Melting point/freezing point	-188 - -138 °C at 1,013 hPa
Initial boiling point and boiling range	-42 - -0.5 °C at 1,013 hPa
Flash point	-104 - -42 °C at 1,013 hPa
Evaporation rate	not determined
Flammability (solid, gas)	flammable gas in accordance with GHS criteria

Explosive limits

- lower explosion limit (LEL)	1.5 vol%
- upper explosion limit (UEL)	26.2 vol%

Vapour pressure	2,200 - 8,400 hPa at 20 °C
Density	0.5 - 0.67 g/cm ³ at 20 °C
Relative density	1.55 - 2.09 (air = 1)

Solubility(ies)

- water solubility	<70 g/l at 20 °C
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Partition coefficient

- n-octanol/water (log KOW)	this information is not available
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Auto-ignition temperature	240 - 470 °C
Viscosity	not relevant (gaseous)
Explosive properties	none
Oxidising properties	none

9.2 Other information

Solid content	0 %
Temperature class (EU, acc. to ATEX)	T3 (maximum permissible surface temperature on the equipment: 200°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". The mixture contains reactive substance(s). Gas under pressure. Risk of ignition.

If heated:

Danger of explosion, Gas under pressure, Danger of bursting container

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5 Incompatible materials

Oxidisers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Shall not be classified as acutely toxic.

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Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

SECTION 12: Ecological information

12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment. Classification acc. to annex 3/annex 4 (VwVWS).

Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
butane	106-97-8	LC50	27.98 mg/l	fish	96 h
butane	106-97-8	EC50	7.71 mg/l	algae	96 h
dimethyl ether	115-10-6	LC50	>4.1 g/l	fish	96 h
dimethyl ether	115-10-6	EC50	>4.4 g/l	aquatic invertebrates	48 h
propane	74-98-6	LC50	27.98 mg/l	fish	96 h
propane	74-98-6	EC50	7.71 mg/l	algae	96 h
isobutane	75-28-5	LC50	27.98 mg/l	fish	96 h
isobutane	75-28-5	EC50	7.71 mg/l	algae	96 h
isopentane	78-78-4	LL50	34.05 mg/l	fish	96 h
isopentane	78-78-4	LC50	12.8 mg/l	fish	96 h
isopentane	78-78-4	EL50	59.44 mg/l	aquatic invertebrates	48 h
isopentane	78-78-4	EC50	5.2 mg/l	algae	96 h
ethane	74-84-0	LC50	27.98 mg/l	fish	96 h
ethane	74-84-0	EC50	7.71 mg/l	algae	96 h

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Biodegradation
Data are not available.

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

SECTION 13: Disposal considerations**13.1 Waste treatment methods**

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Relevant provisions relating to waste

List of wastes

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process. Consult the appropriate authorities about waste disposal.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number	3161
14.2 UN proper shipping name	LIQUEFIED GAS, FLAMMABLE, N.O.S.
Technical name (Hazardous ingredients)	isobutane, dimethyl ether
14.3 Transport hazard class(es)	
Class	2 (gases)
Subsidiary risk(s)	2.1 (flammable)
14.4 Packing group	not assigned to a packing group
14.5 Environmental hazards	non-environmentally hazardous acc. to the dangerous goods regulations
14.6 Special precautions for user	
Provisions for dangerous goods (ADR) should be complied within the premises.	

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14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	3161
Proper shipping name	LIQUEFIED GAS, FLAMMABLE, N.O.S.
Class	2
Classification code	2F
Danger label(s)	2.1



Special provisions (SP)	274, 662
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
Transport category (TC)	2
Tunnel restriction code (TRC)	B/D
Hazard identification No	23
Emergency Action Code	2YE

International Maritime Dangerous Goods Code (IMDG)

UN number	3161
Proper shipping name	LIQUEFIED GAS, FLAMMABLE, N.O.S.
Class	2.1
Danger label(s)	2.1



Special provisions (SP)	274
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
EmS	F-D, S-U
Stowage category	D

International Civil Aviation Organization (ICAO-IATA/DGR)

UN number	3161
Proper shipping name	Liquefied gas, flammable, n.o.s.
Class	2.1
Danger label(s)	2.1

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Special provisions (SP) A1, 274
Exempted quantities (EQ) E0

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

VOC Deco-Paint Directive 2004/42/EC

VOC content	100 %
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National inventories

All ingredients are listed
EINECS/ELINCS/NLP (Europe)
DSL/NDSL (Canada)
ENCS, class 1 and 2 (MITI-inventory, Japan)
AICS (Australia)
KECL (Republic of Korea)
PICCS (Philippines)
IECSC (China)
NZIoC (New Zealand)
REACH (Europe)
ASIA-PAC (Asia-Pacific Region)
SWISS (Switzerland)
Toxic Substance Control Act (TSCA)

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2000/39/EC	Comission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC
2006/15/EC	Comission Directive establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
Aquatic Chronic	hazardous to the aquatic environment - chronic hazard
Asp. Tox.	aspiration hazard
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)

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Abbr.	Descriptions of used abbreviations
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
Flam. Gas	flammable gas
Flam. Liq.	flammable liquid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	indicative occupational exposure limit value
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	parts per million
Press. Gas	gas under pressure
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	short-term exposure limit
STOT SE	specific target organ toxicity - single exposure
TRGS	Technische Regeln für Gefahrstoffe (technical rules for hazardous substances, Germany)
TWA	time-weighted average
VOC	Volatile Organic Compounds
vPvB	very Persistent and very Bioaccumulative
WEL	workplace exposure limit

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU.

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Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.

Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H220	extremely flammable gas
H224	extremely flammable liquid and vapour
H280	contains gas under pressure; may explode if heated
H304	may be fatal if swallowed and enters airways
H336	may cause drowsiness or dizziness
H411	toxic to aquatic life with long lasting effects

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.