



SAFETY DATA SHEET

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

1.1. Product identifier

Trade name or designation of the mixture	LPS® Micro-X NU
Registration number	-
Synonyms	None.
Part Number	06616, M06616
Issue date	05-August-2014
Version number	02
Revision date	26-October-2015
Supersedes date	05-August-2014

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

Identified uses	A spray cleaner designed to remove dirt, moisture, dust, flux or oxides from the internal components of electronic or precision equipment such as circuit boards.
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Supplier	Alsco Ltd
Company name	Unit 13 Hillmead Industrial Estate
Address	Marshall Road Swindon, Wiltshire United Kingdom SN5 5FZ
Telephone	+44 1793 733 900
In Case of Emergency	+001 703-527-3887
Manufacturer	
Company name	ITW Pro Brands
Address	4647 Hugh Howell Rd., Tucker, GA 30084 (U.S.A.)
Website	http://www.lpslabs.com
e-mail	lpssds@itwprobrands.com

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification R10, Xn;R48/20, Xi;R36-38, R67, N;R51/53

The full text for all R-phrases is displayed in section 16.

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

Physical hazards

Aerosols	Category 2	H223 - Flammable aerosol. H229 - Pressurized container: May burst if heated.
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Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.
Reproductive toxicity	Category 2	H361 - Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - single exposure	Category 3 narcotic effects	H336 - May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure (inhalation)

Category 2 (nervous system)

H373 - May cause damage to organs (nervous system) through prolonged or repeated exposure by inhalation.

Environmental hazards

Hazardous to the aquatic environment, long-term aquatic hazard

Category 2

H411 - Toxic to aquatic life with long lasting effects.

Hazard summary

Physical hazards

Flammable.

Health hazards

May impair fertility. May cause harm to the unborn child. Irritating to eyes. Irritating to skin. Also harmful: danger of serious damage to health by prolonged exposure through inhalation. Vapours may cause drowsiness and dizziness. Occupational exposure to the substance or mixture may cause adverse health effects.

Environmental hazards

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Specific hazards

Flammable. Do not breathe vapours, aerosols. Irritating to eyes and skin. May cause central nervous system effects. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Harmful if swallowed. May impair fertility. May cause harm to the unborn child. Prolonged exposure may cause chronic effects.

Main symptoms

Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Narcosis. Decrease in motor functions. Behavioural changes. Irritating to eyes, respiratory system and skin. Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

2.2. Label elements

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

Contains:

2,2-Dimethylbutane, 2,3-Dimethylbutane, 2-Methylpentane, 3-Methylpentane, Ethane, 1,1,1,2-Tetrafluoro-(HFC-134a), Isopropanol, n-Hexane

Hazard pictograms



Signal word

Warning

Hazard statements

H223	Flammable aerosol.
H229	Pressurized container: May burst if heated.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs (nervous system) through prolonged or repeated exposure by inhalation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P211	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P251	Pressurised container: Do not pierce or burn, even after use.
P260	Do not breathe gas.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER/doctor if you feel unwell.
P321	Specific treatment (see this label).
P332 + P313	If skin irritation occurs: Get medical advice/attention.

P337 + P313
P362 + P364
P391

If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Collect spillage.

Storage

P403 + P233
P405
P410 + P412

Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

Disposal

P501

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

Supplemental label information 11,62 % of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

2.3. Other hazards None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
2-Methylpentane	30 - 40	107-83-5 203-523-4	-	601-007-00-7	
Classification:	DSD: F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	CLP: Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Chronic 2;H411				C
Ethane, 1,1,1,2-Tetrafluoro-(HFC-134a)	20 - 30	811-97-2 212-377-0	-	-	
Classification:	DSD: -				
	CLP: -				
2,3-Dimethylbutane	10 - 20	79-29-8 201-193-6	-	601-007-00-7	
Classification:	DSD: F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	CLP: Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Chronic 2;H411				C
3-Methylpentane	10 - 20	96-14-0 202-481-4	-	601-007-00-7	
Classification:	DSD: F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	CLP: Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Chronic 2;H411				C
2,2-Dimethylbutane	1 - 10	75-83-2 200-906-8	-	601-007-00-7	
Classification:	DSD: F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	CLP: Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, Aquatic Chronic 2;H411				C
Isopropanol	1 - 10	67-63-0 200-661-7	-	603-117-00-0	
Classification:	DSD: F;R11, Xi;R36, R67				
	CLP: Flam. Liq. 2;H225, Eye Irrit. 2;H319, STOT SE 3;H336				
n-Hexane	1 - 3	110-54-3 203-777-6	-	601-037-00-0	#
Classification:	DSD: F;R11, Repr. Cat. 3;R62, Xn;R65-48/20, Xi;R38, R67, N;R51/53				
	CLP: Flam. Liq. 2;H225, Asp. Tox. 1;H304, Skin Irrit. 2;H315, STOT SE 3;H336, STOT RE 2;H373, Aquatic Chronic 2;H411				

List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.

DSD: Directive 67/548/EEC.

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Community workplace exposure limit(s).

Composition comments The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wash contaminated clothing before reuse.

4.1. Description of first aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician if symptoms develop or persist.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

Eye contact Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or Poison Control Centre immediately.

Ingestion Call a physician or poison control centre immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

4.2. Most important symptoms and effects, both acute and delayed Irritation of eyes and mucous membranes. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Defatting of the skin. Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Narcosis. Behavioural changes. Prolonged exposure may cause chronic effects.

4.3. Indication of any immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards Flammable aerosol.

5.1. Extinguishing media

Suitable extinguishing media Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture By heating and fire, harmful vapours/gases may be formed. Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back.

5.3. Advice for firefighters

Special protective equipment for firefighters Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection.

Special fire fighting procedures In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk. In the event of fire and/or explosion do not breathe fumes.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate personal protective equipment. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.

For emergency responders Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material.

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

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use.

6.4. Reference to other sections

Use personal protection recommended in Section 8 of the SDS. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Vapours may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Do not smoke. Use non-sparking tools and explosion-proof equipment.

Avoid breathing mist or vapour. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure.

Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

7.2. Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame.

Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Keep in an area equipped with sprinklers.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	MAK	715 mg/m ³
		200 ppm
	STEL	2860 mg/m ³ 800 ppm
2,3-Dimethylbutane (CAS 79-29-8)	MAK	715 mg/m ³
		200 ppm
	STEL	2860 mg/m ³ 800 ppm
2-Methylpentane (CAS 107-83-5)	MAK	715 mg/m ³
		200 ppm
	STEL	2860 mg/m ³ 800 ppm
3-Methylpentane (CAS 96-14-0)	MAK	715 mg/m ³
		200 ppm
	STEL	2860 mg/m ³ 800 ppm
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	MAK	4200 mg/m ³
		1000 ppm
	STEL	16800 mg/m ³ 4000 ppm
Isopropanol (CAS 67-63-0)	MAK	500 mg/m ³
		200 ppm
	STEL	2000 mg/m ³ 800 ppm

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Components	Type	Value
n-Hexane (CAS 110-54-3)	MAK	72 mg/m3 20 ppm
	STEL	288 mg/m3 80 ppm

Belgium. Exposure Limit Values.

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1000 mg/m3 400 ppm
	TWA	500 mg/m3 200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1225 mg/m3
	TWA	980 mg/m3
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Components	Type	Value
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	MAC	4240 mg/m3
		1000 ppm
Isopropanol (CAS 67-63-0)	MAC	999 mg/m3
	STEL	400 ppm 1250 mg/m3 500 ppm
n-Hexane (CAS 110-54-3)	MAC	72 mg/m3 20 ppm

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

Components	Type	Value
Isopropanol (CAS 67-63-0)	TWA	980 mg/m3 400 ppm

Czech Republic. OELs. Government Decree 361

Components	Type	Value
Isopropanol (CAS 67-63-0)	Ceiling	1000 mg/m3
	TWA	500 mg/m3
n-Hexane (CAS 110-54-3)	Ceiling	200 mg/m3
	TWA	70 mg/m3

Denmark. Exposure Limit Values

Components	Type	Value
Isopropanol (CAS 67-63-0)	TLV	490 mg/m3 200 ppm
n-Hexane (CAS 110-54-3)	TLV	72 mg/m3 20 ppm

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	600 mg/m3 250 ppm
	TWA	350 mg/m3 150 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm

Finland. Workplace Exposure Limits

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	2300 mg/m3
	TWA	630 ppm 1800 mg/m3 500 ppm
2,3-Dimethylbutane (CAS 79-29-8)	STEL	2300 mg/m3
	TWA	630 ppm 1800 mg/m3 500 ppm
2-Methylpentane (CAS 107-83-5)	STEL	2300 mg/m3
	TWA	630 ppm 1800 mg/m3 500 ppm
3-Methylpentane (CAS 96-14-0)	STEL	2300 mg/m3
	TWA	630 ppm 1800 mg/m3 500 ppm
Isopropanol (CAS 67-63-0)	STEL	620 mg/m3 250 ppm
	TWA	500 mg/m3 200 ppm
n-Hexane (CAS 110-54-3)	STEL	2300 mg/m3 630 ppm
	TWA	72 mg/m3 20 ppm

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value	Form
Isopropanol (CAS 67-63-0)	VLE	980 mg/m3 400 ppm	
n-Hexane (CAS 110-54-3)	VLE	1500 mg/m3	Vapor.
	VME	72 mg/m3 20 ppm	

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	TWA	1800 mg/m3
		500 ppm
2,3-Dimethylbutane (CAS 79-29-8)	TWA	1800 mg/m3
		500 ppm
2-Methylpentane (CAS 107-83-5)	TWA	1800 mg/m3
		500 ppm
3-Methylpentane (CAS 96-14-0)	TWA	1800 mg/m3
		500 ppm
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	TWA	4200 mg/m3
		1000 ppm
Isopropanol (CAS 67-63-0)	TWA	500 mg/m3 200 ppm
		180 mg/m3 50 ppm
n-Hexane (CAS 110-54-3)	TWA	180 mg/m3 50 ppm

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	AGW	1800 mg/m3

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

Components	Type	Value
2,3-Dimethylbutane (CAS 79-29-8)	AGW	500 ppm
		1800 mg/m3
2-Methylpentane (CAS 107-83-5)	AGW	500 ppm
		1800 mg/m3
3-Methylpentane (CAS 96-14-0)	AGW	500 ppm
		1800 mg/m3
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	AGW	500 ppm
		4200 mg/m3
Isopropanol (CAS 67-63-0)	AGW	1000 ppm
		500 mg/m3
n-Hexane (CAS 110-54-3)	AGW	200 ppm
		180 mg/m3
		50 ppm

Greece. OELs (Decree No. 90/1999, as amended)

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1225 mg/m3
		500 ppm
		980 mg/m3
n-Hexane (CAS 110-54-3)	TWA	400 ppm
		72 mg/m3
		20 ppm

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	2000 mg/m3
		500 mg/m3
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Components	Type	Value
Isopropanol (CAS 67-63-0)	TWA	490 mg/m3
		200 ppm
n-Hexane (CAS 110-54-3)	TWA	90 mg/m3
		25 ppm

Ireland. Occupational Exposure Limits

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	400 ppm
		200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3
		20 ppm

Italy. Occupational Exposure Limits

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	1000 ppm
2,3-Dimethylbutane (CAS 79-29-8)	STEL	500 ppm
		1000 ppm
2-Methylpentane (CAS 107-83-5)	STEL	500 ppm
		1000 ppm
3-Methylpentane (CAS 96-14-0)	STEL	500 ppm
		1000 ppm
Isopropanol (CAS 67-63-0)	STEL	400 ppm
		200 ppm
		72 mg/m3
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3

Italy. Occupational Exposure Limits

Components	Type	Value
		20 ppm

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	600 mg/m3
	TWA	350 mg/m3
n-Hexane (CAS 110-54-3)	STEL	300 mg/m3
	TWA	72 mg/m3
		20 ppm

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Components	Type	Value
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	STEL	3000 mg/m3
	TWA	750 ppm
		2000 mg/m3
Isopropanol (CAS 67-63-0)	STEL	500 ppm
		600 mg/m3
	TWA	250 ppm
		350 mg/m3
n-Hexane (CAS 110-54-3)	TWA	150 ppm
		72 mg/m3
		20 ppm

Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A

Components	Type	Value
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3
		20 ppm

Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)

Components	Type	Value
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3
		20 ppm

Netherlands. OELs (binding)

Components	Type	Value
n-Hexane (CAS 110-54-3)	STEL	144 mg/m3
	TWA	72 mg/m3

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value
Isopropanol (CAS 67-63-0)	TLV	245 mg/m3
		100 ppm
n-Hexane (CAS 110-54-3)	TLV	72 mg/m3
		20 ppm

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1200 mg/m3
	TWA	900 mg/m3
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3

Portugal. OELs. Decree-Law n. 290/2001 (Journal of the Republic - 1 Series A, n.266)

Components	Type	Value
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3
		20 ppm

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
n-Hexane (CAS 110-54-3)	TWA	50 ppm

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	500 mg/m3 203 ppm
	TWA	200 mg/m3 81 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1000 mg/m3 400 ppm
	TWA	500 mg/m3 200 ppm
n-Hexane (CAS 110-54-3)	STEL	140 mg/m3 40 ppm
	TWA	72 mg/m3 20 ppm

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

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	TWA	720 mg/m3 200 ppm
	TWA	720 mg/m3 200 ppm
2-Methylpentane (CAS 107-83-5)	TWA	720 mg/m3 200 ppm
	TWA	720 mg/m3 200 ppm
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	TWA	4200 mg/m3 1000 ppm
	TWA	500 mg/m3 200 ppm
Isopropanol (CAS 67-63-0)	TWA	72 mg/m3 20 ppm
	TWA	72 mg/m3 20 ppm

Spain. Occupational Exposure Limits

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1000 mg/m3 400 ppm
	TWA	500 mg/m3 200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3 20 ppm

Sweden. Occupational Exposure Limit Values

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	1100 mg/m3 300 ppm
	TWA	700 mg/m3 200 ppm
2,3-Dimethylbutane (CAS 79-29-8)	STEL	1100 mg/m3 300 ppm
	TWA	700 mg/m3 200 ppm
2-Methylpentane (CAS 107-83-5)	STEL	1100 mg/m3

Sweden. Occupational Exposure Limit Values

Components	Type	Value
3-Methylpentane (CAS 96-14-0)	TWA	300 ppm 700 mg/m3
	STEL	200 ppm 1100 mg/m3
	TWA	300 ppm 700 mg/m3
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	STEL	200 ppm 3000 mg/m3
	TWA	750 ppm 2000 mg/m3
Isopropanol (CAS 67-63-0)	STEL	500 ppm 600 mg/m3
	TWA	250 ppm 350 mg/m3
n-Hexane (CAS 110-54-3)	STEL	150 ppm 180 mg/m3
	TWA	50 ppm 90 mg/m3
	TWA	25 ppm

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	3600 mg/m3
	TWA	1000 ppm 1800 mg/m3
2,3-Dimethylbutane (CAS 79-29-8)	STEL	500 ppm 3600 mg/m3
	TWA	1000 ppm 1800 mg/m3
2-Methylpentane (CAS 107-83-5)	STEL	500 ppm 3600 mg/m3
	TWA	1000 ppm 1800 mg/m3
3-Methylpentane (CAS 96-14-0)	STEL	500 ppm 3600 mg/m3
	TWA	1000 ppm 1800 mg/m3
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	TWA	500 ppm 4200 mg/m3
	STEL	1000 ppm 1000 mg/m3
Isopropanol (CAS 67-63-0)	STEL	400 ppm 500 mg/m3
	TWA	200 ppm 200 mg/m3
n-Hexane (CAS 110-54-3)	STEL	1440 mg/m3 400 ppm
	TWA	180 mg/m3 50 ppm
	TWA	50 ppm

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
ETHANE, 1,1,1,2-TETRAFLUORO-(H FC-134a) (CAS 811-97-2)	TWA	4240 mg/m3
	STEL	1000 ppm
Isopropanol (CAS 67-63-0)	STEL	1250 mg/m3

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
n-Hexane (CAS 110-54-3)	TWA	500 ppm
		999 mg/m ³
	TWA	400 ppm
		72 mg/m ³
		20 ppm

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

Components	Type	Value
n-Hexane (CAS 110-54-3)	TWA	72 mg/m ³ 20 ppm

Biological limit values**France. Biological indicators of exposure (IBE) (National Institute for Research and Security (INRS, ND 2065))**

Components	Value	Determinant	Specimen	Sampling time
n-Hexane (CAS 110-54-3)	5 mg/g	2,5-Hexanedione	Creatinine in urine	*

* - For sampling details, please see the source document.

Germany. TRGS 903, BAT List (Biological Limit Values)

Components	Value	Determinant	Specimen	Sampling time
Isopropanol (CAS 67-63-0)	25 mg/l	Aceton	Urine	*
	25 mg/l	Aceton	Blood	*
n-Hexane (CAS 110-54-3)	5 mg/l	2,5-Hexandion plus 4,5-Dihydroxy-2-hexanon (nach Hydrolyse)	Urine	*

* - For sampling details, please see the source document.

Hungary. Chemical Safety at Workplace Ordinance Joint Decree No. 25/2000 (Annex 2): Permissible limit values of biological exposure (effect) indices

Components	Value	Determinant	Specimen	Sampling time
n-Hexane (CAS 110-54-3)	3,5 mg/g	hexane-2,5-dion	Creatinine in urine	*
	3,5 µmol/mmol	hexane-2,5-dion	Creatinine in urine	*

* - For sampling details, please see the source document.

Slovakia. BLVs (Biological Limit Value). Regulation no. 355/2006 concerning protection of workers exposed to chemical agents, Annex 2

Components	Value	Determinant	Specimen	Sampling time
n-Hexane (CAS 110-54-3)	3 mg/g	2,5-hexanedione and 4,5-dihydroxy-2-hexanone	Creatinine in urine	*
	5 mg/l	2,5-hexanedione and 4,5-dihydroxy-2-hexanone	Urine	*

* - For sampling details, please see the source document.

Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

Components	Value	Determinant	Specimen	Sampling time
Isopropanol (CAS 67-63-0)	40 mg/l	Acetona	Urine	*
n-Hexane (CAS 110-54-3)	0,2 mg/l	2,5-Hexanodiona, sin hidrólisis	Urine	*

* - For sampling details, please see the source document.

Switzerland. BAT-Werte (Biological Limit Values in the Workplace as per SUVA)

Components	Value	Determinant	Specimen	Sampling time
Isopropanol (CAS 67-63-0)	25 mg/l	Aceton	Urine	*
	25 mg/l	Aceton	Blood	*

Switzerland. BAT-Werte (Biological Limit Values in the Workplace as per SUVA)

Components	Value	Determinant	Specimen	Sampling time
n-Hexane (CAS 110-54-3)	5 mg/l	2,5-Hexandion plus 4,5-Dihydroxy-2-hexanon	Urine	*

* - For sampling details, please see the source document.

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no-effect level (DNEL) Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls Explosion-proof general and local exhaust ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment

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

Eye/face protection Wear safety glasses with side shields (or goggles). Eye wash fountain is recommended.

Skin protection

- Hand protection For prolonged or repeated skin contact use suitable protective gloves. Chemical resistant gloves are recommended. Frequent change is advisable.

- Other Avoid contact with the skin. Wear appropriate chemical resistant clothing. Chemical resistant gloves.

Respiratory protection No personal respiratory protective equipment normally required. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.

Thermal hazards None known.

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

Environmental exposure controls Contain spills and prevent releases and observe national regulations on emissions. Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance**

Physical state Gas.
Form Aerosol
Colour Clear colorless or nearly colorless

Odour Mild.

Odour threshold Not established

pH Not available.

Melting point/freezing point -128 °C (-198,4 °F) estimated

Initial boiling point and boiling range 60,5 °C (140,9 °F) Dispensed liquid

Flash point < -17,0 °C (< 1,4 °F) Tag closed cup Dispensed liquid

Evaporation rate < 1 BuAc (Ethyl Ether= 1)

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 0,6 %

Flammability limit - upper (%) 7 %

Vapour pressure 352,53 mm Hg @ 38°C

Vapour density > 1 (Air = 1)

Relative density Not available.

Solubility(ies)	
Solubility (water)	< 10 % by weight
Solubility (other)	Not available.
Partition coefficient (n-octanol/water)	Not established
Auto-ignition temperature	306 °C (582,8 °F)
Decomposition temperature	Not established
Viscosity	< 3 cSt @ 25°C
Explosive properties	Not available.
Oxidising properties	Not available.
9.2. Other information	
Heat of combustion	> 30 kJ/g
Percent volatile	100 %
Specific gravity	0,8 - 0,82 @ 20°C
VOC (Weight %)	74 % per State & Federal Consumer Product Regulations; 600 g/L per SCAQMD Rule 102

SECTION 10: Stability and reactivity

10.1. Reactivity	Avoid contact with oxidising agents (e.g. nitric acid, peroxides and chromates).
10.2. Chemical stability	Risk of ignition. Instability caused by elevated temperatures.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Avoid temperatures exceeding the flash point.
10.5. Incompatible materials	Strong oxidising agents. Isocyanates Acids. Chlorine.
10.6. Hazardous decomposition products	Carbon oxides.

SECTION 11: Toxicological information

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

Information on likely routes of exposure

Inhalation	Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Causes skin irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed.

Symptoms Skin irritation. Defatting of the skin. Irritating to eyes and respiratory system. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

11.1. Information on toxicological effects

Acute toxicity Narcotic effects.

Components	Species	Test results
Isopropanol (CAS 67-63-0)		
Acute		
Dermal		
LD50	Rabbit	12800 mg/kg 16,4 ml/kg, 24 Hours
Inhalation		
<i>Vapour</i>		
LC50	Rat	> 10000 ppm, 6 Hours
Oral		
LD50	Dog	4797 mg/kg
	Mouse	3600 mg/kg
	Rabbit	5,03 g/kg
	Rat	5,84 g/kg 4,7 g/kg

Components	Species	Test results
n-Hexane (CAS 110-54-3)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg, 4 Hours > 5 ml/kg, 4 Hours
Inhalation		
LC50	Mouse	48000 ppm, 4 Hours
<i>Vapour</i>		
LC50	Rat	> 5000 ppm, 24 Hours > 31,86 mg/l 73860 ppm, 4 Hours
Oral		
LD50	Rat	24 ml/kg 24 mg/kg
	Wistar rat	49 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory sensitisation	Not a respiratory sensitizer.	
Skin sensitisation	This product is not expected to cause skin sensitisation.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
ACGIH Carcinogens		
Isopropanol (CAS 67-63-0)	Not classifiable as a human carcinogen. A4	
Reproductive toxicity	Suspected of damaging fertility or the unborn child.	
Specific target organ toxicity - single exposure	Narcotic effects.	
Specific target organ toxicity - repeated exposure	May cause damage to organs (nervous system) through prolonged or repeated exposure by inhalation.	
Aspiration hazard	Not likely, due to the form of the product.	
Mixture versus substance information	Not available.	
Other information	None known.	

SECTION 12: Ecological information

12.1. Toxicity Toxic to aquatic life with long lasting effects.

Components	Species	Test results
Isopropanol (CAS 67-63-0)		
Aquatic		
Fish	LC50	Bluegill (<i>Lepomis macrochirus</i>) > 1400 mg/l, 96 hours
n-Hexane (CAS 110-54-3)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 2,101 - 2,981 mg/l, 96 hours

12.2. Persistence and degradability Not inherently biodegradable.

12.3. Bioaccumulative potential No data available for this product.

Partition coefficient n-octanol/water (log Kow)

2,2-Dimethylbutane	3,82
2,3-Dimethylbutane	3,42
2-Methylpentane	3,74
3-Methylpentane	3,6
Ethane, 1,1,1,2-Tetrafluoro-(HFC-134a)	1,06
Isopropanol	0,05
n-Hexane	3,9

Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	Not available.
12.6. Other adverse effects	None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 14: Transport information

ADR

14.1. UN number	UN1950
14.2. UN proper shipping name	Aerosols, flammable
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Hazard No. (ADR)	Not available.
Tunnel restriction code	D
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN1950
14.2. UN proper shipping name	Aerosols, flammable
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN1950
14.2. UN proper shipping name	Aerosols, flammable
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number	UN1950
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14.2. UN proper shipping name	Aerosols, flammable
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No.
ERG Code	2X
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

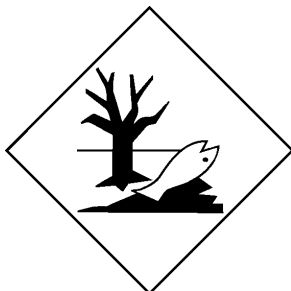
14.1. UN number	UN1950
14.2. UN proper shipping name	AEROSOLS, flammable (Hexanes), MARINE POLLUTANT
14.3. Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
14.4. Packing group	Not applicable.
14.5. Environmental hazards	
Marine pollutant	Yes
EmS	F-D, S-U
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

ADN; ADR; IATA; IMDG; RID



Marine pollutant



General information

IMDG Regulated Marine Pollutant.

SECTION 15: Regulatory information

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

EU regulations

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

Not listed.

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

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended
Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended
Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA
Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended
Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended
n-Hexane (CAS 110-54-3)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended
Not listed.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended
Not listed.

Other EU regulations

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

2,2-Dimethylbutane (CAS 75-83-2)

2,3-Dimethylbutane (CAS 79-29-8)

2-Methylpentane (CAS 107-83-5)

3-Methylpentane (CAS 96-14-0)

Isopropanol (CAS 67-63-0)

n-Hexane (CAS 110-54-3)

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

2,2-Dimethylbutane (CAS 75-83-2)

2,3-Dimethylbutane (CAS 79-29-8)

2-Methylpentane (CAS 107-83-5)

3-Methylpentane (CAS 96-14-0)

Isopropanol (CAS 67-63-0)

n-Hexane (CAS 110-54-3)

Directive 94/33/EC on the protection of young people at work, as amended

n-Hexane (CAS 110-54-3)

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

National regulations

Not available.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

Full text of any statements or R-phrases and H-statements under Sections 2 to 15

R10 Flammable.

R11 Highly flammable.

R36 Irritating to eyes.

R38 Irritating to skin.

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R60 May impair fertility.
R61 May cause harm to the unborn child.
R62 Possible risk of impaired fertility.
R65 Harmful: may cause lung damage if swallowed.
R67 Vapours may cause drowsiness and dizziness.
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Revision information

SECTION 2: Hazards identification: Prevention
SECTION 2: Hazards identification: Response
Composition / Information on Ingredients: Disclosure Overrides
SECTION 9: Physical and chemical properties: Appearance
Regulatory Information: Other
GHS: Qualifiers

Training information

Follow training instructions when handling this material.

Disclaimer

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