



# 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® CFC Free Nu  
**Registration number** -  
**Synonyms** None.  
**Part Number** 05416, M05416  
**Issue date** 27-December-2016  
**Version number** 01

### 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](mailto: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;R38, 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	H229 - Pressurized container: May burst if heated.
----------	------------	--

##### Health hazards

Skin corrosion/irritation	Category 2	H315 - Causes skin 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

<b>Physical hazards</b>	Flammable.
<b>Health hazards</b>	May impair fertility. May cause harm to the unborn child. 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.
<b>Environmental hazards</b>	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<b>Specific hazards</b>	None known.
<b>Main symptoms</b>	May cause drowsiness and dizziness. Narcosis. Headache. Nausea, vomiting. Behavioural changes. Decrease in motor functions. Skin irritation. May cause redness and pain. Prolonged exposure may cause chronic effects.

## 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

H229	Pressurized container: May burst if heated.
H315	Causes skin irritation.
H361	Suspected of damaging fertility or the unborn child.
H336	May cause drowsiness or dizziness.
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, 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.
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

P308 + P313	IF exposed or concerned: Get medical advice/attention.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER/doctor if you feel unwell.
P391	Collect spillage.

### Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P410 + P412	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** None.

**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	
<b>Classification:</b>	<b>DSD:</b> F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	<b>CLP:</b> 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	-	-	
<b>Classification:</b>	<b>DSD:</b> -				
	<b>CLP:</b> Press. Gas;H280				
2,3-Dimethylbutane	10 - 20	79-29-8 201-193-6	-	601-007-00-7	
<b>Classification:</b>	<b>DSD:</b> F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	<b>CLP:</b> 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	
<b>Classification:</b>	<b>DSD:</b> F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	<b>CLP:</b> 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	
<b>Classification:</b>	<b>DSD:</b> F;R11, Xn;R65, Xi;R38, R67, N;R51/53				C
	<b>CLP:</b> 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	
<b>Classification:</b>	<b>DSD:</b> F;R11, Xi;R36, R67				
	<b>CLP:</b> 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	#
<b>Classification:</b>	<b>DSD:</b> F;R11, Repr. Cat. 3;R62, Xn;R65-48/20, Xi;R38, R67, N;R51/53				
	<b>CLP:</b> 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**

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.

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

M: M-factor

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

Note C: Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

**Composition comments**

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

**SECTION 4: First aid measures****General information**

IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

#### 4.1. Description of first aid measures

<b>Inhalation</b>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell.
<b>Skin contact</b>	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	In the unlikely event of swallowing contact a physician or poison control centre. Rinse mouth.

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

May cause drowsiness and dizziness. Narcosis. Headache. Nausea, vomiting. Behavioural changes. Decrease in motor functions. Skin irritation. May cause redness and pain. 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** Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).

**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

Contents under pressure. Pressurised container may explode when exposed to heat or flame. During fire, gases hazardous to health may be formed.

#### 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.

**Special fire fighting procedures** Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

#### Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Use water spray to cool unopened containers. 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. Wear appropriate protective equipment and clothing during clean-up. Do not breathe gas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. 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. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

#### 6.3. Methods and material for containment and cleaning up

Refer to attached safety data sheets and/or instructions for use. Stop leak if you can do so without risk. Isolate area until gas has dispersed. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Prevent entry into waterways, sewer, basements or confined areas. Absorb in vermiculite, dry sand or earth and place into containers. 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.

#### 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

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Pressurised container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Do not re-use empty containers. Do not breathe gas. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

**7.2. Conditions for safe storage, including any incompatibilities**

Store locked up. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Store away from incompatible materials (see Section 10 of the SDS).

**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 <sup>3</sup>
	STEL	200 ppm 2860 mg/m <sup>3</sup> 800 ppm
2,3-Dimethylbutane (CAS 79-29-8)	MAK	715 mg/m <sup>3</sup>
	STEL	200 ppm 2860 mg/m <sup>3</sup> 800 ppm
2-Methylpentane (CAS 107-83-5)	MAK	715 mg/m <sup>3</sup>
	STEL	200 ppm 2860 mg/m <sup>3</sup> 800 ppm
3-Methylpentane (CAS 96-14-0)	MAK	715 mg/m <sup>3</sup>
	STEL	200 ppm 2860 mg/m <sup>3</sup> 800 ppm
Ethane, 1,1,1,2-tetrafluoro-(hfc-134a) (CAS 811-97-2)	MAK	4200 mg/m <sup>3</sup>
	STEL	1000 ppm 16800 mg/m <sup>3</sup> 4000 ppm
Isopropanol (CAS 67-63-0)	MAK	500 mg/m <sup>3</sup> 200 ppm
	STEL	2000 mg/m <sup>3</sup> 800 ppm
n-Hexane (CAS 110-54-3)	MAK	72 mg/m <sup>3</sup> 20 ppm
	STEL	288 mg/m <sup>3</sup> 80 ppm

**Belgium. Exposure Limit Values.**

Components	Type	Value
Isopropanol (CAS 67-63-0)	STEL	1000 mg/m <sup>3</sup> 400 ppm
	TWA	500 mg/m <sup>3</sup> 200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m <sup>3</sup> 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/m <sup>3</sup>
	TWA	980 mg/m <sup>3</sup>
n-Hexane (CAS 110-54-3)	TWA	72 mg/m <sup>3</sup> 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-(hfc-134a ) (CAS 811-97-2)	MAC	4240 mg/m3
Isopropanol (CAS 67-63-0)	MAC	1000 ppm
		999 mg/m3
		400 ppm
n-Hexane (CAS 110-54-3)	STEL	1250 mg/m3
		500 ppm
		72 mg/m3
n-Hexane (CAS 110-54-3)	MAC	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
		350 mg/m3
n-Hexane (CAS 110-54-3)	TWA	150 ppm
		72 mg/m3
		20 ppm

**Finland. Workplace Exposure Limits**

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

**Finland. Workplace Exposure Limits  
Components**

Type	Value
STEL	200 ppm 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
VLE	980 mg/m3 400 ppm	
VME	1500 mg/m3 72 mg/m3 20 ppm	Vapor.

**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-(hfc-134a ) (CAS 811-97-2)	TWA	4200 mg/m3 500 ppm
Isopropanol (CAS 67-63-0)	TWA	1000 ppm 500 mg/m3 200 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
AGW	1800 mg/m3 500 ppm
AGW	4200 mg/m3 500 ppm
AGW	1000 ppm 500 mg/m3 200 ppm
AGW	180 mg/m3 50 ppm

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

Type	Value
STEL	1225 mg/m3 500 ppm
TWA	980 mg/m3

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

Components	Type	Value
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
	TWA	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
	TWA	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
	TWA	500 ppm
2,3-Dimethylbutane (CAS 79-29-8)	STEL	1000 ppm
	TWA	500 ppm
2-Methylpentane (CAS 107-83-5)	STEL	1000 ppm
	TWA	500 ppm
3-Methylpentane (CAS 96-14-0)	STEL	1000 ppm
	TWA	500 ppm
Isopropanol (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m3
		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-(hfc-134a) (CAS 811-97-2)	STEL	3000 mg/m3
		750 ppm
		2000 mg/m3
Isopropanol (CAS 67-63-0)	TWA	500 ppm
		600 mg/m3
		250 ppm
n-Hexane (CAS 110-54-3)	TWA	350 mg/m3
		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

**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
2,3-Dimethylbutane (CAS 79-29-8)	TWA	720 mg/m <sup>3</sup>
		200 ppm
2-Methylpentane (CAS 107-83-5)	TWA	720 mg/m <sup>3</sup>
		200 ppm
3-Methylpentane (CAS 96-14-0)	TWA	720 mg/m <sup>3</sup>
		200 ppm
Ethane, 1,1,1,2-tetrafluoro-(hfc-134a) ) (CAS 811-97-2)	TWA	4200 mg/m <sup>3</sup>
		1000 ppm
Isopropanol (CAS 67-63-0)	TWA	500 mg/m <sup>3</sup>
		200 ppm
n-Hexane (CAS 110-54-3)	TWA	72 mg/m <sup>3</sup>
		20 ppm

**Spain. Occupational Exposure Limits**

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

**Sweden. Occupational Exposure Limit Values**

Components	Type	Value
2,2-dimethylbutane (CAS 75-83-2)	STEL	1100 mg/m <sup>3</sup>
		300 ppm
	TWA	700 mg/m <sup>3</sup>
2,3-Dimethylbutane (CAS 79-29-8)		200 ppm
	STEL	1100 mg/m <sup>3</sup>
	TWA	700 mg/m <sup>3</sup>
2-Methylpentane (CAS 107-83-5)		200 ppm
	STEL	1100 mg/m <sup>3</sup>
	TWA	700 mg/m <sup>3</sup>
3-Methylpentane (CAS 96-14-0)		200 ppm
	STEL	1100 mg/m <sup>3</sup>
	TWA	700 mg/m <sup>3</sup>
Ethane, 1,1,1,2-tetrafluoro-(hfc-134a) ) (CAS 811-97-2)	STEL	3000 mg/m <sup>3</sup>
		300 ppm
	TWA	2000 mg/m <sup>3</sup>
Isopropanol (CAS 67-63-0)		500 ppm
	STEL	600 mg/m <sup>3</sup>
	TWA	350 mg/m <sup>3</sup>
n-Hexane (CAS 110-54-3)		150 ppm
	STEL	180 mg/m <sup>3</sup>
	TWA	90 mg/m <sup>3</sup>
	25 ppm	

**Switzerland. SUVA Grenzwerte am Arbeitsplatz**

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

**UK. EH40 Workplace Exposure Limits (WELs)**

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

**Biological limit values****Croatia. BLV. Dangerous Substance Exposure Limit Values at Workplace, Annexes 4 (as amended)**

Components	Value	Determinant	Specimen	Sampling time
Isopropanol (CAS 67-63-0)	50 mg/l	Acetone	Urine	*
	50 mg/l	Acetone	Blood	*
n-Hexane (CAS 110-54-3)	150 µg/l	n-Hexane	Blood	*
	5,3 mg/g	2,5-Hexanedione	Creatinine in urine	*
	5,25 mmol/mol	2,5-Hexanedione	Creatinine in urine	*
	40 ppm	n-Hexane	End-exhaled air	*
	1,74 µmol/l	n-Hexane	Blood	*

**Croatia. BLV. Dangerous Substance Exposure Limit Values at Workplace, Annexes 4 (as amended)**

Components	Value	Determinant	Specimen	Sampling time
	1,66 µmol/l	n-Hexane	End-exhaled air	*

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

**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	*
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 levels (DNELs)** Not available.

**Predicted no effect concentrations (PNECs)** Not available.

## 8.2. Exposure controls

**Appropriate engineering controls** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

### 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).

#### Skin protection

**- Hand protection** Wear appropriate chemical resistant gloves.

**- Other** Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

**Respiratory protection** In case of insufficient ventilation, wear suitable respiratory equipment.

**Thermal hazards** Wear appropriate thermal protective clothing, when necessary.

**Hygiene measures** Observe any medical surveillance requirements. When using do not smoke. 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** Inform appropriate managerial or supervisory personnel of all environmental 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)** Flammable gas.

#### 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 explosive.

<b>Oxidising properties</b>	Not oxidising.
<b>9.2. Other information</b>	
<b>Heat of combustion</b>	> 30 kJ/g
<b>Percent volatile</b>	100 %
<b>Specific gravity</b>	0,8 - 0,82 @ 20°C
<b>VOC</b>	74 % per State & Federal Consumer Product Regulations; 600 g/L per SCAQMD Rule 102

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>10.2. Chemical stability</b>	Material is stable under normal conditions.
<b>10.3. Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>10.4. Conditions to avoid</b>	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
<b>10.5. Incompatible materials</b>	Acids. Strong oxidising agents. Isocyanates. Chlorine.
<b>10.6. Hazardous decomposition products</b>	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

<b>Inhalation</b>	May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting.
<b>Skin contact</b>	Causes skin irritation.
<b>Eye contact</b>	Direct contact with eyes may cause temporary irritation.
<b>Ingestion</b>	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

**Symptoms** May cause drowsiness and dizziness. Narcosis. Headache. Nausea, vomiting. Behavioural changes. Decrease in motor functions. Skin irritation. May cause redness and pain.

### 11.1. Information on toxicological effects

**Acute toxicity** Narcotic effects.

Components	Species	Test results
Isopropanol (CAS 67-63-0)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	16,4 ml/kg, 24 Hours
<b>Oral</b>		
LD50	Rat	4,7 g/kg
n-Hexane (CAS 110-54-3)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	> 5 ml/kg, 4 Hours
<b>Inhalation</b>		
<i>Vapour</i>		
LC50	Rat	73860 ppm, 4 Hours
<b>Oral</b>		
LD50	Rat	49 ml/kg
<b>Skin corrosion/irritation</b>	Causes skin irritation.	
<b>Serious eye damage/eye irritation</b>	Direct contact with eyes may cause temporary irritation.	
<b>Respiratory sensitisation</b>	Not a respiratory sensitizer.	
<b>Skin sensitisation</b>	This product is not expected to cause skin sensitisation.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
<b>ACGIH Carcinogens</b>		
Isopropanol (CAS 67-63-0)	Not classifiable as a human carcinogen. A4	

**Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)**

Not listed.

**Reproductive toxicity** Suspected of damaging fertility or the unborn child.

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

n-Hexane (CAS 110-54-3) Toxic for reproduction - category 2.

**Specific target organ toxicity - single exposure** May cause drowsiness and dizziness.

**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** No information available.

**Other information** Symptoms may be delayed.

## SECTION 12: Ecological information

**12.1. Toxicity** Toxic to aquatic life with long lasting effects. Based on available data, the classification criteria are not met for hazardous to the aquatic environment, acute hazard.

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

**12.2. Persistence and degradability** No data is available on the degradability of this product.

### 12.3. Bioaccumulative potential

#### 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** The product contains volatile organic compounds which have a photochemical ozone creation potential.

## 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** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not re-use empty containers.

**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. Contents under pressure. Do not puncture, incinerate or crush. 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.

**Special precautions** Dispose in accordance with all applicable 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.

### 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.

### 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.

### IATA

14.1. UN number	UN1950
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 with restrictions.
Cargo aircraft only	Allowed with restrictions.

### 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

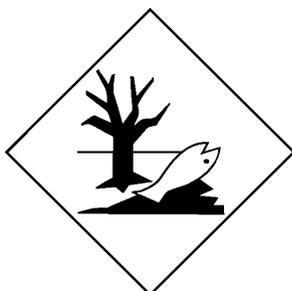
14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

14.7. Transport in bulk according to Annex II of Marpol 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.

## Other EU regulations

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

## Other regulations

Pregnant women should not work with the product, if there is the least risk of exposure. The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

## National regulations

Follow national regulation for work with chemical agents. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended.

## 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.  
H280 Contains gas under pressure; may explode if heated.  
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

This document has undergone significant changes and should be reviewed in its entirety.

### Training information

Follow training instructions when handling this material.

### Disclaimer

ITW Pro Brands cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.