



**OKS 521**

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**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

Product name : OKS 521

**Manufacturer or supplier's details**

Company name of supplier : OKS Spezialechmierstoffe GmbH  
Ganghoferstr. 47  
D-82216 Maisach-Gernlinden  
Tel.: +49 8142 3051 500  
Fax.: +49 8142 3051 599  
info@oks-germany.com

E-mail address of person responsible for the SDS : mcm@oks-germany.com  
Material Compliance Management

Emergency telephone number : +7 495 628 1687  
+49 8142 3051 517

**Recommended use of the chemical and restrictions on use**

Recommended use : Lubricant spray

Restrictions on use : Restricted to professional users.

**2. HAZARDS IDENTIFICATION**




**GHS Classification (According to GOST 32423, GOST 32424 and GOST 32425)**

Aerosols : Category 1  
Skin irritation : Category 2  
Eye irritation : Category 2A  
Specific target organ toxicity - single exposure : Category 3 (Central nervous system)  
Aspiration hazard : Category 1  
Short-term (acute) aquatic hazard : Category 3  
Long-term (chronic) aquatic hazard : Category 3

**GHS-Labeling (According to GOST 31340)**

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Hazard pictograms :   

Signal word : Danger

Hazard statements : H222 Extremely flammable aerosol.  
H229 Pressurized container: May burst 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.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
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.  
**Response:**  
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.  
P331 Do NOT induce vomiting.  
**Storage:**  
P410 + P412 Protect from sunlight. Do not expose to temperatures exceeding 50 °C/ 122 °F.

**Other hazards which do not result in classification**  
None known.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Pure substance/mixture : Mixture

Chemical nature : Active substance with propellant  
Solvent  
Molybdenum disulfide  
graphite

**Components**

Chemical name	Concentration (% w/w)	Occupational Exposure Limits		CAS-No.	EC-No.
		MAC value mg/m3 / TSEL value	Hazard Class		
n-butyl acetate	>= 20 - < 25	MPC-TWA:	4	123-86-4	204-658-1

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		50 mg/m3 Data Source: RU OEL			
		MPC-STEL: 200 mg/m3 Data Source: RU OEL	4		
Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane	>= 20 - < 25	No data available			921-024-6
molybdenum disulphide	>= 10 - < 20	MPC-TWA: 1 mg/m3 Data Source: RU OEL	3	1317-33-5	215-263-9
		MPC-STEL: 6 mg/m3 Data Source: RU OEL	3		
		MPC-TWA: 1 mg/m3 Data Source: RU OEL	3		
		MPC-STEL: 6 mg/m3 Data Source: RU OEL	3		
butane	>= 10 - < 20	MPC-TWA: 300 mg/m3 Data Source: RU OEL	4	106-97-8	203-448-7
		MPC-STEL: 900 mg/m3 Data Source: RU OEL	4		
dimethyl ether	>= 10 - < 20	MPC-TWA: 200 mg/m3 Data Source: RU OEL	4	115-10-6	204-065-8
		MPC-STEL: 600 mg/m3 Data Source:	4		

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		RU OEL			
1-Butanol, titanium(4+) salt, homopolymer	>= 1 - < 10	No data available		9022-96-2	Not Assigned
propane	>= 1 - < 10	No data available		74-98-6	200-827-9
isobutane	>= 1 - < 10	No data available		75-28-5	200-857-2

**4. FIRST AID MEASURES**

- If inhaled : Call a physician or poison control centre immediately.  
Remove person to fresh air. If signs/symptoms continue, get medical attention.  
Keep patient warm and at rest.  
If unconscious, place in recovery position and seek medical advice.  
Keep respiratory tract clear.  
If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : Take off all contaminated clothing immediately.  
Get medical attention immediately if irritation develops and persists.  
Wash clothing before reuse.  
Thoroughly clean shoes before reuse.  
Wash off immediately with plenty of water.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.  
Seek medical advice.
- If swallowed : Move the victim to fresh air.  
If accidentally swallowed obtain immediate medical attention.  
Keep respiratory tract clear.  
Do NOT induce vomiting.  
Rinse mouth with water.  
Aspiration hazard if swallowed - can enter lungs and cause damage.
- Most important symptoms and effects, both acute and delayed : Central nervous system depression  
Risk of product entering the lungs on vomiting after ingestion.  
Health injuries may be delayed.  
Causes skin irritation.  
Inhalation may provoke the following symptoms:  
Unconsciousness  
Dizziness  
Drowsiness

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Headache  
Nausea  
Tiredness  
Skin contact may provoke the following symptoms:  
Erythema  
Aspiration may cause pulmonary oedema and pneumonitis.

Notes to physician : Treat symptomatically.

**5. FIREFIGHTING MEASURES**

**Flammable properties**

Flash point : -60 °C  
Method: Abel-Pensky

Ignition temperature : No data available

Upper explosion limit / Upper flammability limit : 18,6 %(V)

Lower explosion limit / Lower flammability limit : 1,1 %(V)

Flammability (solid, gas) : Extremely flammable aerosol.

Suitable extinguishing media : ABC powder

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Fire Hazard  
Do not let product enter drains.  
Contains gas under pressure; may explode if heated.  
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Hazardous combustion products : Carbon oxides  
Sulphur oxides  
Metal oxides

Further information : Standard procedure for chemical fires.  
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Cool containers/tanks with water spray.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.  
Exposure to decomposition products may be a hazard to health.

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**6. ACCIDENTAL RELEASE MEASURES**

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.  
Ensure adequate ventilation.  
Remove all sources of ignition.  
Do not breathe vapours or spray mist.  
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.  
Refer to protective measures listed in sections 7 and 8.  
Only qualified personnel equipped with suitable protective equipment may intervene.
- Environmental precautions : Do not allow contact with soil, surface or ground water.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).  
Keep in suitable, closed containers for disposal.  
Non-sparking tools should be used.

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**7. HANDLING AND STORAGE**

- Advice on safe handling : Do not use in areas without adequate ventilation.  
Do not breathe vapours or spray mist.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Keep away from fire, sparks and heated surfaces.  
Smoking, eating and drinking should be prohibited in the application area.  
Wash hands and face before breaks and immediately after handling the product.  
Do not get in eyes or mouth or on skin.  
Do not get on skin or clothing.  
Do not ingest.  
Do not use sparking tools.  
These safety instructions also apply to empty packaging which may still contain product residues.  
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use.
- Conditions for safe storage : BEWARE: Aerosol is pressurized. Keep away from direct sun exposure and temperatures over 50 °C. Do not open by force or throw into fire even after use. Do not spray on flames or

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red-hot objects.  
Store in accordance with the particular national regulations.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Data Source
n-butyl acetate	123-86-4	STEL	150 ppm 723 mg/m <sup>3</sup>	2019/1831/EU (2019-10-31)
		TWA	50 ppm 241 mg/m <sup>3</sup>	2019/1831/EU (2019-10-31)
		MPC-TWA (vapour and/or gas)	50 mg/m <sup>3</sup>	RU OEL (2021-02-03)
	Further information: Class 4 - Low hazard			
		MPC-STEL (vapour and/or gas)	200 mg/m <sup>3</sup>	RU OEL (2021-02-03)
	Further information: Class 4 - Low hazard			
molybdenum disulphide	1317-33-5	MPC-TWA (aerosol)	1 mg/m <sup>3</sup>	RU OEL (2011-07-12)
	Further information: Class 3 - Dangerous			
		MPC-STEL (aerosol)	6 mg/m <sup>3</sup>	RU OEL (2011-07-12)
	Further information: Class 3 - Dangerous			
		MPC-TWA (aerosol)	1 mg/m <sup>3</sup> (Molybdenum)	RU OEL (2021-02-03)
	Further information: Class 3 - Moderately dangerous			
		MPC-STEL (aerosol)	6 mg/m <sup>3</sup> (Molybdenum)	RU OEL (2021-02-03)
	Further information: Class 3 - Moderately dangerous			
butane	106-97-8	MPC-TWA (vapour and/or gas)	300 mg/m <sup>3</sup>	RU OEL (2021-02-03)
	Further information: Class 4 - Low hazard			
		MPC-STEL (vapour and/or gas)	900 mg/m <sup>3</sup>	RU OEL (2021-02-03)
	Further information: Class 4 - Low hazard			
dimethyl ether	115-10-6	TWA	1.000 ppm 1.920 mg/m <sup>3</sup>	2000/39/EC (2000-06-16)
		MPC-TWA (vapour and/or gas)	200 mg/m <sup>3</sup>	RU OEL (2021-02-03)

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Further information: Class 4 - Low hazard			
	MPC-STEL (vapour and/or gas)	600 mg/m3	RU OEL (2021-02-03)
Further information: Class 4 - Low hazard			

**Engineering measures** : Use only in an area equipped with explosion proof exhaust ventilation.  
Handle only in a place equipped with local exhaust (or other appropriate exhaust).

**Personal protective equipment**

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.  
Short term only

Filter type : Filter type A-P

Hand protection

Material : butyl-rubber  
Break through time : > 10 min  
Protective index : Class 1

Remarks : Wear protective gloves. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.

Eye protection : Safety glasses with side-shields

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : aerosol

Colour : black

Odour : characteristic



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Odour Threshold : No data available

pH : Not applicable  
substance/mixture is non-soluble (in water)

Melting point/range : No data available

Boiling point/boiling range : -161,0 °C  
(1.013 hPa)

Flash point : -60 °C  
Method: Abel-Pensky

Evaporation rate : No data available

Flammability (solid, gas) : Extremely flammable aerosol.

Self-ignition : No data available

Upper explosion limit / Upper flammability limit : 18,6 %(V)

Lower explosion limit / Lower flammability limit : 1,1 %(V)

Vapour pressure : 4.600 hPa (20 °C)

Relative vapour density : No data available

Relative density : 0,79 (20 °C)  
Reference substance: Water  
The value is calculated

Density : 0,79 g/cm<sup>3</sup> (20 °C)

Bulk density : No data available

Solubility(ies)  
Water solubility : insoluble

Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Auto-ignition temperature : No data available



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Decomposition temperature : No data available

Viscosity  
Viscosity, dynamic : No data available

Viscosity, kinematic : < 20,5 mm<sup>2</sup>/s ( 40 °C)

Explosive properties : Not explosive

Oxidizing properties : No data available

Sublimation point : No data available

Metal corrosion rate : Not corrosive to metals

**10. STABILITY AND REACTIVITY**

Reactivity : No hazards to be specially mentioned.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.

Conditions to avoid : Heat, flames and sparks.  
Strong sunlight for prolonged periods.  
Risk of receptacle bursting.

Incompatible materials : Oxidizing agents

Hazardous decomposition products : No decomposition if stored and applied as directed.

**11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

**Product:**

Acute oral toxicity : Remarks: Effects due to ingestion may include:  
  
Symptoms: Central nervous system depression

Acute inhalation toxicity : Remarks: Respiration of solvent vapour may cause dizziness.  
  
Symptoms: Inhalation may provoke the following symptoms:,  
Respiratory disorder, Dizziness, Drowsiness, Vomiting,

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Fatigue, Vertigo, Central nervous system depression

Acute dermal toxicity : Symptoms: Redness, Local irritation

**Components:**

**n-butyl acetate:**

Acute oral toxicity : LD50 (Rat): 10.768 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 21 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: OECD Test Guideline 403  
GLP: yes  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 17.600 mg/kg

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Acute oral toxicity : LD50 (Rat): > 5.840 mg/kg  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 25,2 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2,8 g/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**molybdenum disulphide:**

Acute oral toxicity : LD50 (Rat): > 5.000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 16.000 mg/kg

**butane:**

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Acute inhalation toxicity : LC50 (Rat): 658 mg/l  
Exposure time: 4 h  
Test atmosphere: gas

**dimethyl ether:**

Acute inhalation toxicity : LC50 (Rat): 309 mg/l  
Exposure time: 4 h  
Test atmosphere: gas

**isobutane:**

Acute inhalation toxicity : LC50 (Rat): 658 mg/l  
Exposure time: 4 h  
Test atmosphere: gas

**Skin corrosion/irritation**

**Product:**

Remarks : Irritating to skin.

**Components:**

**n-butyl acetate:**

Species : Rabbit  
Assessment : No skin irritation  
Method : OECD Test Guideline 404  
Result : Repeated exposure may cause skin dryness or cracking.

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Species : Rabbit  
Assessment : Irritating to skin.  
Method : OECD Test Guideline 404  
Result : Irritating to skin.

**molybdenum disulphide:**

Assessment : No skin irritation  
Result : No skin irritation

**dimethyl ether:**

Assessment : No skin irritation  
Result : No skin irritation

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**Serious eye damage/eye irritation**

**Product:**

Result : Eye irritation

Remarks : Irritating to eyes.

**Components:**

**n-butyl acetate:**

Species : Rabbit  
Result : No eye irritation  
Assessment : No eye irritation  
Method : OECD Test Guideline 405  
GLP : yes

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Species : Rabbit  
Result : No eye irritation  
Assessment : No eye irritation

**molybdenum disulphide:**

Result : No eye irritation  
Assessment : No eye irritation

**dimethyl ether:**

Result : No eye irritation  
Assessment : No eye irritation

**1-Butanol, titanium(4+) salt, homopolymer:**

Result : Eye irritation

**Respiratory or skin sensitisation**

**Product:**

Remarks : This information is not available.

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**Components:**

**n-butyl acetate:**

Test Type : Maximisation Test  
Exposure routes : Dermal  
Species : Guinea pig  
Assessment : Does not cause skin sensitisation.  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitisation.

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Test Type : Maximisation Test  
Exposure routes : Dermal  
Species : Guinea pig  
Assessment : Does not cause skin sensitisation.  
Method : OECD Test Guideline 406  
Result : Did not cause sensitisation on laboratory animals.

**molybdenum disulphide:**

Assessment : Does not cause skin sensitisation.  
Result : Does not cause skin sensitisation.

**dimethyl ether:**

Assessment : Does not cause skin sensitisation.  
Result : Does not cause skin sensitisation.

**Germ cell mutagenicity**

**Product:**

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

**Components:**

**n-butyl acetate:**

Genotoxicity in vitro : Test Type: Ames test  
Test system: Salmonella typhimurium  
Method: OECD Test Guideline 471  
Result: negative

Test Type: Chromosome aberration test in vitro

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Test system: Chinese hamster cells  
Method: OECD Test Guideline 473  
Result: negative

Genotoxicity in vivo : Species: Mouse  
Application Route: Oral  
Method: OECD Test Guideline 474  
Result: negative

Germ cell mutagenicity - Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Test system: Rodent cell line  
Method: OECD Test Guideline 473  
Result: negative

**molybdenum disulphide:**

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

**dimethyl ether:**

Genotoxicity in vitro : Test Type: Ames test  
Method: OECD Test Guideline 471  
Result: negative

Genotoxicity in vivo : Species: Drosophila melanogaster (vinegar fly)  
Application Route: inhalation (gas)  
Method: OECD Test Guideline 477  
Result: negative

**Carcinogenicity**

**Product:**

Remarks : No data available

**Components:**

**n-butyl acetate:**

Carcinogenicity - : Not classifiable as a human carcinogen.

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Assessment

**molybdenum disulphide:**

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

**dimethyl ether:**

Species : Rat  
Application Route : inhalation (gas)  
Exposure time : 2 Years  
: 47 mg/l  
Method : OECD Test Guideline 453  
Result : negative

**Reproductive toxicity**

**Product:**

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

**Components:**

**n-butyl acetate:**

Effects on fertility : Test Type: Two-generation study  
Species: Rat  
Application Route: inhalation (vapour)  
General Toxicity - Parent: NOAEC: 750 mg/l  
General Toxicity F1: NOAEC: 750 mg/l  
General Toxicity F2: NOAEC: 750 mg/l  
Method: OECD Test Guideline 416  
Result: Embryotoxic effects and adverse effects on the offspring were detected.

Reproductive toxicity - Assessment : - Fertility -  
No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.  
- Teratogenicity -  
No toxicity to reproduction

**dimethyl ether:**

Reproductive toxicity - Assessment : - Fertility -  
Animal testing did not show any effects on fertility.



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**STOT - single exposure**

**Components:**

**n-butyl acetate:**

Exposure routes : Inhalation  
Target Organs : Central nervous system  
Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Assessment : May cause drowsiness or dizziness.

**molybdenum disulphide:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

**STOT - repeated exposure**

**Components:**

**n-butyl acetate:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Exposure routes : inhalation (vapour)  
Assessment : No significant health effects observed in animals at concentrations of 1 mg/l/6h/d or less.

**molybdenum disulphide:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

**Repeated dose toxicity**

**Product:**

Remarks : This information is not available.

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**Components:**

**n-butyl acetate:**

Species : Rat  
NOAEL : 125 mg/kg  
Application Route : Oral

**Aspiration toxicity**

**Product:**

May be fatal if swallowed and enters airways.

May be fatal if swallowed and enters airways.

**Components:**

**n-butyl acetate:**

No aspiration toxicity classification

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

May be fatal if swallowed and enters airways.

**dimethyl ether:**

No aspiration toxicity classification

**Further information**

**Product:**

Remarks : Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

**Components:**

**molybdenum disulphide:**

Remarks : Information given is based on data on the components and the toxicology of similar products.

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**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Product:**

Toxicity to fish : Remarks: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

**Components:**

**n-butyl acetate:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 18 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): 44 mg/l  
Exposure time: 48 h  
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 397 mg/l  
Exposure time: 72 h  
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 23 mg/l  
Exposure time: 21 d  
Test Type: Reproduction Test  
GLP: yes

Toxicity to microorganisms : EC50 (Tetrahymena pyriformis): 356 mg/l  
Exposure time: 40 h  
Test Type: Growth inhibition

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**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 22 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 3 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EbC50 (Pseudokirchneriella subcapitata (green algae)): 26 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

**Ecotoxicology Assessment**

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

**molybdenum disulphide:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
Exposure time: 72 h

**dimethyl ether:**

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): > 4.100 mg/l  
Exposure time: 96 h  
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 4.400 mg/l  
Exposure time: 48 h  
Test Type: static test

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Toxicity to algae/aquatic plants : EC50 (green algae): 154,9 mg/l  
Exposure time: 96 h

**Persistence and degradability**

**Product:**

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

**Components:**

**n-butyl acetate:**

Biodegradability : Primary biodegradation  
Result: rapidly biodegradable  
Biodegradation: 83 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

**Hydrocarbons, C6-C7, n-alkanes, isoalkanes, cyclics, <5% n-hexane:**

Biodegradability : Result: Readily biodegradable.

**dimethyl ether:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D

**Bioaccumulative potential**

**Product:**

Bioaccumulation : Remarks: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).  
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

**Components:**

**n-butyl acetate:**

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Partition coefficient: n-octanol/water : log Pow: 2,3 (25 °C)  
pH: 7  
Method: OECD Test Guideline 117  
GLP: yes

**butane:**

Partition coefficient: n-octanol/water : log Pow: 2,89  
Method: OECD Test Guideline 107

**dimethyl ether:**

Partition coefficient: n-octanol/water : log Pow: 0,07 (25 °C)

**propane:**

Partition coefficient: n-octanol/water : log Pow: 2,36

**isobutane:**

Partition coefficient: n-octanol/water : log Pow: 2,88  
Method: OECD Test Guideline 107

**Mobility in soil**

**Product:**

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: No data available

**Other adverse effects**

**Product:**

Additional ecological information : Harmful to aquatic life with long lasting effects.

**Components:**

**n-butyl acetate:**

Results of PBT and vPvB assessment : Non-classified PBT substance Non-classified vPvB substance

**dimethyl ether:**

Results of PBT and vPvB assessment : Non-classified vPvB substance Non-classified PBT substance

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**Hygienic standards:**

**(Allowable concentration in air, water, including fishery waters, soil)**

Components	Air	Water	Soil	Data Source
n-butyl acetate	Concentration that prevents irritation, reflex reactions, odors when exposed to 20-30 minutes - maximum one-time: 0,1 mg/m <sup>3</sup> Limiting health hazard indicator: reflectory Class 4 - low hazard	Maximum Permissible Concentration 0,3 Milligrams per cubed decimeter Limiting health hazard indicator: sanitary and toxicological effects Hazard class: 4 Maximum Allowable Concentration: 0,1 mg/l Limiting health hazard indicator: general sanitary Hazard class: Class 4 - low hazard		List 5
molybdenum disulphide	Concentration that provides admissible (acceptable) levels of risk when exposed to at least 24 hours - average daily: 0,02 mg/m <sup>3</sup> (Molybdenum) Limiting health hazard indicator: resorptive Class 3 - moderately dangerous			
butane	Concentration that prevents irritation, reflex reactions, odors when exposed to 20-30 minutes - maximum one-time: 200 mg/m <sup>3</sup> Limiting health hazard indicator: reflectory Class 4 - low hazard	Maximum Permissible Concentration 0,05 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 3		List 5

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dimethyl ether	TSEL value: 0,2 mg/m <sup>3</sup>	Maximum Permissible Concentration 1 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 4 Maximum Allowable Concentration: 5 mg/l Limiting health hazard indicator: sanitary-toxicological Hazard class: Class 4 - low hazard		List 5
propane		Maximum Permissible Concentration 0,05 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 3		List 5
isobutane	Concentration that prevents irritation, reflex reactions, odors when exposed to 20-30 minutes - maximum one-time: 15 mg/m <sup>3</sup> Limiting health hazard indicator: reflectory Class 4 - low hazard	Maximum Permissible Concentration 0,05 Milligrams per cubed decimeter Limiting health hazard indicator: toxic Hazard class: 3		List 5

List 5: Order of the Russian Federal Fisheries Agency "Standards of maximum permissible concentrations of harmful substances in fishery water bodies"

**13. DISPOSAL CONSIDERATIONS**

**Disposal methods**

Waste from residues : Do not dispose of with domestic refuse.



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Dispose of as hazardous waste in compliance with local and national regulations.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as the unused product.  
Offer empty spray cans to an established disposal company.  
Pressurized container: Do not pierce or burn, even after use.

The following Waste Codes are only suggestions:

Waste Code : unused product, packagings not completely emptied  
16 05 04\*, gases in pressure containers (including halons)  
containing hazardous substances

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**14. TRANSPORT INFORMATION**

**ADR**

UN number : UN 1950  
Proper shipping name : AEROSOLS  
Class : 2  
Packing group : Not assigned by regulation  
Labels : 2.1  
Tunnel restriction code : (D)

**IATA-DGR**

UN/ID No. : UN 1950  
Proper shipping name : Aerosols, flammable  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : Flammable Gas  
Packing instruction (cargo aircraft) : 203  
Packing instruction (passenger aircraft) : 203

**IMDG-Code**

UN number : UN 1950  
Proper shipping name : AEROSOLS  
  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
EmS Code : F-D, S-U  
Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data



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Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

**15. REGULATORY INFORMATION**

**National regulatory information**

Federal Law of 10.01.2002 No. 184-FZ "On Technical Regulation".  
Federal Law of 10.01.2002 No. 7-FZ "On Environmental Protection".  
Federal Law of 21.07.1997 No. 116-FZ (amended on 11.06.2021) "On industrial safety of hazardous production facilities".  
Federal Law of 24.06.1998 No. 89-FZ (amended on 02.07.2021) "On production and consumption waste".  
Federal Law of 10.01.2002 No. 7-FZ (amended on 02.07.2021) "On environmental protection".  
Federal Law of 04.05.1999 No. 96-FZ "On the protection of atmospheric air" (as amended on December 8, 2020).  
Federal Law of 30.03.1999 No. 52-FZ (amended on 02.07.2021) "On the Sanitary and Epidemiological Well-Being of the Population" (amended and supplemented, entered into force on 31.10.2021).  
Federal Law of 27.12.2002 No. 184-FZ (amended on 02.07.2021) "On Technical Regulation" (amended and supplemented, entered into force on 01.09.2021).  
TECHNICAL REGULATIONS OF THE CUSTOMS UNION TR CU 030/2012 On requirements for lubricants, oils and special fluids (amended on 03.03.2017).

**16. OTHER INFORMATION**

**List of data sources used in the preparation of the Safety Data Sheet**

GOST 30333-2007. Interstate standard. Safety data sheet for chemical products. Primary requirements.  
GOST 12.1.007-76 Occupational safety standards system. Noxious substances. Classification and general safety requirements  
GOST 12.1.044-89 Occupational safety standards system. Fire and explosion hazard of substances and materials. Nomenclature of indices and methods of their determination  
GOST 14192-96. Interstate standard. Cargo marking. Minsk, 1998.  
GOST 31340-2013. Interstate standard. Precautionary labeling of chemical products. General requirements.  
GOST 32419-2013 Classification of the hazard of chemical products. General requirements.  
GOST 32421-2013 Classification of chemical products, the hazard of which is due to physical and chemical properties. Test methods for explosive chemical products.  
GOST 32423-2013 Hazard classification of mixed chemical products by their effects on the body.  
GOST 32424-2013 Classification of the hazard of chemical products by their impact on the environment. Basic provisions.  
GOST 32425-2013 Hazard classification of mixed chemical products in terms of environmental impact.  
GOST R 53264-2009 Fire fighting equipment. Special protective clothing for firefighters. General technical requirements. Test methods.

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GOST R 53265-2009 Fire fighting equipment. Personal protective equipment for the feet of the firefighter. General technical requirements. Test methods.  
GOST R 53268-2009 Fire fighting equipment. Fire rescue belts. General technical requirements. Test methods.  
GOST R 53269-2009 Fire fighting equipment. Firefighters helmets. General technical requirements. Test methods.  
SanPiN 1.2.3685-21 "Hygienic standards and requirements for ensuring the safety and (or) harmlessness to humans of environmental factors" dated 28.01.2021.  
SanPiN 2.1.3684-21 "Sanitary and epidemiological requirements for the maintenance of the territories of urban and rural settlements, for water bodies, drinking water and drinking water supply, atmospheric air, soils, living quarters, the operation of industrial, public premises, the organization and implementation of sanitary and anti-epidemic (preventive) measures".  
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). United Nations. New York and Geneva, 20.  
International Maritime Dangerous Goods Code (IMDG-Code).  
Water quality standards for fishery water bodies, including standards for maximum permissible concentrations of harmful substances in the waters of fishery water bodies (approved by order of the Ministry of Agriculture of Russia dated December 13, 2016 No. 552).  
Regulations for the carriage of dangerous goods (Appendix 1 and 2) to the Agreement on International Goods Transport by Rail (SMGS), 2009.  
UN Recommendations on the Transport of Dangerous Goods. Typical rules. Twenty-first revised edition. United Nations, New York and Geneva, 2019.

**Full text of other abbreviations**

Aquatic Acute	:	Short-term (acute) aquatic hazard
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Eye Irrit.	:	Eye irritation
Flam. Gas	:	Flammable gases
Flam. Liq.	:	Flammable liquids
Press. Gas	:	Gases under pressure
Skin Irrit.	:	Skin irritation
STOT SE	:	Specific target organ toxicity - single exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2019/1831/EU	:	Europe. Commission Directive 2019/1831/EU establishing a fifth list of indicative occupational exposure limit values
RU OEL	:	Russia. Hygienic standards GN 2.2.5.1313-03 Permissible concentration (MAC) of harmful substances in the air of the working area
RU OEL	:	SanPiN 1.2.3685-21 Table 2.1, Table 2.8, Table 2.16 & Table 2.17 Maximum permissible concentrations (MPC) in the air of the working area
2000/39/EC / TWA	:	Limit Value - eight hours
2019/1831/EU / TWA	:	Limit Value - eight hours
2019/1831/EU / STEL	:	Short term exposure limit
RU OEL / MPC-STEEL	:	Maximum Permissible Concentration - Short Term Exposure
RU OEL / MPC-TWA	:	Maximum Permissible Concentration - Time Weighted Average
RU OEL / MPC-STEEL	:	Maximum Permissible Concentration - Short Term Exposure
RU OEL / MPC-TWA	:	Maximum Permissible Concentration - Time Weighted Average

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ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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