

## Safety Data Sheet

### POLYFAN RUSH

Safety Data Sheet dated 10/04/2024 version 7



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

### 1.1. Product identifier

Mixture identification:

Trade name: POLYFAN RUSH

Trade code: L0040210

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

Recommended use: Coatings and paints, thinners, paint removers

Stucco a spruzzo bicomponente

Dispersione pigmentata liquida

Usi professionali

Uses advised against: N.A.

### 1.3. Details of the supplier of the safety data sheet

Company: Lechler SpA - Via Cecilio, 17 - 22100 Como - CO - Italy

Telefono: +39031586111

First Email: safety@lechler.eu

### 1.4. Emergency telephone number

CAV "Osp.Ped.Bambino Gesù" Dip.Emergenza di Roma ...0668593726  
Azienda Ospedaliera Università di Foggia .....800183459 -  
Ospedale Niguarda Ca' Granda di Milano .....0266101029 -  
Azienda Ospedaliera "A. Cardarelli" di Napoli .....0817472870 -  
CAV Policlinico "Umberto I" di Roma .....0649978000 -  
CAV Policlinico "A. Gemelli" di Roma .....063054343 -  
Azienda Osp."Careggi" U.O. Tossicologica di Firenze .....0557947819 -  
CAV Centro Nazionale di Informaz.Tossicol. di Pavia .....038224444 -  
Azienda Ospedaliera Papa Giovanni XXIII di Bergamo.....800883300 -  
Azienda Ospedaliera Integrata di Verona.....800011858 -

## SECTION 2: Hazards identification



### 2.1. Classification of the substance or mixture

#### Regulation (EC) n. 1272/2008 (CLP)

Flam. Liq. 2	Highly flammable liquid and vapour.
Skin Irrit. 2	Causes skin irritation.
Eye Irrit. 2	Causes serious eye irritation.
Skin Sens. 1A	May cause an allergic skin reaction.
Repr. 2	Suspected of damaging the unborn child.
STOT SE 3	May cause respiratory irritation.
STOT RE 1	Causes damage to organs through prolonged or repeated exposure.
DECL10	This titanium dioxide-containing product is not classified as carcinogen by inhalation because it does not meet the criteria stated in Note 10, Annex VI of Regulation (EC) 1272/2008.

Note 10: The classification as a carcinogen by inhalation applies only to mixtures in powder form containing 1 % or more of titanium dioxide which is in the form of or incorporated in particles with aerodynamic diameter  $\leq 10 \mu\text{m}$ .

Adverse physicochemical, human health and environmental effects:

No other hazards

## 2.2. Label elements

**Regulation (EC) No 1272/2008 (CLP):**

### Hazard pictograms and Signal Word



Danger

### Hazard statements

H225	Highly flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

### Precautionary statements

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.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378	In caso d'incendio: utilizzare sabbia secca, prodotto chimico secco o schiuma resistente all'alcool per estinguere.
P403+P235	Store in a well-ventilated place. Keep cool.

### Special Provisions:

EUH211 Warning! Hazardous respirable droplets may be formed when sprayed. Do not breathe spray or mist.

### Contains

stirene  
anidride maleica  
acido neodecanoico, sale di cobalto

### Special provisions according to Annex XVII of REACH and subsequent amendments:

None.

## 2.3. Other hazards

Risultati della valutazione PBT e vPvB

Secondo i criteri dell'ordinamento REACH nessuna sostanza come PBT,

vPvB. Proprietà di interferenza con il sistema endocrino-Tossicità

La sostanza/miscela non contiene componenti considerati aventi proprietà di interferenza endocrina ai sensi dell'articolo 57(f) del REACH o del regolamento delegato (UE) 2017/2100 della Commissione o del regolamento (UE) 2018/605 della Commissione a livelli dello 0,1% o superiori.

Proprietà di interferenza con il sistema endocrino-ecotossicità

La sostanza/miscela non contiene componenti considerati aventi proprietà di interferenza endocrina ai sensi dell'articolo 57(f) del REACH o del regolamento delegato (UE) 2017/2100 della Commissione o del regolamento (UE) 2018/605 della Commissione a livelli dello 0,1% o superiori.

Other Hazards: No other hazards

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## SECTION 3: Composition/information on ingredients

### 3.1. Substances

N.A.

### 3.2. Mixtures

Mixture identification: POLYFAN RUSH

### Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Numb.	Classification	Registration Number
≥20 - ≤25 %	stirene	CAS:100-42-5 EC:202-851-5 Index:601-026-00-0	Flam. Liq. 3, H226; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335; STOT RE 1, H372; Asp. Tox. 1, H304; Aquatic Chronic 3, H412;	01-2119457861-32

Repr. 2, H361

≥20 - ≤25 %	talco (Mg3H2(SiO3)4)	CAS:14807-96-6 EC:238-877-9	Substance with a Union workplace exposure limit.	
≥3 - ≤5 %	diossido di titanio	CAS:13463-67-7 EC:236-675-5 Index:022-006-00-2	Not classified as hazardous	01-2119489379-17
≥1 - ≤2.5 %	acetato di etile	CAS:141-78-6 EC:205-500-4 Index:607-022-00-5	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119475103-46
≥1 - ≤2.5 %	etanolo	CAS:64-17-5 EC:200-578-6 Index:603-002-00-5	Flam. Liq. 2, H225; Eye Irrit. 2, H319	01-2119457610-43
≥0.1 - ≤0.25 %	diisobutirrato di 1-isopropil-2,2-dimetiltrimetilene	CAS:6846-50-0 EC:229-934-9	Repr. 2, H361; Aquatic Chronic 3, H412	01-2119451093-47
≥0.1 - ≤0.25 %	acido neodecanoico, sale di cobalto	CAS:27253-31-2 EC:248-373-0	Acute Tox. 4, H302; Skin Sens. 1, H317; STOT RE 1, H372; Aquatic Chronic 3, H412	01-2119970733-31
< 0.1 %	Silice cristallina respirabile	CAS:14808-60-7 EC:238-878-4	STOT RE 1, H372	
< 0.1 %	butanone	CAS:78-93-3 EC:201-159-0 Index:606-002-00-3	Flam. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336, EUH066	01-2119457290-43
< 0.1 %	nerofumo	CAS:1333-86-4 EC:215-609-9	Not classified as hazardous	01-2119384822-32
< 0.1 %	quarzo (SiO2)	CAS:14808-60-7 EC:238-878-4	Substance with a Union workplace exposure limit.	
< 0.1 %	metanolo	CAS:67-56-1 EC:200-659-6 Index:603-001-00-X	Flam. Liq. 2, H225 Acute Tox. 3, H301 Acute Tox. 3, H331 Acute Tox. 3, H311 STOT SE 1, H370	01-2119433307-44
			Specific Concentration Limits: C ≥ 10%: STOT SE 1 H370 3% ≤ C < 10%: STOT SE 2 H371	
< 0.1 %	anidride maleica	CAS:108-31-6 EC:203-571-6 Index:607-096-00-9	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1A, H317 STOT RE 1, H372, EUH071	01-2119472428-31
			Specific Concentration Limits: C ≥ 0.001%: Skin Sens. 1A H317	

#### Substances in nanoform:

nerofumo	CAS:1333-86-4 EC:215-609-9	Particle size distribution:	D10: ≥ 18 nm ≤ 61 nm D50: ≥ 36 nm ≤ 101 nm D90: ≥ 66 nm ≤ 173 nm (Tecnica di misurazione: STEM)
		Shape and aspect ratio:	Sfere, (:1): < 3 (Tecnica di misurazione: TEM)
		Crystallinity:	Amorphous: = 100% - (Tecnica di misurazione: Diffrazione raggi X (XRD))
		Surface Treatment - Agent:	(No)
		Specific surface area:	≥ 21m2/g ≤ 1,200m2/g - (Tecnica di misurazione: Metodo Brunauer, Emmett and Teller (BET) con l'utilizzo di azoto)

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## **SECTION 4: First aid measures**

### **4.1. Description of first aid measures**

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

In case of Ingestion:

Do not induce vomiting, get medical attention showing the SDS and label hazardous.

In case of Inhalation:

In case of inhalation, consult a doctor immediately and show him packing or label.

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

Eye irritation

Eye damages

Skin Irritation

Erythema

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

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

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## **SECTION 5: Firefighting measures**

### **5.1. Extinguishing media**

Suitable extinguishing media:

In caso d'incendio: utilizzare sabbia secca, prodotto chimico secco o schiuma resistente all'alcool per estinguere.

Extinguishing media which must not be used for safety reasons:

None in particular.

### **5.2. Special hazards arising from the substance or mixture**

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

### **5.3. Advice for firefighters**

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

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## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

**For non emergency personnel:**

Wear personal protection equipment.

Remove all sources of ignition.

Wear breathing apparatus if exposed to vapours/dusts/aerosols.

Provide adequate ventilation.

Use appropriate respiratory protection.

See protective measures under point 7 and 8.

**For emergency responders:**

Wear personal protection equipment.

### **6.2. Environmental precautions**

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

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

Suitable material for taking up: absorbing material, organic, sand

Wash with plenty of water.

### **6.4. Reference to other sections**

See also section 8 and 13

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.  
Exercise the greatest care when handling or opening the container.  
Use localized ventilation system.  
Do not eat or drink while working.  
See also section 8 for recommended protective equipment.

### Advice on general occupational hygiene:

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

Always keep in a well ventilated place.  
Conservare ad una temperatura compresa tra 5° e 35°C. Tenere lontano da fiamme libere e sorgenti di calore. Evitare l'esposizione diretta al sole.  
Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.

Incompatible materials:

None in particular.

Instructions as regards storage premises:

Cool and adequately ventilated.

### 7.3. Specific end use(s)

Recommendation(s)

None in particular

Industrial sector specific solutions:

None in particular

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Community Occupational Exposure Limits (OEL)

	OEL Type	Country	Occupational Exposure Limit
stirene CAS: 100-42-5	SUVA	SWITZERLAN D	Long Term: 85 mg/m <sup>3</sup> - 20 ppm ototossicità con amplificazione del rumore
	SUVA	SWITZERLAN D	Breve Termine 170 mg/m <sup>3</sup> - 40 ppm Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	ACGIH		Long Term: 10 ppm; Breve Termine 20 ppm OTO, A3, BEI - CNS and hearing impair, URT irr, peripheral neuropathy, visual disorders
talco (Mg <sub>3</sub> H <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub> ) CAS: 14807-96-6	ACGIH		Long Term: 2 mg/m <sup>3</sup> Containing no asbestos fibers\$ E,R, A4 - Pulm fibrosis, pulm func
	EU		Long Term: 0.1 mg/m <sup>3</sup> 2004/37/CE
	SUVA	SWITZERLAN D	Long Term: 2 mg/m <sup>3</sup> Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	EU		Agenti cancerogeni o mutageni
	EU		Polvere respirabile
diossido di titanio CAS: 13463-67-7	SUVA	SWITZERLAN D	Long Term: 3 mg/m <sup>3</sup> Polveri inerti, valore limite di esposizione professionale generale; Si qualificano come inerti le polveri che, allo stato attuale d
	ACGIH		Long Term: 0.2 mg/m <sup>3</sup> Nanoscale particles; R ; A3 - LRT irr, pneumoconiosis
	ACGIH		Long Term: 2.5 mg/m <sup>3</sup> Finescale particles; R ; A3 - LRT irr, pneumoconiosis
acetato di etile CAS: 141-78-6	EU		Long Term: 734 mg/m <sup>3</sup> - 200 ppm; Breve Termine 1468 mg/m <sup>3</sup> - 400 ppm Behaviour Indicative 2017/164/EU
	SUVA	SWITZERLAN D	Long Term: 730 mg/m <sup>3</sup> - 200 ppm; Breve Termine 1460 mg/m <sup>3</sup> - 400 ppm National Institute for Occupational Safety and Health
etanolo CAS: 64-17-5	SUVA	SWITZERLAN D	Breve Termine 1920 mg/m <sup>3</sup> - 1000 ppm Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono

			improbabili.
	SUVA	SWITZERLAN D	Long Term: 960 mg/m <sup>3</sup> - 500 ppm National Institute for Occupational Safety and Health
	ACGIH		Breve Termine 1000 ppm A3 - URT irr
acido neodecanoico, sale di cobalto CAS: 27253-31-2	SUVA	SWITZERLAN D	Long Term: 0.05 mg/m <sup>3</sup> Possibilità d'intossicazione per riassorbimento transcutaneo. Certe sostanze penetrano nell'organismo non soltanto tramite le vie re
Silice cristallina respirabile CAS: 14808-60-7	ACGIH		Long Term: 0.025 mg/m <sup>3</sup> R, A2 - Pulm fibrosis, lung cancer
	SUVA	SWITZERLAN D	Long Term: 0.15 mg/m <sup>3</sup> Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	EU		Long Term: 0.1 mg/m <sup>3</sup> 2004/37/CE
	EU		Polvere respirabile
	EU		Agenti cancerogeni o mutageni
butanone CAS: 78-93-3	EU		Long Term: 600 mg/m <sup>3</sup> - 200 ppm; Breve Termine 900 mg/m <sup>3</sup> - 300 ppm Behaviour Indicative 2000/39/CE
	SUVA	SWITZERLAN D	Long Term: 590 mg/m <sup>3</sup> - 200 ppm Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	SUVA	SWITZERLAN D	Breve Termine 590 mg/m <sup>3</sup> - 200 ppm National Institute for Occupational Safety and Health
	VLEP	ITALY	Long Term: 600 mg/m <sup>3</sup> - 200 ppm; Breve Termine 900 mg/m <sup>3</sup> - 300 ppm
	ACGIH		Long Term: 200 ppm; Breve Termine 300 ppm BEI - URT irr, CNS and PNS impair
nerofumo CAS: 1333-86-4	ACGIH		Long Term: 3 mg/m <sup>3</sup> I, A3 - Bronchitis
quarzo (SiO <sub>2</sub> ) CAS: 14808-60-7	ACGIH		Long Term: 0.025 mg/m <sup>3</sup> R, A2 - Pulm fibrosis, lung cancer
	SUVA	SWITZERLAN D	Long Term: 0.15 mg/m <sup>3</sup> Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	EU		Long Term: 0.1 mg/m <sup>3</sup> 2004/37/CE
	EU		Polvere respirabile
	EU		Agenti cancerogeni o mutageni
metanolo CAS: 67-56-1	ACGIH		Long Term: 200 ppm; Breve Termine 250 ppm Skin, BEI - Headache, eye dam, dizziness, nausea
	EU		Long Term: 260 mg/m <sup>3</sup> - 200 ppm Behaviour Indicative 2006/15/CE
	EU		Identifica la possibilità di significativo assorbimento attraverso la pelle
	SUVA	SWITZERLAN D	Long Term: 260 mg/m <sup>3</sup> - 200 ppm; Breve Termine 1040 mg/m <sup>3</sup> - 800 ppm Se il valore limite di esposizione professionale viene rispettato, le lesioni al feto sono improbabili.
	VLEP	ITALY	Long Term: 260 mg/m <sup>3</sup> - 200 ppm La notazione 'Pelle' attribuita ai valori limite di esposizione indica possibilità di assorbimento significativo attraverso la pell
anidride maleica CAS: 108-31-6	SUVA	SWITZERLAN D	Breve Termine 0.4 mg/m <sup>3</sup> - 0.1 ppm Occupational Safety and Health Administration
	SUVA	SWITZERLAN D	Long Term: 0.4 mg/m <sup>3</sup> - 0.1 ppm La sostanza può essere presente contemporaneamente come vapore e aerosol
	ACGIH		Long Term: 0.01 mg/m <sup>3</sup> IFV, DSEN, RSEN, A4 - Resp sens

## Biological limit values

styrene  
CAS: 100-42-5

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 800 mg/g Creatinine; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: mandelic acid; Sampling Period: Before next shift  
Value: 300 mg/g Creatinine; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: phenyl glycolic acid; Sampling Period: Fine turno  
Value: 240 mg/g Creatinine; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: phenyl glycolic acid; Sampling Period: Before next shift  
Value: 100 mg/g Creatinine; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: styrene; Sampling Period: Fine turno  
Value: 0.55 mg/L; Medium: Blood  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: styrene; Sampling Period: Before next shift  
Value: 0.02 mg/L; Medium: Blood  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: mandelic acid; Sampling Period: End of last day of the working day (recommended to avoid the first day of the week)  
Value: 8 g/g creatinine; Medium: Urine  
Remark: Brazil. NR7. Parameters for Biological Control of Occupational Exposure to Some Chemical Agents

Biological Indicator: phenyl glyoxylic acid; Sampling Period: End of last day of the working day (recommended to avoid the first day of the week)  
Value: 240 mg/g Creatinine; Medium: Urine  
Remark: Brazil. NR7. Parameters for Biological Control of Occupational Exposure to Some Chemical Agents

Biological Indicator: total mandelic acid plus phenylglyoxylic acid; Sampling Period: In case of long-term exposure: after more than one shift  
Value: 600 mg/g Creatinine; Medium: Urine  
Remark: Bulgaria. Biological limit values

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 800 mg/g Creatinine; Medium: Urine  
Remark: Chile. Biological Limit Values

Biological Indicator: phenyl glyoxylic acid; Sampling Period: Fine turno  
Value: 240 mg/g Creatinine; Medium: Urine  
Remark: Chile. Biological Limit Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno  
Value: 295 Millimoles per mole Creatinine; Medium: Urine  
Remark: China. Biological Occupational Exposure Limits for 15 chemicals.

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno  
Value: 400 mg/g Creatinine; Medium: Urine  
Remark: China. Biological Occupational Exposure Limits for 15 chemicals.

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Before next shift  
Value: 120 Millimoles per mole Creatinine; Medium: Urine  
Remark: China. Biological Occupational Exposure Limits for 15 chemicals.

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Before next shift  
Value: 160 mg/g Creatinine; Medium: Urine  
Remark: China. Biological Occupational Exposure Limits for 15 chemicals.

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno  
Value: 400 mg/g Creatinine; Medium: Urine  
Remark: Maximum allowable occupational exposure limits in the workplace - Table 3. Adopted Biological Exposu

Biological Indicator: Styrene; Sampling Period: Fine turno  
Value: 40 µg/L; Medium: Urine  
Remark: Maximum allowable occupational exposure limits in the workplace - Table 3. Adopted Biological Exposu

Biological Indicator: styrene; Sampling Period: 16 Hours after the end of work  
Value: 19 micromol per litre; Medium: Blood  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: styrene; Sampling Period: 16 Hours after the end of work  
Value: 20 µg/L; Medium: Blood  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 1 g/g creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 74 mol/mol creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: phenyl glyoxylic acid; Sampling Period: Fine turno  
Value: 240 mg/g Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: phenyl glyoxylic acid; Sampling Period: Fine turno  
Value: 18 mol/mol creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: mandelic acid + phenyl glyoxylic acid; Sampling Period: during long-term exposure in the middle of the work week  
Value: 600 mg/g Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 400 mg/g Creatinine; Medium: Urine  
Remark: Czech Republic. Biological Exposure Indices

Biological Indicator: mandelic acid; Sampling Period: Fine turno  
Value: 300 micromoles per millimole creatinine; Medium: Urine  
Remark: Czech Republic. Biological Exposure Indices

Biological Indicator: mandelic + phenylglyoxylic acid; Sampling Period: Fine turno  
Value: 600 mg/g Creatinine; Medium: Urine  
Remark: Czech Republic. Biological Exposure Indices

Biological Indicator: MAPGA; Sampling Period: Morning after working day  
Value: 1.2 mg/L; Medium: Urine  
Remark: Finland. Biological limit values

Biological Indicator: mandelic acid + phenylglyoxylic acid; Sampling Period: Immediately after exposure or after working hours  
Value: 600 mg/g Creatinine; Medium: Urine  
Remark: TRGS 903 - Biological limit values

Biological Indicator: mandelic acid; Sampling Period: FSL  
Value: 1000 mg/g Creatinine; Medium: Urine  
Remark: Hungary. Permissible limit values of biological exposure (effect) indices

Biological Indicator: mandelic acid; Sampling Period: After shift  
Value: 740 micromoles per millimole creatinine; Medium: Urine  
Remark: Hungary. Permissible limit values of biological exposure (effect) indices

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: FSL  
Value: 400 mg/g Creatinine; Medium: Urine  
Remark: Israel. Safety at Work Regulations - Annex III Biological Exposure Indices

Biological Indicator: Mandelic acid + Phenylglyoxylic acid; Sampling Period: Fine turno; Fine settimana lavorativa  
Value: 430 mg/L; Medium: Urine  
Remark: Occupational exposure limits based on biological monitoring (JSOH).

Biological Indicator: Styrene; Sampling Period: Fine turno; Fine settimana lavorativa  
Value: 0.2 mg/L; Medium: Blood  
Remark: Occupational exposure limits based on biological monitoring (JSOH).

Biological Indicator: Mandelic acid; Sampling Period: Fine turno  
Value: 800 mg/g Creatinine; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Mandelic acid; Sampling Period: Before next shift  
Value: 300 mg/g Creatinine; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Phenylglyoxylic acid; Sampling Period: Fine turno  
Value: 240 mg/g Creatinine; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure



## Limits

Biological Indicator: Phenylglyoxylic acid; Sampling Period: Before next shift

Value: 100 mg/g Creatinine; Medium: Urine

Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Styrene; Sampling Period: Fine turno

Value: 0.55 mg/L; Medium: venous blood

Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Styrene; Sampling Period: Before next shift

Value: 0.02 mg/L; Medium: venous blood

Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: mandelic acid; Sampling Period: Fine turno

Value: 8 g/g creatinine; Medium: Urine

Remark: Latvia. Biological Exposure Indices

Biological Indicator: styrene; Sampling Period: Fine turno

Value: 0.55 mg/L; Medium: Blood

Remark: Latvia. Biological Exposure Indices

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno

Value: 400 mg/g Creatinine; Medium: Urine

Remark: Official Mexican Norm NOM-047-SSA1-2011, Environmental Health - Biological exposure indices for work

Biological Indicator: Styrene; Sampling Period: Fine turno

Value: 0.2 mg/L; Medium: venous blood

Remark: Official Mexican Norm NOM-047-SSA1-2011, Environmental Health - Biological exposure indices for work

Biological Indicator: Mandelic acid; Sampling Period: Fine turno

Value: 1 Millimoles per liter; Medium: Urine

Remark: New Zealand. Biological Exposure Indices

Biological Indicator: Sum of mandelic acid and phenyl glyoxylic acid; Sampling Period: Fine turno

Value: 400 mg/g Creatinine; Medium: Urine

Remark: Portuguese Norm 1796 - Biological Exposure Indices

Biological Indicator: Styrene; Sampling Period: Fine turno

Value: 0.2 mg/L; Medium: venous blood

Remark: Portuguese Norm 1796 - Biological Exposure Indices

Biological Indicator: mandelic acid; Sampling Period: Fine turno

Value: 800 mg/g Creatinine; Medium: Urine

Remark: Romania. Biological limit values

Biological Indicator: mandelic acid; Sampling Period: Beginning of next shift

Value: 300 mg/g Creatinine; Medium: Urine

Remark: Romania. Biological limit values

Biological Indicator: phenylglyoxalic acid; Sampling Period: Fine turno

Value: 100 mg/g Creatinine; Medium: Urine

Remark: Romania. Biological limit values

Biological Indicator: styrene; Sampling Period: Fine turno

Value: 0.55 mg/L; Medium: Blood

Remark: Romania. Biological limit values

Biological Indicator: styrene; Sampling Period: Beginning of next shift

Value: 0.02 mg/L; Medium: Blood

Remark: Romania. Biological limit values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno

Value: 901 mg/L; Medium: Urine

Remark: Slovakia. Biological Limit Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: In case of long-term exposure: after more than one shift

Value: 5960 micromol per litre; Medium: Urine

Remark: Slovakia. Biological Limit Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno

Value: 600 mg/g Creatinine; Medium: Urine

Remark: Slovakia. Biological Limit Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: In case of long-term exposure: after more than one shift

Value: 449 micromoles per millimole creatinine; Medium: Urine

Remark: Slovakia. Biological Limit Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno

Value: 600 mg/g Creatinine; Medium: Urine

Remark: Slovenia. BAT-values

Biological Indicator: Mandelic acid; Sampling Period: Fine turno

Value: 800 mg/g Creatinine; Medium: Urine

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Mandelic acid; Sampling Period: Before next shift

Value: 300 mg/g Creatinine; Medium: Urine

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Phenolglyoxylic acid; Sampling Period: Fine turno

Value: 240 mg/g Creatinine; Medium: Urine

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Phenolglyoxylic acid; Sampling Period: Before next shift

Value: 100 mg/g Creatinine; Medium: Urine

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Styrene; Sampling Period: Fine turno

Value: 0.55 mg/L; Medium: venous blood

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Styrene; Sampling Period: Before next shift

Value: 0.02 mg/L; Medium: venous blood

Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: End of workday

Value: 400 mg/g Creatinine; Medium: Urine

Remark: Occupational Exposure Limits for Chemical Agents in Spain - Biological Exposure Values

Biological Indicator: styrene; Sampling Period: End of workday

Value: 0.2 mg/L; Medium: venous blood

Remark: Occupational Exposure Limits for Chemical Agents in Spain - Biological Exposure Values

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Immediately after exposure or after working hours

Value: 600 mg/g Creatinine; Medium: Urine

Remark: Svizzera. Lista di valori BAT

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: End of workday

Value: 400 mg/g Creatinine; Medium: Urine

Remark: Uruguay. Health surveillance of workers - Biological Exposure Indices (BEI).

Biological Indicator: styrene; Sampling Period: End of workday

Value: 0.2 mg/L; Medium: Blood

Remark: Uruguay. Health surveillance of workers - Biological Exposure Indices (BEI).

Biological Indicator: Mandelic acid and phenylglyoxylic; Sampling Period: Fine turno

Value: 400 mg/g Creatinine; Medium: Urine

Remark: ACGIH - Indicatori di Esposizione Biologica (BEI)

Biological Indicator: Styrene; Sampling Period: Fine turno

Value: 40 µg/L; Medium: Urine

Remark: ACGIH - Indicatori di Esposizione Biologica (BEI)

Biological Indicator: Mandelic acid; Sampling Period: End of workday

Value: 400 mg/g Creatinine; Medium: Urine

Remark: VE.Biological Exposure Limits

Biological Indicator: Styrene; Sampling Period: End of workday

Value: 0.2 mg/L; Medium: Blood

Remark: VE.Biological Exposure Limits

Sampling Period: during long-term exposure: at the end of the work shift after several consecutive workdays

Sampling Period: Fine turno

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: Fine turno

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: After shift

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: Fine turno

acido neodecanoico, sale  
di cobalto  
CAS: 27253-31-2

Sampling Period: No restrictions  
Value: 30 µg/L; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Sampling Period: No restrictions  
Value: 5098 micromol per litre; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Sampling Period: No restrictions  
Value: 2003 µg/g creatinine; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Sampling Period: No restrictions  
Value: 3845 micromoles per millimole creatinine; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Sampling Period: At the end of a work week / at the end of a work day / at the end of a shift  
Value: 10 µg/L; Medium: Urine  
Remark: Austria. Regulation on health surveillance in the workplace 2014

Sampling Period: Immediately after exposure or after working hours  
Value: 30 µg/L; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

Sampling Period: Immediately after exposure or after working hours  
Value: 509 Nanomoles per liter; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

butanone  
CAS: 78-93-3

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: MEK; Sampling Period: End of last day of the working day (recommended to avoid the first day of the week)  
Value: 2 mg/L; Medium: Urine  
Remark: Brazil. NR7. Parameters for Biological Control of Occupational Exposure to Some Chemical Agents

Biological Indicator: MEC; Sampling Period: FSL  
Value: 26 mg/g Creatinine; Medium: Urine  
Remark: Chile. Biological Limit Values

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Maximum allowable occupational exposure limits in the workplace - Table 3. Adopted Biological Exposu

Biological Indicator: ethyl-methyl-ketone; Sampling Period: Fine turno  
Value: 408 Millimoles per mole Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: ethyl-methyl-ketone; Sampling Period: Fine turno  
Value: 26 mg/g Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: 2-butanone; Sampling Period: Immediately after exposure or after working hours  
Value: 2 mg/L; Medium: Urine  
Remark: TRGS 903 - Biological limit values

Biological Indicator: MEK; Sampling Period: End of shift or A few hours after high exposure  
Value: 5 mg/L; Medium: Urine  
Remark: Occupational exposure limits based on biological monitoring (JSOH).

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Official Mexican Norm NOM-047-SSA1-2011, Environmental Health - Biological exposure indices for work

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: New Zealand. Biological Exposure Indices

Biological Indicator: MEK; Sampling Period: Fine turno

Value: 2 mg/L; Medium: Urine  
Remark: Portuguese Norm 1796 - Biological Exposure Indices

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Romania. Biological limit values

Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: Slovenia. BAT-values

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 26 mg/g Creatinine; Medium: Urine  
Remark: Slovenia. BAT-values

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: MEK; Sampling Period: End of workday  
Value: 2 mg/L; Medium: Urine  
Remark: Occupational Exposure Limits for Chemical Agents in Spain - Biological Exposure Values

Biological Indicator: 2-butanone (MEK); Sampling Period: Immediately after exposure or after working hours  
Value: 2 mg/L; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

Biological Indicator: 2-Butanon (MEK); Sampling Period: Immediately after exposure or after working hours  
Value: 277 micromol per litre; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

Biological Indicator: butan-2-one; Sampling Period: After shift  
Value: 70 micromol per litre; Medium: Urine  
Remark: UK. Biological monitoring guidance values

Biological Indicator: MEK; Sampling Period: Fine turno  
Value: 2 mg/L; Medium: Urine  
Remark: ACGIH - Indicatori di Esposizione Biologica (BEI)

Biological Indicator: MEK; Sampling Period: End of workday  
Value: 2 mg/L; Medium: Urine  
Remark: VE. Biological Exposure Limits

Sampling Period: Fine turno

metanolo  
CAS: 67-56-1

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Argentina. Biological Exposure Indices

Biological Indicator: Methanol; Sampling Period: You can differentiate between pre-and post-shift  
Value: 15 mg/L; Medium: Urine  
Remark: Brazil. NR7. Parameters for Biological Control of Occupational Exposure to Some Chemical Agents

Biological Indicator: Methanol; Sampling Period: Non critico  
Value: 7 mg/g Creatinine; Medium: Urine  
Remark: Chile. Biological Limit Values

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Maximum allowable occupational exposure limits in the workplace - Table 3. Adopted Biological Exposu

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 247 Millimoles per mole Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 7 mg/g Creatinine; Medium: Urine  
Remark: Croatia. Biological Exposure Limits

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Czech Republic. Biological Exposure Indices

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 47 Millimoles per liter; Medium: Urine  
Remark: Czech Republic. Biological Exposure Indices

Biological Indicator: Methanol; Sampling Period: Immediately after exposure or after working hours  
Value: 30 mg/L; Medium: Urine

Remark: TRGS 903 - Biological limit values

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 20 mg/L; Medium: Urine  
Remark: Occupational exposure limits based on biological monitoring (JSOH).

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Formic acid; Sampling Period: Before shift at end of workweek  
Value: 80 mg/g Creatinine; Medium: Urine  
Remark: Kenya. Occupational Safety and Health Act (CAP.514), Schedule I, Table 3 Biological Exposure Limits

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Official Mexican Norm NOM-047-SSA1-2011, Environmental Health - Biological exposure indices for work

Biological Indicator: Methyl alcohol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: New Zealand. Biological Exposure Indices

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: Portuguese Norm 1796 - Biological Exposure Indices

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 6 mg/L; Medium: Urine  
Remark: Romania. Biological limit values

Biological Indicator: Methanol; Sampling Period: In case of long-term exposure: after more than one shift  
Value: 30 mg/L; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 938 micromol per litre; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Biological Indicator: Methanol; Sampling Period: In case of long-term exposure: after more than one shift  
Value: 20 mg/g Creatinine; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 707 micromoles per millimole creatinine; Medium: Urine  
Remark: Slovakia. Biological Limit Values

Biological Indicator: Methanol; Sampling Period: during long-term exposure: at the end of the work shift after several consecutive workdays  
Value: 30 mg/L; Medium: Urine  
Remark: Slovenia. BAT-values

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Formic acid; Sampling Period: Prior to last shift of workweek  
Value: 80 mg/g Creatinine; Medium: Urine  
Remark: South Africa. Hazardous Chemical Substances Regulations, Biological Exposure Indices.

Biological Indicator: Methanol; Sampling Period: End of workday  
Value: 15 mg/L; Medium: Urine  
Remark: Occupational Exposure Limits for Chemical Agents in Spain - Biological Exposure Values

Biological Indicator: Methanol; Sampling Period: Immediately after exposure or after working hours  
Value: 30 mg/L; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

Biological Indicator: Methanol; Sampling Period: In case of long-term exposure: after more than one shift  
Value: 936 micromol per litre; Medium: Urine  
Remark: Svizzera. Lista di valori BAT

Biological Indicator: Methanol; Sampling Period: Fine turno  
Value: 15 mg/L; Medium: Urine  
Remark: ACGIH - Indicatori di Esposizione Biologica (BEI)

Biological Indicator: Methanol; Sampling Period: End of workday  
Value: 15 mg/L; Medium: Urine

Remark: VE.Biological Exposure Limits

Sampling Period: Immediately after exposure or after working hours

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: Fine turno

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: Fine turno

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: Fine turno

Sampling Period: In case of long-term exposure: after more than one shift

Sampling Period: End of last day of the working day (recommended to avoid the first day of the week)

### Predicted No Effect Concentration (PNEC) values

stirene  
CAS: 100-42-5

Exposure Route: Fresh Water; PNEC Limit: 0.028 mg/l

Exposure Route: Marine water; PNEC Limit: 0.014 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 0.614 mg/kg

Exposure Route: Marine water sediments; PNEC Limit: 0.307 mg/kg

Exposure Route: Soil; PNEC Limit: 0.2 mg/kg

Exposure Route: Microorganisms in sewage treatments; PNEC Limit: 5 mg/l

diossido di titanio  
CAS: 13463-67-7

Exposure Route: Fresh Water; PNEC Limit: 1 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 1000 mg/kg

Exposure Route: Marine water; PNEC Limit: 0.127 mg/l

Exposure Route: Marine water sediments; PNEC Limit: 100 mg/kg

Exposure Route: Soil; PNEC Limit: 100 mg/kg

diisobutirrato di 1-  
isopropil-2,2-  
dimetiltrimetilene  
CAS: 6846-50-0

Exposure Route: Fresh Water; PNEC Limit: 0.014 mg/l

Exposure Route: Marine water; PNEC Limit: 0.0014 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 3 mg/l

Exposure Route: Soil; PNEC Limit: 0.926 mg/kg

Exposure Route: Oral; PNEC Limit: 1000 mg/kg

butanone  
CAS: 78-93-3

Exposure Route: Fresh Water; PNEC Limit: 55.8 mg/l

Exposure Route: Marine water; PNEC Limit: 55.8 mg/l

Exposure Route: Freshwater sediments; PNEC Limit: 284.74 mg/kg

Exposure Route: Marine water sediments; PNEC Limit: 284 mg/kg

Exposure Route: Soil; PNEC Limit: 22.5 mg/kg

### Derived No Effect Level (DNEL) values

stirene  
CAS: 100-42-5

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 406 mg/kg

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 85 mg/m<sup>3</sup>

Exposure Route: Human Inhalation; Exposure Frequency: Short Term, systemic effects  
Worker Professional: 289 mg/m<sup>3</sup>

Exposure Route: Human Inhalation; Exposure Frequency: Short Term (acute)  
Worker Professional: 306 mg/m<sup>3</sup>

Exposure Route: Oral; Exposure Frequency: Long Term, systemic effects  
Consumer: 2.1 mg/kg

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects  
Consumer: 343 mg/kg

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects  
Consumer: 10 mg/m<sup>3</sup>

Exposure Route: Human Inhalation; Exposure Frequency: Short Term, systemic effects

Consumer: 174.25 mg/m<sup>3</sup>

Exposure Route: Human Inhalation; Exposure Frequency: Short Term (acute)  
Consumer: 182.75 mg/m<sup>3</sup>

diossido di titanio  
CAS: 13463-67-7

Exposure Route: Human Inhalation; Exposure Frequency: Local Effects  
Worker Professional: 10 mg/m<sup>3</sup>

Exposure Route: Human Oral; Exposure Frequency: Specific Effects  
Consumer: 700 ppm

diisobutirrato di 1-  
isopropil-2,2-  
dimetiltrimetilene  
CAS: 6846-50-0

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 5 mg/kg

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 17.62 mg/m<sup>3</sup>

Exposure Route: Human Oral; Exposure Frequency: Long Term, systemic effects  
Consumer: 5 mg/kg

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects  
Consumer: 4.35 mg/m<sup>3</sup>

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects  
Consumer: 5 mg/kg

butanone  
CAS: 78-93-3

Exposure Route: Human Dermal; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 1161 mg/kg; Consumer: 412 mg/kg

Exposure Route: Human Inhalation; Exposure Frequency: Long Term, systemic effects  
Worker Professional: 600 mg/m<sup>3</sup>; Consumer: 106 mg/m<sup>3</sup>

Exposure Route: Human Oral; Exposure Frequency: Long Term, systemic effects  
Consumer: 31 mg/kg

## Technical measures to prevent exposure

metanolo: ei

### 8.2. Exposure controls

Eye protection:

Use close fitting safety goggles, don't use eye lens.

Protection for skin:

Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:

Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection:

Use respiratory protection where ventilation is insufficient or exposure is prolonged.

Thermal Hazards:

N.A.

Environmental exposure controls:

N.A.

Hygienic and Technical measures

N.A.

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## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state: Liquid

Colour: grey

Odour: N.A.

pH: Not Relevant

Kinematic viscosity: > 20,5 mm<sup>2</sup>/sec (40 °C)

Melting point/freezing point: N.A.

Boiling point or initial boiling point and boiling range: N.A.

Flash point: 16.5 °C (61.7 °F)

Lower and upper explosion limit: N.A.

Relative vapour density: N.A.

Vapour pressure: N.A.

Density and/or relative density: 1.50 g/cm<sup>3</sup>

Solubility in water: N.A.

Solubility in oil: N.A.  
Partition coefficient n-octanol/water (log value): N.A.  
Auto-ignition temperature: N.A.  
Decomposition temperature: N.A.  
Flammability: The product is classified Flam. Liq. 2 H225  
Kinematic viscosity m<sup>2</sup>/s (40°C) > 20,5 mm<sup>2</sup>/sec (40 °C)  
Viscosity: = 20.00 s - Method: ISO/DIN 2431 84 - Sezione: 6.00 mm

**Particle characteristics:**

Particle size: N.A.  
Nanoforms: See Nanoform information in Section 3.

**9.2. Other information**

Evaporation rate: N.A.  
Miscibility: N.A.  
Conductivity: N.A.  
No other relevant information

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**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Stable under normal conditions

**10.2. Chemical stability**

Data not available.

**10.3. Possibility of hazardous reactions**

None.

**10.4. Conditions to avoid**

Stable under normal conditions.

**10.5. Incompatible materials**

Avoid contact with combustible materials. The product could catch fire.

**10.6. Hazardous decomposition products**

None.

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**SECTION 11: Toxicological information**

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

**Toxicological Information of the Preparation**

a) acute toxicity	Not classified Based on available data, the classification criteria are not met ATEmix - Inhalation (Vapours) : 54.4891 mg/l
b) skin corrosion/irritation	The product is classified: Skin Irrit. 2(H315)
c) serious eye damage/irritation	The product is classified: Eye Irrit. 2(H319)
d) respiratory or skin sensitisation	The product is classified: Skin Sens. 1A(H317)
e) germ cell mutagenicity	Not classified Based on available data, the classification criteria are not met
f) carcinogenicity	Not classified Based on available data, the classification criteria are not met
g) reproductive toxicity	The product is classified: Repr. 2(H361)
h) STOT-single exposure	The product is classified: STOT SE 3(H335)
i) STOT-repeated exposure	The product is classified: STOT RE 1(H372)
j) aspiration hazard	Not classified Based on available data, the classification criteria are not met

**Toxicological information on main components of the mixture:**

stirene	a) acute toxicity	LD50 Oral Ratto = 5000 mg/kg LC50 Inhalation Ratto = 11.8 mg/l 4h LD50 Skin Ratto > 2000 mg/kg	OECD Test Guideline 402
talco (Mg <sub>3</sub> H <sub>2</sub> (SiO <sub>3</sub> ) <sub>4</sub> )	a) acute toxicity	LD50 Oral > 5000 mg/kg bw	
diossido di titanio	a) acute toxicity	LD50 Oral Ratto > 5000 mg/kg LD50 Skin Coniglio > 5000 mg/kg	



acetato di etile	a) acute toxicity	LD50 Oral Ratto = 5620 mg/kg LC50 Inhalation Ratto = 56 mg/l 4h LD50 Skin Coniglio > 18000 mg/kg
butanone	a) acute toxicity	LC50 Inhalation Ratto > 5000 mg/l LD50 Oral Ratto = 2054 mg/kg
nerofumo	a) acute toxicity	LD50 Oral Ratto > 8000 mg/kg

## 11.2. Information on other hazards

### Endocrine disrupting properties:

La sostanza/miscela non contiene componenti considerati aventi proprietà di interferenza endocrina ai sensi dell'articolo 57(f) del REACH o del regolamento delegato (UE) 2017/2100 della Commissione o del regolamento (UE) 2018/605 della Commissione a livelli dello 0,1% o superiori.

## SECTION 12: Ecological information

### 12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Eco-Toxicological Information:

#### List of Eco-Toxicological properties of the product

Not classified for environmental hazards.

No data available for the product

#### List of Eco-Toxicological properties of the components

##### Component

##### Ident. Numb. Ecotox Data

stirene	CAS: 100-42-5 - EINECS: 202- 851-5 - INDEX: 601-026-00-0	a) Tossicità acquatica acuta : LC50 Fish Pimephales promelas (fathead minnow) = 4.02 mg/L 96 H
		a) Tossicità acquatica acuta : EC50 Invertebrates Daphnia magna (Water flea) = 4.7 mg/L 48 H
		e) Tossicità per le piante : EC10 Algae Pseudokirchneriella subcapitata (microalgae) = 0.28 mg/L 96 H
		b) Tossicità acquatica cronica : NOEC Invertebrates Daphnia magna (Water flea) = 1.01 mg/L 21 D
		e) Tossicità per le piante : EC50 Algae Pseudokirchneriella subcapitata (microalgae) = 4.9 mg/L 72 H
diossido di titanio	CAS: 13463-67- 7 - EINECS: 236-675-5 - INDEX: 022- 006-00-2	a) Tossicità acquatica acuta : LC50 Fish > 100 mg/L 96h
		a) Tossicità acquatica acuta : EC50 Daphnia > 100 mg/L 48h
acetato di etile	CAS: 141-78-6 - EINECS: 205- 500-4 - INDEX: 607-022-00-5	a) Tossicità acquatica acuta : LC50 Fish = 230 mg/L 96 H
		a) Tossicità acquatica acuta : EC50 Invertebrates Daphnia (water flea) > 2500 mg/L 24 H
		e) Tossicità per le piante : EC50 Algae > 100 mg/L 72 H
butanone	CAS: 78-93-3 - EINECS: 201- 159-0 - INDEX: 606-002-00-3	a) Tossicità acquatica acuta : LC50 Fish pimephales promelas = 2993 mg/L 96h OECD 203
		a) Tossicità acquatica acuta : EC50 Invertebrates daphnia magna = 308 mg/L 48h OECD 202

nerofumo CAS: 1333-86-4 - EINECS: 215-609-9

a) Tossicità acquatica acuta : EC50 Algae Pseudokirchneriella subcapitata = 2029 mg/L 96h OECD 201

a) Tossicità acquatica acuta : LC10 Fish Brachydanio rerio (zebrafish) = 1000 mg/L 96h

a) Tossicità acquatica acuta : EC50 Invertebrates Daphnia magna (Water flea) > 5600 mg/L 48h

a) Tossicità acquatica acuta : EC50 Algae Desmodesmus subspicatus (green algae) > 10000 mg/L 72h

## 12.2. Persistence and degradability

N.A.

## 12.3. Bioaccumulative potential

N.A.

## 12.4. Mobility in soil

N.A.

## 12.5. Results of PBT and vPvB assessment

No PBT or vPvB substances present in concentration  $\geq 0.1\%$

## 12.6. Endocrine disrupting properties

La sostanza/miscela non contiene componenti considerati aventi proprietà di interferenza endocrina ai sensi dell'articolo 57(f) del REACH o del regolamento delegato (UE) 2017/2100 della Commissione o del regolamento (UE) 2018/605 della Commissione a livelli dello 0,1% o superiori.

## 12.7. Other adverse effects

N.A.

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## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

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## SECTION 14: Transport information

### 14.1. UN number or ID number

1263

### 14.2. UN proper shipping name

ADR-Shipping Name: PAINT

IATA-Technical name: PAINT

IMDG-Technical name: PAINT

### 14.3. Transport hazard class(es)

ADR-Class: 3

IATA-Class: 3

IMDG-Class: 3

### 14.4. Packing group

ADR-Packing Group: II

IATA-Packing group: II

IMDG-Packing group: II

### 14.5. Environmental hazards

Marine pollutant: No

Environmental Pollutant: No

IMDG-EMS: F-E, S-E

### 14.6. Special precautions for user

Road and Rail (ADR-RID):

ADR-Label: 3

ADR - Hazard identification number: 33

ADR-Special Provisions: 163 367 640D 650

ADR-Transport category (Tunnel restriction code): 2 (D/E)

**Air (IATA):**

IATA-Passenger Aircraft: 353  
IATA-Cargo Aircraft: 364  
IATA-Label: 3  
IATA-Subsidiary hazards: -  
IATA-Erg: 3L  
IATA-Special Provisions: A3 A72 A192

**Sea (IMDG):**

IMDG-Stowage Code: Category B  
IMDG-Stowage Note: -  
IMDG-Subsidiary hazards: -  
IMDG-Special Provisions: 163 367

**14.7. Maritime transport in bulk according to IMO instruments**

N.A.

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**SECTION 15: Regulatory information**

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

Dir. 98/24/EC (Risks related to chemical agents at work)  
Dir. 2000/39/EC (Occupational exposure limit values)  
Regulation (EC) n. 1907/2006 (REACH)  
Regulation (EC) n. 1272/2008 (CLP)  
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013  
Regulation (EU) n. 286/2011 (ATP 2 CLP)  
Regulation (EU) n. 618/2012 (ATP 3 CLP)  
Regulation (EU) n. 487/2013 (ATP 4 CLP)  
Regulation (EU) n. 944/2013 (ATP 5 CLP)  
Regulation (EU) n. 605/2014 (ATP 6 CLP)  
Regulation (EU) n. 2015/1221 (ATP 7 CLP)  
Regulation (EU) n. 2016/918 (ATP 8 CLP)  
Regulation (EU) n. 2016/1179 (ATP 9 CLP)  
Regulation (EU) n. 2017/776 (ATP 10 CLP)  
Regulation (EU) n. 2018/669 (ATP 11 CLP)  
Regulation (EU) n. 2018/1480 (ATP 13 CLP)  
Regulation (EU) n. 2019/521 (ATP 12 CLP)  
Regulation (EU) n. 2020/217 (ATP 14 CLP)  
Regulation (EU) n. 2020/1182 (ATP 15 CLP)  
Regulation (EU) n. 2021/643 (ATP 16 CLP)  
Regolamento (UE) n. 2021/849 (ATP 17 CLP)  
Regolamento (UE) n. 2022/692 (ATP 18 CLP)  
Regulation (EU) n. 2020/878

**Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:**

Restrictions related to the product: 3, 40  
Restrictions related to the substances contained: 28, 29, 69, 75

**Provisions related to directive EU 2012/18 (Seveso III):**

<b>Seveso III category according to Annex 1, part 1</b>	<b>Lower-tier threshold (tonnes)</b>	<b>Upper-tier threshold (tonnes)</b>
Product belongs to category: P5c	5000	50000

**Regulation (EU) No 649/2012 (PIC regulation)**

No substances listed

**German Water Hazard Class.**

2: significativamente inquinante per le acque

**Lagerklasse according to TRGS 510:**

LGK 3

**SVHC Substances:**

NOSVHCCOMPS

**Dir. 2010/75/CE (Direttiva COV)**

Volatile Organic compounds - VOCs = 26.46 %

Volatile Organic compounds - VOCs = 396.90 g/L

Estimated Total Content of Water 0.00 %

Estimated Total Solid Content 73.54 %

### Classificazione in accordo con VbF

Classificazione in accordo con VbF A I - Punto di infiammabilità inferiore a 21 °C, non mescolabile in acqua a 15 °C

### Mal-Code (Denmark)

Mal-Code (Denmark)	Mal Factor	Unit of Measure	Revision Status / Number	Regulatory Base
4 - 6	3164	m3 air/10 g	1993	Administrative determined MAL-Factors

### Biocidi

REGOLAMENTO (CE) N. 528/2012

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture.

## SECTION 16: Other information

Code	Description
EUH066	Repeated exposure may cause skin dryness or cracking.
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H361d	Suspected of damaging the unborn child.
H370	Causes damage to organs.
H372	Causes damage to organs through prolonged or repeated exposure.
H372	Causes damage to organs (hearing organs) through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Code	Hazard class and hazard category	Description
2.6/2	Flam. Liq. 2	Flammable liquid, Category 2
2.6/3	Flam. Liq. 3	Flammable liquid, Category 3
3.1/3/Dermal	Acute Tox. 3	Acute toxicity (dermal), Category 3
3.1/3/Inhal	Acute Tox. 3	Acute toxicity (inhalation), Category 3
3.1/3/Oral	Acute Tox. 3	Acute toxicity (oral), Category 3
3.1/4/Inhal	Acute Tox. 4	Acute toxicity (inhalation), Category 4
3.1/4/Oral	Acute Tox. 4	Acute toxicity (oral), Category 4
3.10/1	Asp. Tox. 1	Aspiration hazard, Category 1
3.2/2	Skin Irrit. 2	Skin irritation, Category 2
3.3/2	Eye Irrit. 2	Eye irritation, Category 2
3.4.2/1	Skin Sens. 1	Skin Sensitisation, Category 1
3.4.2/1A	Skin Sens. 1A	Skin Sensitisation, Category 1A
3.7/2	Repr. 2	Reproductive toxicity, Category 2
3.8/1	STOT SE 1	Specific target organ toxicity — single exposure, Category 1
3.8/3	STOT SE 3	Specific target organ toxicity — single exposure, Category 3
3.9/1	STOT RE 1	Specific target organ toxicity — repeated exposure, Category 1

**Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:****Classification according to Regulation (EC) Nr. 1272/2008**

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Flam. Liq. 2, H225	On basis of test data
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Skin Sens. 1A, H317	Calculation method
Repr. 2, H361d	Calculation method
STOT SE 3, H335	Calculation method
STOT RE 1, H372	Calculation method

This document was prepared by a competent person who has received appropriate training.

## Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

## Legend to abbreviations and acronyms used in the safety data sheet:

ACGIH: American Conference of Governmental Industrial Hygienists

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ATE: Acute Toxicity Estimate

ATEmix: Acute toxicity Estimate (Mixtures)

BCF: Biological Concentration Factor

BEI: Biological Exposure Index

BOD: Biochemical Oxygen Demand

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CAV: Poison Center

CE: European Community

CLP: Classification, Labeling, Packaging.

CMR: Carcinogenic, Mutagenic and Reprotoxic

COD: Chemical Oxygen Demand

COV: Volatile Organic Compound

CSA: Chemical Safety Assessment

CSR: Chemical Safety Report

DMEL: Derived Minimal Effect Level

DNEL: Derived No Effect Level.

DPD: Dangerous Preparations Directive

DSD: Dangerous Substances Directive

EC50: Half Maximal Effective Concentration

ECHA: European Chemicals Agency

EINECS: European Inventory of Existing Commercial Chemical Substances.

ES: Exposure Scenario

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

IC50: half maximal inhibitory concentration

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).

IMDG: International Maritime Code for Dangerous Goods.

INCI: International Nomenclature of Cosmetic Ingredients.

IRCCS: Scientific Institute for Research, Hospitalization and Health Care

KAFH: KAFH

KSt: Explosion coefficient.

LC50: Lethal concentration, for 50 percent of test population.

LD50: Lethal dose, for 50 percent of test population.

LDLo: Leathal Dose Low

N.A.: Not Applicable

N/A: Not Applicable

N/D: Not defined/ Not available

NA: Not available

NIOSH: National Institute for Occupational Safety and Health

NOAEL: No Observed Adverse Effect Level

OSHA: Occupational Safety and Health Administration

PBT: Persistent, Bioaccumulative and Toxic

PGK: Packaging Instruction

PNEC: Predicted No Effect Concentration.

PSG: Passengers

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.

STEL: Short Term Exposure limit.

STOT: Specific Target Organ Toxicity.

TLV: Threshold Limiting Value.

TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).

vPvB: Very Persistent, Very Bioaccumulative.

WGK: German Water Hazard Class.

**Paragraphs modified from the previous revision:**

- SECTION 14: Transport information