

## EC Material Safety Data Sheet according to directives 93/12/EEC and 2001/58/EC

---

### 1. Product and company name

1.1 Trade name: TPKE-GB 010

1.2 Company: REA Elektronik GmbH  
Teichwiesenstr. 1  
D-64367 Mühlthal-waschenbach  
Phone: +49 6154/638-0 Fax: +49 6154/638-191

**Emergency telephone:** Medizinische Klinik  
Grafenstr. 9  
D-64276 Darmstadt  
Phone: +49 6151/107-6420

---

### 2. Composition / Data of constituents

#### 2.1 Chemical characterization:

Mixture of polar organic solvents, dye, binding agents and auxiliaries

#### 2.2 Hazardous ingredients:

Substance identity	EC Nr.:	CAS Nr.:	Content %:	Symbol:	R phrases:
2-Butanone	201-159-0	78-93-3	> 75	F, Xi	11,36,66,67
N-Methyl-2-pyrrolidone	212-828-1	872-50-4	< 3	Xi	36/38
2-Propanol	200-661-7	67-63-0	< 6	F, Xi	11,36,67
Nitrocellulose	n.d.a.	9004-70-0	< 9	F	11
Nitrogen content < 12.6 %					
Titan dioxide	n.d.a.	13463-67-7	< 4	None	None

---

### 3. Hazardous identification

#### Special hazard information with regard to health and environment:

Highly flammable liquid. Irritating to eyes.  
Repeated exposure may cause skin dryness or cracking.  
Vapours may cause drowsiness and dizziness.

#### Possible noticeable symptoms on humans:

##### 2-Butanone:

Irritating to eyes and respiratory system. Degreasing properties for the skin.  
Can cause dizziness, headache and perceptive trouble.  
Can cause depression of the central nervous system.

##### N-Methyl-2-pyrrolidone:

Irritating to skin. Risk of absorption through the skin. Long-lasting contact with the skin can lead to dermatitis.  
Contact with the eyes may cause irreversible damages and even lead to a loss of sight.  
Swallowing can cause stomach trouble, indisposition, diarrhoea and vomiting.

##### 2-Propanol:

Irritating to eyes. Vapours may cause drowsiness and daze. Degreasing properties for the skin, which may lead to a secondary inflammation. If swallowed may lead to a risk of aspiration. If the product reaches the lungs it may lead to symptoms similar to a pneumonia.

---

#### **4. First aid measures**

**General advice:**

Take off immediately all contaminated clothing. If there is a risk that casualty is losing consciousness, lay him and move him safely on his side.

**Inhalation:**

Move casualty to fresh air. If there is respiratory distress, give oxygen and seek medical attention.

**Skin contact:**

Wash affected area with soap and copious amounts of water.

**Eye contact:**

If available, remove contact lenses. Rinse immediately with copious amounts of water (at least 15 minutes long). Seek medical attention.

**Swallowing:**

Have the casualty take a rest. Seek immediately medical attention.

Have the casualty drink some water (200 ml). Do not induce vomiting. NO MILK, NO CASTOR OIL.

The doctor will have to decide which measures are to be taken.

---

#### **5. Fire fighting measures**

The vapours of the solvents contained in the mixture are heavier than air and collect on the ground.

The product is inflammable. Contact with the air may lead to explosive mixtures.

The product is by part miscible in water.

##### **5.1 Extinguishing media:**

Convenient extinguishing media are: Alcohol-resistant foam, carbon dioxide, dry powder, water fog and water spray.

Do NOT use: Water jet

##### **5.2 Hazards due to gas formation and / or decomposition products:**

A fire can generate the following gases: Carbon oxide, nitrogen oxide and other by part irritating combustion vapours.

##### **5.3 Special protective equipment during fire fighting:**

Wear self-contained breathing apparatus with pressure equipment as well complete protective clothing.

Prevent water used for fire fighting from entering sewers or ground water.

---

#### **6. Accidental release measures**

**Personal protection:**

Avoid sources of ignition. Do not smoke. Do not breathe in vapours/aerosol. Avoid contact with the eyes and the skin. Wear appropriate protective gloves (Latex, Vinyl, Nitril are only resistant to a limited extent. Butyl rubber is resistant). Wear safety glasses/goggles. If no exhauster available, wear breathing filter (Class A brown).

**Environmental protection:**

Prevent vapours from developing by covering with damp cloth. Do not allow to enter sewers, basement or ground water. In case of emergency stem by using appropriate measures. Keep away from sources of ignition. Do not smoke.

**After spillage/leakage:**

Absorb spills with non-combustible, liquid-binding material (such as sand, silica gel, multi-purpose binding agent, Oil-Dry®, Dresser-Dri®). Clean with water. Dispose of product and of all cloth and cleaning agents contaminated by the product according to regulations mentioned in Section 13.

**Further information:**

Product is highly flammable and by part miscible with water.

---

## 7. Handling and storage

### 7.1 Handling:

Usual precautionary measures when handling chemicals are to be taken.  
Wear appropriate gloves and eye protection. Open and handle container with care.  
Air thoroughly and if necessary care for exhauster or breathing filter (Class A brown).  
Do not smoke, eat or drink at work. Take measures against static discharges.  
Preventive skin protection is recommended.  
Wash hands with soap and copious amounts of water at the end of work.

### 7.2 Storage conditions:

Store product in a cool, approved area and keep it in its original container, tightly closed.  
Air thoroughly. Keep away from sources of ignition and from fire-activating materials.  
Protect against strong heating and sunshine. Recommended storage temperature: +15°C-25°C

## 8. Exposure controls/Personal protection

### 8.1 Occupational exposure limits:

#### MAC values TRGS 900 (Maximum Admissible Concentration Germany)

CAS Nr.:	Ingredient:	Rule:	Value:	Unit:	Value:	Unit:
78-93-3	2-Butanone	MAC	200	ml/m <sup>3</sup>	600	mg/m <sup>3</sup>
872-50-4	N-Methyl-2-Pyrrolidone	MAC	19	ml/m <sup>3</sup>	80	mg/m <sup>3</sup>
67-63-0	2-Propanol	MAC	200	ml/m <sup>3</sup>	500	mg/m <sup>3</sup>
13463-67-7	Titan dioxide	MAC	n.d.a.	ml/m <sup>3</sup>	3	mg/m <sup>3</sup>

#### BAT values TRGS 903 (Biological Workplace Tolerance Limit Germany)

CAS Nr.:	Ingredient:	BAT value:	Parameter:	Test material:	Test extraction time:
78-93-3	2-Butanone	5 mg/l	2-Butanone	Urine	End of shift
872-50-4	N-Methyl-2-Pyrrolidone	none	none	none	none
67-63-0	2-Propanol	50 mg/l	Acetone	Blood	End of shift
13463-67-7	Titan dioxide	none	none	none	none

### 8.2 Personal protective equipment:

Protective means must be selected according to work-specific conditions and to the concentration of hazardous ingredients. The resistance of the protective means to chemicals should be evaluated with the respective supplier.

#### Respiratory protection:

If no exhauster available, wear breathing filter Class A (brown) Organic vapours

#### Protective gloves:

Wear impermeable protective gloves (Butyl rubber). Latex gloves are only resistant to a limited extent.  
Preventive skin protection.

#### Eye protection:

Wear safety glasses/goggles with sideshields.

#### Protective clothing:

Wear long-sleeved, antistatic, hardly inflammable working clothes.

#### Hygiene measures:

Keep away from food, drink and animal feedingstuffs. Wash hands when making a break and at the end of work. Do not eat, drink or smoke at work.

**Never clean skin or clothes with solvents!**

## 9. Physical and chemical properties

<b>Form:</b>	liquid	
<b>Colour:</b>	yellow	
<b>Odour:</b>	characteristic	
<b>Boiling point:</b>	79 °C - 110 °C	
<b>Melting point:</b>	n.a.	
<b>Flash point:</b>	- 4 °C	
<b>Autoignition point:</b>	505 °C	Literature value for 2-Butanone
<b>Explosive limits:</b>	lower: 1.8 % upper: 11.5 %	Literature value for 2-Butanone
<b>Vapour pressure:</b>	101 mbar / 20 °C	Literature value for 2-Butanone
<b>Vapour density:</b>	> 1 (air = 1)	
<b>pH value:</b>	5 - 7	
<b>Density:</b>	0,887 - 0,897 g/ml	
<b>Bulk density:</b>	not applicable due to liquid physical condition	
<b>Viscosity:</b>	4,4 - 4,9 mPas	
<b>Solubility in water:</b>	Miscible by part, approx. 250 g/Litre	
<b>Miscible in:</b>	Miscible with most of organic solvents	
<b>Solvent content:</b>	84 %	

## 10. Stability and reactivity

<b>Stability:</b>	The product is stable.
<b>Conditions to avoid:</b>	Strong heat (> 45°C) and/or sunshine
<b>Substances to avoid:</b>	Strong acids and alkaline solutions, oxidizing and reducing substances
<b>Hazardous reactions:</b>	With acids, alkaline solutions, oxidizing and reducing substances.
<b>Hazardous decomposition:</b>	Carbon oxide, nitrogen oxide

## 11. Toxicological information

	2-Butanone	N-Methyl-2-Pyrrolidone	2-Propanol	Titan dioxide	Unit
<b>Acute toxicity:</b>					
<b>LD<sub>50</sub>: Acute/oral/rat:</b>	2737-3300	3598	4396-5500	10000	mg/kg
<b>LD<sub>50</sub>: Acute/dermal/rabbit:</b>	3000-6480	8000	12800	n.d.a.	mg/kg
<b>LC<sub>50</sub>: Inhalation/rat:</b>	10000	3.1-8.8	46.5	n.d.a.	mg/Litre/4h

Repeated or prolonged contact with the skin may cause skin eruptions and dermatitis. Degreasing effect.  
Critical amounts can be taken up due to absorption through the skin.  
Inhalation causes headache, daze, drowsiness and perceptible trouble.  
Eye contact can cause strong irritation and oedema of the cornea.  
Can cause liver, kidney and central nervous system injuries.  
If breathed in when swallowed or vomited out, may cause severe lung injuries.

## 12 Ecological information

### Water pollution hazards Class 1 (Germany)

Toxicity	2-Butanone	N-Methyl-2-pyrrolidone	2-Propanol	Titan dioxide
Fish toxicity: (Leuciscus idus)	LC <sub>50</sub> : 4600 mg / litre	LC <sub>50</sub> : 4600 mg / litre after 96h	LC <sub>50</sub> : 9640 g / litre after 96h	LC <sub>0</sub> : >1000 g / litre
Bacteria toxicity: (Ps. Putida)	EC <sub>50</sub> : 1050 mg / litre	EC <sub>50</sub> : >9000 mg / litre after 48h	EC <sub>5</sub> : 1050 mg / litre after 16h	n.d.a.
Aquatic organisms	LC <sub>50</sub> : >1000 mg / litre after 96h	n.d.a.	n.d.a.	n.d.a.
Daphnia toxicity: (Daphnia magna)	EC <sub>50</sub> : 7060 mg / litre	EC <sub>50</sub> : 4897 mg / litre after 48h	EC <sub>50</sub> : 13299 mg / litre after 48h	n.d.a.

Do not allow to enter sewers or waterways.

No environmental problems are to be expected if the product is handled under normal conditions of anticipated use.

## 13 Disposal information

Consult local authorities for approved method of disposal.

**European waste code:** 070604

**Uncleaned packings:** Waste disposal as per local regulations.

## 14 Transport regulations

### 14.1 Road transport: ADR/RID and GGVS/GGVE:

ADR/RID and GGVS/GGVE class: 3  
Warning label: 3  
Warning No.: 33  
Packing group: II  
UN Number: 1263  
Classification code: F 1  
Proper shipping name: Paint UN 1263, dye accessories  
Maximum weight: 333 Litres

### 14.2 Sea transport: IMDG/GGVSee:

IMDG/GGVSee class: 3.2  
UN Number: 1263  
MFAG: 310/313  
Label: 3  
Packing group: II  
EmS Number: "F-E,S-E"  
Marine pollutant: N  
Proper shipping name: Paint UN 1263, dye accessories

### 14.3 Air transport: ICAO-TI and IATA-DGR:

ICAO/IATA class: 3  
UN/ID Number: 1263  
Label: 3  
Packing group: II  
Proper shipping name: Paint UN 1263, dye accessories  
Packing regulations air liner: 305/ Y 305  
Max. net/box: 305/ 5 Litres Y305/1 Litre  
Packing regulations freight plane: 307  
Max. net/box: 60 Litres

The transport regulations are cited according to international regulations and in the form applicable in Germany (GGVS/GGVE). Possible national deviations in other countries are not considered.

n.a. = Not applicable

n.d.a. = No data available

## **15. Regulations**

### **Labelling according to EC guideline 1999/45/EEC and to TRGS200:**

The product is classified and labelled according to EC guidelines.

#### **Warning symbol:**

**F** Highly flammable  
**Xi** Irritating

**R phrases:** R 11 Highly flammable  
R 36 Irritating to eyes  
R 66 Repeated exposure may cause skin dryness or cracking  
R 67 Vapours may cause drowsiness and dizziness

**S phrases:** S 9 Keep container in a well ventilated place  
S 16 Keep away from sources of ignition - No smoking  
**Recommendation:** S 33 Take precautionary measures against static discharges

#### **German regulations:**

Water pollutant class: 1 "Slightly hazardous in the aquatic environment"  
Regulation concerning flammable liquids: A 1  
Storage class VCI: 3 A  
Local regulations on chemical accidents: 26, 2, 7b

#### **Other national regulations:**

Swiss toxic class: 5

---

## **16. Other information**

The data given here are based on current knowledge and experience. The purpose of this safety data sheet is to describe the products in terms of their safety requirements. The data do not signify any warranty with regard to the properties of the product.

**To be used only for industrial purposes of application!**

---