

Safety data sheet according to regulation (CE) n. 1907/2006 (REACH), Annex II, and successive adjustments introduced by Commission Regulation (EU) no. 2015/830

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

1.1. Product identifier

Product name DETERDEK PRO

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

Intended use acid descaler.

Identified Uses	Industrial	Professional	Consumer
Uses	~	*	*
1.3. Details of the supplier of the safety data shee	t		
Name Full address District and Country	FILA INDUSTRIA CHIMICA S Via Garibaldi, 58 35018 San Martino di Lupari ITALIA		
	Tel. +39.049.9467300		
	Fax +39.049.9460753		
e-mail address of the competent person			
responsible for the Safety Data Sheet	sds@filasolutions.com		
1.4. Emergency telephone number For urgent inquiries refer to	TEL +39.049.9467300 (Mond Friday; 8.30 - 12.30 and 14.	•	

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2015/830.

Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

(Wales); IRELAND 018092166

UNITED KINGDOM: NHS Direct 111 (In England, Scotland North Ireland) 08454647

Hazard classification and indication:

Serious eye damage, category 1 H318 Causes serious eye damage. Skin irritation, category 2 H315 Causes skin irritation.

2.2. Label elements



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 2/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Danger

Hazard statements:

H318 Causes serious eye damage. H315 Causes skin irritation.

Precautionary statements:

P102 Keep out of reach of children.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing

P280 Wear protective gloves / eye protection / face protection.
P310 Immediately call a POISON CENTER / doctor / . . .

P101 If medical advice is needed, have product container or label at hand.

P264 Wash hands thoroughly after handling.

Contains: PHOSPHORIC ACID

Alcohols, C12-14, ethoxylates

2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

SECTION 3. Composition/information on ingredients

3.1. Substances

Information not relevant

3.2. Mixtures

Contains:

Identification x = Conc. % Classification 1272/2008 (CLP)

PHOSPHORIC ACID

CAS 7664-38-2 $19 \le x < 24$ Met. Corr. 1 H290, Skin Corr. 1B H314, Eye Dam. 1 H318, Classification note

according to Annex VI to the CLP Regulation: B

EC 231-633-2



Revision nr. 16

Dated 21/03/2019
Printed on 06/06/2019

Page n. 3/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

INDEX 015-011-00-6

Reg. no. 01-2119485924-24

Alcohols, C12-14, ethoxylates

CAS 68439-50-9 1 ≤ x < 2 Acute Tox. 4 H302, Eye Dam. 1 H318, Aquatic Chronic 3 H412

EC

INDEX -

Benzyl acetate

CAS 140-11-4 $0 \le x < 0.02$ Aquatic Chronic 3 H412

EC 205-399-7

INDEX -

Reg. no. 01-2119638272-42

The full wording of hazard (H) phrases is given in section 16 of the sheet.

SECTION 4. First aid measures

4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

SKIN: Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

INGESTION: Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

INHALATION: Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

Specific information on symptoms and effects caused by the product are unknown.

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

Information not available

SECTION 5. Firefighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray. UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE Do not breathe combustion products.

5.3. Advice for firefighters



GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

Storage class TRGS 510 (Germany): 8B

7.3. Specific end use(s)

Information not available

SECTION 8. Exposure controls/personal protection



DETERDEK PRO

Revision nr. 16

Dated 21/03/2019
Printed on 06/06/2019

D---- 5/4.4

Page n. 5/14

Replaced revision:15 (Dated: 20/12/2016)

8.1. Control parameters

Regulatory References:

Česká Republika CZE Nařízení vlády č. 361/2007 Sb. kterým se stanoví podmínky ochrany zdraví při práci TRGS 900 (Fassung 31.1.2018 ber.) - Liste der Arbeitsplatzgrenzwerte und Kurzzeitwerte Graensevaerdier per stoffer og materialer DEU DNK Deutschland Danmark ESP INSHT - Límites de exposición profesional para agentes químicos en España 2017 España HTP-arvot 2012. Haitallisiksi tunnetut pitoisuudet - Sosiaali- ja terveysministeriön julkaisuja 2012:5 JORF n°0109 du 10 mai 2012 page 8773 texte n° 102 FIN Suomi FRA France GBR United Kingdom EH40/2005 Workplace exposure limits ΕΦΗΜΕΡΙΣ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ -ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 19 - 9 Φεβρουαρίου 2012 GRC Ελλάδα HRV HUN NN13/09 - Ministarstvo gospodarstva, rada i poduzetništva 50/2011. (XII. 22.) NGM rendelet a munkahelyek kémiai biztonságáról Hrvatska Magyarország Decreto Legislativo 9 Aprile 2008, n.81 Italia ITA NLD Nederland Databank of the social and Economic Concil of Netherlands (SER) Values, AF 2011:18 Veiledning om Administrative normer for forurensning i arbeidsatmosfære
ROZPORZĄDZENIE MINISTRA RODZIN Y, PRAC Y I POLITYKI SPOŁECZNEJ z dnia 12 czerwca 2018 r NOR Norge POL Polska PRT Portugal Ministério da Economia e do Emprego Consolida as prescrições mínimas em matéria de protecção dos trabalhadores contra os riscos para a segurança e a saúde devido à exposição a agentes químicos no rabalho - Diaro da Republica I 26; 2012-02-06

Monitorul Oficial al României 44; 2012-01-19

NARIADENIE VLÁDY Slovenskej republiky z 20. júna 2007

Uradni list Republike Slovenije 04.06.2015 (1602) - Pravilnik o spremembah in dopolnitvah Pravilnika o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu ROU România SVK Slovensko SVN Slovenija SWE Sverige Occupational Exposure Limit Values, AF 2011:18 KİMYASAL MADDELERLE ÇALIŞMALARDA SAĞLIK VE GÜVENLİK ÖNLEMLERİ HAKKINDA TUR Türkiye YÖNETMELİK - Resmi Gazete Tarihi: 12.08.2013 Resmi Gazete Sayısı: 28733 Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 91/322/EEC. OEL EU EU

TLV-ACGIH ACGIH 2018

PHOSPHORIC ACID	
Threshold Limit Value	

Threshold Limit Y	Country	Country TWA/8h		STEL/15min			
		mg/m3	ppm	mg/m3	ppm		
TLV	CZE	1		2			
AGW	DEU	2		4		INHAL	
MAK	DEU	2		4		INHAL	
TLV	DNK	1					
VLA	ESP	1		2			
HTP	FIN	1		2			
VLEP	FRA	1	0,2	2	0,5		
WEL	GBR	1		2			
TLV	GRC	1		3			
GVI	HRV	1		2			
AK	HUN	1		2			
VLEP	ITA	1		2			
OEL	NLD	1		2			
TLV	NOR	1					
NDS	POL	1		2			
VLE	PRT	1		2			
TLV	ROU	1		2			
NPHV	SVK	1		2			



DETERDEK PRO

Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 6/14

Replaced revision:15 (Dated: 20/12/2016)

MV	SVN	1	2
- AAA16	OME		
MAK	SWE	1	3
	T. 10		
ESD	TUR	1	2
OFI	FIL	-	
OEL	EU	1	2

3

TLV-ACGIH Health - Derived no-effect level - DNEL / DMEL Effects on

	consumers				workers				
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic	
Inhalation			0.73 mg/m3	VND	2 mg/m3	VND	2.92 mg/m3	VND	

Benzyl acetate Threshold Limit Value						
Туре	Country	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
OEL	EU		10			

Legend:

(C) = CEILING; INHAL = Inhalable Fraction; RESP = Respirable Fraction; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

When choosing personal protective equipment, ask your chemical substance supplier for advice.

Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

HAND PROTECTION

Protect hands with category III work gloves (see standard EN 374).

The following should be considered when choosing work glove material: compatibility, degradation, failure time and permeability.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.

SKIN PROTECTION

Wear category II professional long-sleeved overalls and safety footwear (see Directive 89/686/EEC and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

FYF PROTECTION

Wear a hood visor or protective visor combined with airtight goggles (see standard EN 166).

RESPIRATORY PROTECTION

If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, use a mask with a type B filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387). In the presence of gases or vapours of various kinds and/or gases or vapours containing particulate (aerosol sprays, fumes, mists, etc.) combined filters are required.

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 7/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance liquid
Colour transparent

Odour Typical princkly smell with

floral fragrance Not available

Not available

pH 1

Odour threshold

Melting point / freezing point Not available Not available Initial boiling point Not available Boiling range > 60 °C Flash point **Evaporation Rate** Not available Flammability of solids and gases Not available Lower inflammability limit Not available Upper inflammability limit Not available Lower explosive limit Not available Upper explosive limit Not available Vapour pressure Not available Vapour density Not available Relative density Not available soluble in water Solubility Partition coefficient: n-octanol/water Not available Auto-ignition temperature Not available Not available Decomposition temperature Not available Viscosity Not available Explosive properties

9.2. Other information

Oxidising properties

VOC (Directive 2010/75/EC): < 0.01 %

SECTION 10. Stability and reactivity

10.1. Reactivity



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 8/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

There are no particular risks of reaction with other substances in normal conditions of use.

PHOSPHORIC ACID

Decomposes at temperatures above 200°C/392°F.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

PHOSPHORIC ACID

Risk of explosion on contact with: nitromethane. May react dangerously with: alkalis, sodium borohydride.

10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

10.5. Incompatible materials

None.

PHOSPHORIC ACID

Incompatible with: metals, strong alkalis, aldehydes, organic sulphides, peroxides.

10.6. Hazardous decomposition products

Due to thermal decomposition or in case of fire, gases and vapors can be released that are potentially harmful to health.

PHOSPHORIC ACID

May develop: phosphoryl oxides.

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Metabolism, toxicokinetics, mechanism of action and other information

Information not available



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 9/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

LC50 (Inhalation) of the mixture:
Not classified (no significant component)
LD50 (Oral) of the mixture:
>2000 mg/kg
LD50 (Dermal) of the mixture:
Not classified (no significant component)

PHOSPHORIC ACID

LD50 (Oral) 1530 mg/kg Rat

LD50 (Dermal) 2740 mg/kg Rabbit

LC50 (Inhalation) > 0,85 mg/l/1h Rat

SKIN CORROSION / IRRITATION

Causes skin irritation

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class



DETERDEK PRO

Revision nr. 16

Dated 21/03/2019 Printed on 06/06/2019

Page n. 10/14

Replaced revision:15 (Dated: 20/12/2016)

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

SECTION 12. Ecological information

No specific data are available for this product. Handle it according to good working practices. Avoid littering. Do not contaminate soil and waterways. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation. Please take all the proper measures to reduce harmful effects on aquifers.

12.1. Toxicity

PHOSPHORIC ACID

LC50 - for Fish 3,25 mg/l/96h Lepomis macrochirus EC50 - for Crustacea > 100 mg/l/48h Daphnia magna

EC50 - for Algae / Aquatic Plants > 100 mg/l/72h Desmodesmus subspicatus

12.2. Persistence and degradability

PHOSPHORIC ACID

Solubility in water > 850000 mg/l

Degradability: information not available

Alcohols C12-14, ethoxylated

Rapidly degradable

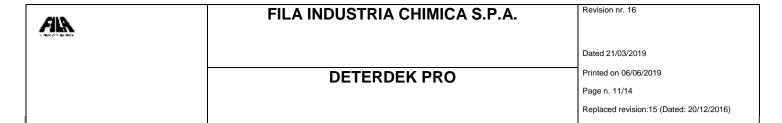
95% 14d

12.3. Bioaccumulative potential

Information not available

12.4. Mobility in soil

Information not available



12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

12.6. Other adverse effects

Information not available

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

SECTION 14. Transport information

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

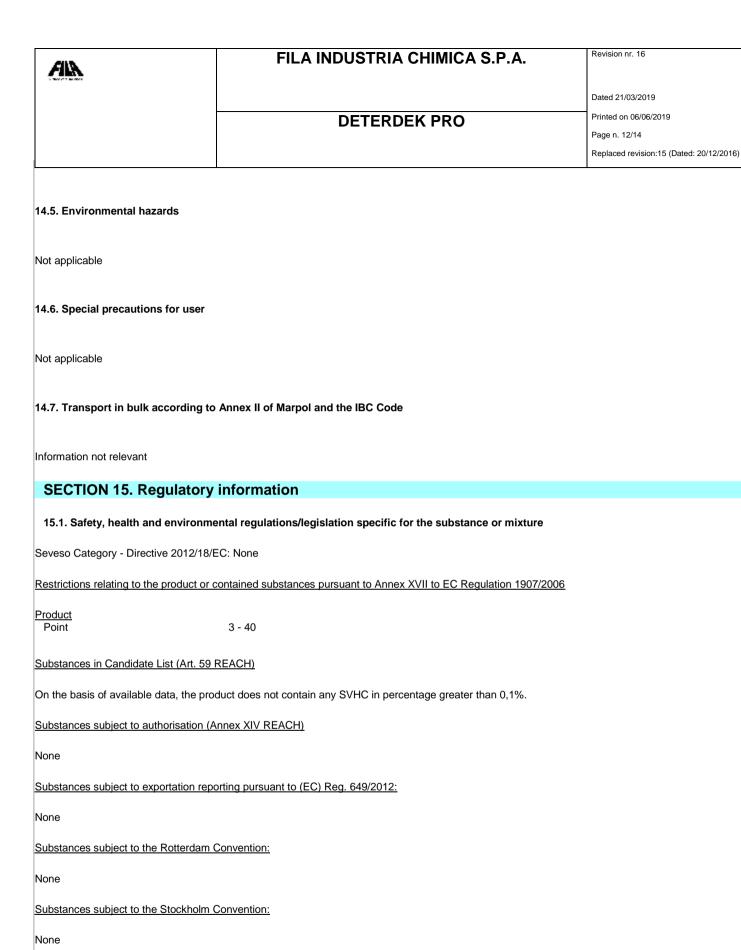
14.1. UN number	
Not applicable	
14.2. UN proper shipping name	
Not applicable	

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable



Healthcare controls



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 13/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

15.2. Chemical safety assessment

A chemical safety assessment has been performed for the following contained substances

PHOSPHORIC ACID

SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Met. Corr. 1 Substance or mixture corrosive to metals, category 1

Acute Tox. 4 Acute toxicity, category 4

Skin Corr. 1B Skin corrosion, category 1B

Eye Dam. 1 Serious eye damage, category 1

Skin Irrit. 2 Skin irritation, category 2

Aquatic Chronic 3 Hazardous to the aquatic environment, chronic toxicity, category 3

H290 May be corrosive to metals.H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H315 Causes skin irritation.

H412 Harmful to aquatic life with long lasting effects.

LEGEND:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value



Revision nr. 16

Dated 21/03/2019

Printed on 06/06/2019

Page n. 14/14

Replaced revision:15 (Dated: 20/12/2016)

DETERDEK PRO

- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY

- 1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
- 2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
- 3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
- 4. Regulation (EU) 2015/830 of the European Parliament
- 5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
- 6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
- Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
- 8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
- 9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
- 10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
- 11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
- 12. Regulation (EU) 2016/1179 (IX Atp. CLP) 13. Regulation (EU) 2017/776 (X Atp. CLP)

- The Merck Index. 10th Edition
- Handling Chemical Safety
- INRS Fiche Toxicologique (toxicological sheet)
- Patty Industrial Hygiene and Toxicology
- N.I. Sax Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals Ministry of Health and ISS (Istituto Superiore di Sanità) Italy

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

Changes to previous review:

The following sections were modified:

01 / 02 / 03 / 04 / 05 / 08 / 10 / 11 / 15.