

according to Regulation (EC) No. 1907/2006

Creation Date 23-Nov-2011 Revision Date 06-Dec-2024 Revision Number 4

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description: Oxidising Solution - Jurassic

Cat No. : 810-00002

Synonyms 0.1M lodine in THF / Pyridine / Water.

Unique Formula Identifier (UFI) AQ7Q-921T-SX00-MJWE

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

Recommended Use Laboratory chemicals.
Uses advised against No Information available

1.3. Details of the supplier of the safety data sheet

Company

EU entity/business name
Thermo Fisher Scientific
Janssen Pharmaceuticalaan 3a

2440 Geel, Belgium

UK entity/business name

Fisher Scientific UK

Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom

Swiss distributor - Fisher Scientific AG Neuhofstrasse 11, CH 4153 Reinach

Tel: +41 (0) 56 618 41 11 e-mail - infoch@thermofisher.com

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Chemtrec US: (800) 424-9300 Chemtrec EU: 001-703-527-3887

For customers in Switzerland:

Tox Info Suisse Emergency Number: 145 (24hr)

Tox Info Suisse: +41-44 251 51 51 (Emergency number from abroad)

Chemtrec (24h) Toll-Free: 0800 564 402 Chemtrec Local: +41-43 508 20 11 (Zurich)

Tel: 01509 231166

Poison Centre - Emergency information services

Ireland: National Poisons Information Centre (NPIC) -

01 809 2166 (8am-10pm, 7 days a week)

Malta: +356 2395 2000 Cyprus: +357 2240 5611

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids Category 2 (H225)

Health hazards

Acute oral toxicity

Skin Corrosion/Irritation

Serious Eye Damage/Eye Irritation

Category 2 (H315)

Category 2 (H319)

Carcinogenicity

Category 2 (H351)

Specific target organ toxicity - (single exposure)

Specific target organ toxicity - (repeated exposure)

Category 2 (H351)

Category 3 (H335) (H336)

Category 2 (H373)

Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

2.2. Label elements

Contains Iodine Pyridine Tetrahydrofuran



Signal Word

Danger

Hazard Statements

H225 - Highly flammable liquid and vapor

H302 - Harmful if swallowed

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H336 - May cause drowsiness or dizziness

H351 - Suspected of causing cancer

H373 - May cause damage to organs through prolonged or repeated exposure

EUH019 - May form explosive peroxides

Precautionary Statements

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

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

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

P312 - Call a POISON CENTER or doctor if you feel unwell

2.3. Other hazards

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

Section 3: Composition/information on ingredients

3.2. Mixtures

Component	CAS No	EC No	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Tetrahydrofuran	109-99-9	203-726-8	76 - 78	Flam. Liq. 2 (H225) Acute Tox. 4 (H302) Eye Irrit. 2 (H319) STOT SE 3 (H335) STOT SE 3 (H336) Carc. 2 (H351) (EUH019)
Pyridine	110-86-1	203-809-9	19 - 20	Flam. Liq. 2 (H225) Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319)
lodine	7553-56-2	231-442-4	1 - 2	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) STOT RE 1 (H372) Aquatic Acute 1 (H400)
Water	7732-18-5	231-791-2	1 - 2	-

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
Tetrahydrofuran	Acute Tox. 4 :: C>82.5% Eye Irrit. 2 :: C>=25% STOT SE 3 :: C>=25%	-	-
lodine	=	1	=

Components	Reach Registration Number	
Tetrahydrofuran	01-2119444314-46	
Pyridine	01-2119493105-40	
lodine	01-2119485285-30	

Full text of Hazard Statements: see section 16

Section 4: First aid measures

4.1. Description of first aid measures

General Advice If symptoms persist, call a physician.

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Eye ContactRinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get

medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists,

call a physician.

Ingestion Clean mouth with water and drink afterwards plenty of water.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if

symptoms occur.

Self-Protection of the First Aider Ensure that medical personnel are aware of the material(s) involved, take precautions to

protect themselves and prevent spread of contamination.

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

. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression

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

Notes to Physician Treat symptomatically. Symptoms may be delayed.

Section 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons

No information available.

5.2. Special hazards arising from the substance or mixture

Extremely flammable. Thermal decomposition can lead to release of irritating gases and vapors. Vapors may travel to source of ignition and flash back. May form explosive peroxides. Containers may explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx), Hydrogen iodide.

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

6.2. Environmental precautions

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Should not be released into the environment. Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

Section 7: Handling and storage

7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Ensure adequate ventilation. If peroxide formation is suspected, do not open or move container. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat, sparks and flame. Protect from direct sunlight. Shelf life 12 months. May form explosive peroxides on prolonged storage. Containers should be dated when opened and tested periodically for the presence of peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals.

Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany)

Class 3

Switzerland - Storage of hazardous substances

Storage class - SC 3

https://www.kvu.ch/de/themen/stoffe-und-produkte https://www.kvu.ch/fr/themes/substances-et-produits https://www.kvu.ch/it/temi/sostanze-e-prodotti

7.3. Specific end use(s)

Use in laboratories

Section 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Forth edition. Published 2020. **IRE** - 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority. **CH** - The Government of Switzerland has set a directive on limit values for working materials (Grenzwerte am Arbeitsplatz) which is based on the Swiss Federal Regulation "Verordnung über die Verhütung von Unfällen und Berufskrankheiten". This directive is administered, periodically revised and enforced by SUVA (Swiss National Accident Insurance Fund).

Component	European Union	The United Kingdom	France	Belgium	Spain

Tetrahydrofuran	TWA: 50 ppm (8h)	STEL: 100 ppm 15 min	TWA / VME: 50 ppm (8	TWA: 50 ppm 8 uren	STEL / VLA-EC: 100
	TWA: 150 mg/m ³ (8h)	STEL: 300 mg/m ³ 15	heures). restrictive limit	TWA: 150 mg/m ³ 8 uren	ppm (15 minutos).
	STEL: 100 ppm (15min)	min	TWA / VME: 150 mg/m ³	STEL: 100 ppm 15	STEL / VLA-EC: 300
	STEL: 300 mg/m ³	TWA: 50 ppm 8 hr	(8 heures). restrictive	minuten	mg/m³ (15 minutos).
	(15min)	TWA: 150 mg/m ³ 8 hr	limit	STEL: 300 mg/m ³ 15	TWA / VLA-ED: 50 ppm
	Skin	Skin	STEL / VLCT: 100 ppm.	minuten	(8 horas)
			restrictive limit	Huid	TWA / VLA-ED: 150
			STEL / VLCT: 300		mg/m³ (8 horas)
			mg/m ³ . restrictive limit		Piel
			Peau		
Pyridine		STEL: 10 ppm 15 min	TWA / VME: 5 ppm (8	TWA: 1 ppm 8 uren	TWA / VLA-ED: 1 ppm
		STEL: 33 mg/m ³ 15 min		TWA: 3.3 mg/m ³ 8 uren	
		TWA: 5 ppm 8 hr	TWA / VME: 15 mg/m ³		TWA / VLA-ED: 3 mg/m ³
		TWA: 16 mg/m ³ 8 hr	(8 heures).		(8 horas)
			STEL / VLCT: 10 ppm.		
			STEL / VLCT: 30		
			mg/m³.		
lodine			STEL / VLCT: 0.1 ppm.	TWA: 0.01 ppm 8 uren	STEL / VLA-EC: 0.1
		STEL: 1.1 mg/m ³ 15 min	STEL / VLCT: 1 mg/m ³ .	TWA: 0.1 mg/m ³ 8 uren	,
				STEL: 0.1 ppm 15	STEL / VLA-EC: 1
				minuten	mg/m³ (15 minutos).
				STEL: 1 mg/m ³ 15	TWA / VLA-ED: 0.01
				minuten	ppm (8 horas)
					TWA / VLA-ED: 0.1
					mg/m³ (8 horas)

Component	Italy	Germany	Portugal	The Netherlands	Finland
Tetrahydrofuran	TWA: 50 ppm 8 ore.	TWA: 50 ppm (8	STEL: 100 ppm 15	huid	TWA: 50 ppm 8 tunteina
	Time Weighted Average	Stunden). AGW -	minutos	STEL: 200 ppm 15	TWA: 150 mg/m ³ 8
	TWA: 150 mg/m ³ 8 ore.	exposure factor 2	STEL: 300 mg/m ³ 15	minuten	tunteina
	Time Weighted Average		minutos	STEL: 600 mg/m ³ 15	STEL: 100 ppm 15
	STEL: 100 ppm 15	Stunden). AGW -	TWA: 50 ppm 8 horas	minuten	minuutteina
	minuti. Short-term	exposure factor 2	TWA: 150 mg/m ³ 8	TWA: 100 ppm 8 uren	STEL: 300 mg/m ³ 15
	STEL: 300 mg/m ³ 15	TWA: 20 ppm (8	horas	TWA: 300 mg/m ³ 8 uren	
	minuti. Short-term	Stunden). MAK	Pele		lho
	Pelle	TWA: 60 mg/m ³ (8			
		Stunden). MAK			
		Höhepunkt: 40 ppm			
		Höhepunkt: 120 mg/m ³			
		Haut			
Pyridine		Haut	TWA: 5 ppm 8 horas	TWA: 0.3 ppm 8 uren	TWA: 1 ppm 8 tunteina
			TWA: 15 mg/m ³ 8 horas	TWA: 0.9 mg/m ³ 8 uren	
					tunteina
					STEL: 5 ppm 15
					minuutteina
					STEL: 16 mg/m ³ 15
					minuutteina
					lho
lodine		Haut	STEL: 0.1 ppm 15		STEL: 0.1 ppm 15
			minutos		minuutteina
			TWA: 0.01 ppm 8 horas		STEL: 1.1 mg/m ³ 15
					minuutteina
					lho

Component	Austria	Denmark	Switzerland	Poland	Norway
Tetrahydrofuran	Haut	TWA: 50 ppm 8 timer	Haut/Peau	STEL: 300 mg/m ³ 15	TWA: 50 ppm 8 timer
	MAK-KZGW: 100 ppm	TWA: 150 mg/m ³ 8 timer	STEL: 100 ppm 15	minutach	TWA: 150 mg/m ³ 8 timer
	15 Minuten	STEL: 300 mg/m ³ 15	Minuten	TWA: 150 mg/m ³ 8	STEL: 75 ppm 15
	MAK-KZGW: 300 mg/m ³	minutter	STEL: 300 mg/m ³ 15	godzinach	minutter. value
	15 Minuten	STEL: 100 ppm 15	Minuten		calculated
	MAK-TMW: 50 ppm 8	minutter	TWA: 50 ppm 8		STEL: 187.5 mg/m ³ 15
	Stunden	Hud	Stunden		minutter. value
	MAK-TMW: 150 mg/m ³		TWA: 150 mg/m ³ 8		calculated
	8 Stunden		Stunden		Hud
Pyridine	Haut	TWA: 5 ppm 8 timer	STEL: 10 ppm 15	TWA: 5 mg/m ³ 8	TWA: 5 ppm 8 timer
	MAK-KZGW: 20 ppm 15	TWA: 15 mg/m ³ 8 timer	Minuten	godzinach	TWA: 15 mg/m ³ 8 timer
	Minuten	STEL: 10 ppm 15	STEL: 30 mg/m ³ 15		STEL: 10 ppm 15
	MAK-KZGW: 60 mg/m ³	minutter	Minuten		minutter. value
	15 Minuten	STEL: 30 mg/m ³ 15	TWA: 5 ppm 8 Stunden		calculated

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	MAK-TMW: 5 ppm 8 Stunden MAK-TMW: 15 mg/m³ 8 Stunden	minutter	TWA: 15 mg/m ³ 8 Stunden		STEL: 22.5 mg/m³ 15 minutter. value calculated
lodine	Haut MAK-KZGW: 0.1 ppm 15 Minuten MAK-KZGW: 1 mg/m³ 15 Minuten MAK-TMW: 0.1 ppm 8 Stunden MAK-TMW: 1 mg/m³ 8 Stunden Ceiling: 0.1 ppm Ceiling: 1 mg/m³	Ceiling: 0.1 ppm Ceiling: 1 mg/m³	Haut/Peau STEL: 0.1 ppm 15 Minuten STEL: 1 mg/m³ 15 Minuten TWA: 0.1 ppm 8 Stunden TWA: 1 mg/m³ 8 Stunden	STEL: 1 mg/m ³ 15 minutach TWA: 0.5 mg/m ³ 8 godzinach	Ceiling: 0.1 ppm Ceiling: 1 mg/m³

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Tetrahydrofuran	TWA: 50.0 ppm	kože	TWA: 50 ppm 8 hr.	Skin-potential for	TWA: 150 mg/m ³ 8
	TWA: 150.0 mg/m ³	TWA-GVI: 50 ppm 8	TWA: 150 mg/m ³ 8 hr.	cutaneous absorption	hodinách.
	STEL: 100 ppm	satima.	STEL: 100 ppm 15 min	STEL: 100 ppm	Potential for cutaneous
	STEL: 300.0 mg/m ³	TWA-GVI: 150 mg/m ³ 8	STEL: 300 mg/m ³ 15	STEL: 300 mg/m ³	absorption
	Skin notation	satima.	min	TWA: 50 ppm	Ceiling: 300 mg/m ³
		STEL-KGVI: 100 ppm	Skin	TWA: 150 mg/m ³	
		15 minutama.			
		STEL-KGVI: 300 mg/m ³			
		15 minutama.			
Pyridine	TWA: 15.0 mg/m ³	TWA-GVI: 5 ppm 8	TWA: 5 ppm 8 hr.	TWA: 5 ppm	TWA: 5 mg/m ³ 8
		satima.	TWA: 15 mg/m ³ 8 hr.	TWA: 15 mg/m ³	hodinách.
		TWA-GVI: 15 mg/m ³ 8	STEL: 10 ppm 15 min		Potential for cutaneous
		satima.	STEL: 30 mg/m ³ 15 min		absorption
					Ceiling: 10 mg/m ³
lodine	TWA: 3.0 mg/m ³	STEL-KGVI: 0.1 ppm 15	TWA: 0.01 ppm 8 hr.		TWA: 0.1 mg/m ³ 8
		minutama.	inhalable fraction and		hodinách.
		STEL-KGVI: 1.1 mg/m ³	vapour		Ceiling: 1 mg/m ³
		15 minutama.	TWA: 0.01 mg/m ³ 8 hr.		
			STEL: 0.1 ppm 15 min		

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Tetrahydrofuran	Nahk	Skin notation	STEL: 250 ppm	STEL: 300 mg/m ³ 15	STEL: 100 ppm
	TWA: 50 ppm 8	TWA: 50 ppm 8 hr	STEL: 735 mg/m ³	percekben. CK	STEL: 300 mg/m ³
	tundides.	TWA: 150 mg/m ³ 8 hr	TWA: 200 ppm	STEL: 100 ppm 15	TWA: 50 ppm 8
	TWA: 150 mg/m ³ 8	STEL: 100 ppm 15 min	TWA: 590 mg/m ³	percekben. CK	klukkustundum.
	tundides.	STEL: 300 mg/m ³ 15		TWA: 150 mg/m ³ 8	TWA: 150 mg/m ³ 8
	STEL: 100 ppm 15	min		órában. AK	klukkustundum.
	minutites.			TWA: 50 ppm 8 órában.	Skin notation
	STEL: 300 mg/m ³ 15			AK	
	minutites.			lehetséges borön	
				keresztüli felszívódás	
Pyridine	TWA: 5 ppm 8 tundides.	TWA: 5 ppm 8 hr	STEL: 10 ppm	STEL: 30 mg/m ³ 15	TWA: 5 ppm 8
	TWA: 15 mg/m ³ 8	existing scientific data	STEL: 30 mg/m ³	percekben. CK	klukkustundum.
	tundides.	on health effects appear	TWA: 5 ppm	STEL: 10 ppm 15	TWA: 15 mg/m ³ 8
		to be particularly limited	TWA: 15 mg/m ³	percekben. CK	klukkustundum.
		TWA: 15 mg/m ³ 8 hr		TWA: 15 mg/m ³ 8	Ceiling: 10 ppm
		existing scientific data		órában. AK	Ceiling: 30 mg/m ³
		on health effects appear		TWA: 5 ppm 8 órában.	
		to be particularly limited		AK	
				lehetséges borön	
				keresztüli felszívódás	
lodine	STEL: 0.1 ppm 15		STEL: 0.1 ppm	STEL: 1 mg/m ³ 15	STEL: 0.1 ppm
	minutites.		STEL: 1 mg/m ³	percekben. CK	STEL: 1 mg/m ³
	STEL: 1 mg/m ³ 15		TWA: 0.1 ppm	STEL: 0.1 ppm 15	
	minutites.		TWA: 1 mg/m ³	percekben. CK	
				TWA: 1 mg/m ³ 8	
				órában. AK	
				TWA: 0.1 ppm 8 órában.	
				AK	
				lehetséges borön	
				keresztüli felszívódás	

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Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Tetrahydrofuran	skin - potential for	TWA: 50 ppm IPRD	Possibility of significant	possibility of significant	Skin notation
	cutaneous exposure	TWA: 150 mg/m ³ IPRD	uptake through the skin	uptake through the skin	TWA: 50 ppm 8 ore
	STEL: 100 ppm	Oda	TWA: 50 ppm 8	TWA: 50 ppm	TWA: 150 mg/m ³ 8 ore
	STEL: 300 mg/m ³	STEL: 100 ppm	Stunden	TWA: 150 mg/m ³	STEL: 100 ppm 15
	TWA: 50 ppm	STEL: 300 mg/m ³	TWA: 150 mg/m ³ 8	STEL: 100 ppm 15	minute
	TWA: 150 mg/m ³		Stunden	minuti	STEL: 300 mg/m ³ 15
			STEL: 100 ppm 15	STEL: 300 mg/m ³ 15	minute
			Minuten	minuti	
			STEL: 300 mg/m ³ 15		
			Minuten		
Pyridine	TWA: 5 ppm	TWA: 5 ppm IPRD	TWA: 5 ppm 8 Stunden	TWA: 5 ppm	TWA: 5 ppm 8 ore
	TWA: 15 mg/m ³	TWA: 15 mg/m³ IPRD	TWA: 15 mg/m ³ 8	TWA: 15 mg/m ³	TWA: 15 mg/m ³ 8 ore
			Stunden		
lodine	TWA: 1 mg/m ³	Ceiling: 0.1 ppm			TWA: 0.09 ppm 8 ore
		Ceiling: 1 mg/m ³			TWA: 0.5 mg/m ³ 8 ore
					STEL: 0.2 ppm 15
					minute
					STEL: 1 mg/m ³ 15
					minute

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Tetrahydrofuran	MAC: 100 mg/m ³	Ceiling: 300 mg/m ³	TWA: 50 ppm 8 urah	Binding STEL: 100 ppm	
		Potential for cutaneous	TWA: 150 mg/m ³ 8 urah	15 minuter	TWA: 50 ppm 8 saat
		absorption	Koža	Binding STEL: 300	TWA: 150 mg/m ³ 8 saat
		TWA: 50 ppm	STEL: 100 ppm 15	mg/m ³ 15 minuter	STEL: 100 ppm 15
		TWA: 150 mg/m ³	minutah	TLV: 50 ppm 8 timmar.	dakika
			STEL: 300 mg/m ³ 15	NGV	STEL: 300 mg/m ³ 15
			minutah	TLV: 150 mg/m ³ 8	dakika
				timmar. NGV	
Pyridine	MAC: 5 mg/m ³	TWA: 5 ppm	TWA: 5 ppm 8 urah	Indicative STEL: 3 ppm	TWA: 5 ppm 8 saat
		TWA: 15 mg/m ³	TWA: 15 mg/m ³ 8 urah	15 minuter	TWA: 15 mg/m ³ 8 saat
			_	Indicative STEL: 10	_
				mg/m ³ 15 minuter	
				TLV: 2 ppm 8 timmar.	
				NGV	
				TLV: 7 mg/m ³ 8 timmar.	
				NGV	
lodine	Skin notation	Ceiling: 1.1 mg/m ³		Binding STEL: 0.1 ppm	
	MAC: 1 mg/m ³	TWA: 0.1 ppm		15 minuter	
	Ĭ	TWA: 1.1 mg/m ³		Binding STEL: 1 mg/m ³	
		1		15 minuter	

Biological limit values List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
Tetrahydrofuran				Tetrahydrofuran: 2 mg/L	Tetrahydrofuran: 2 mg/L
				urine end of shift	urine (end of shift)

Component	Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
Tetrahydrofurar			Tetrahydrofuran: 2 mg/L		
			urine end of exposure or		
			work shift		

Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS70 General methods for sampling airborne gases and vapours

MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography

MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
Tetrahydrofuran				DNEL = 12.6mg/kg
109-99-9 (76 - 78)				bw/day
Pyridine		DNEL = 0.42mg/kg		DNEL = 0.14mg/kg
110-86-1 (19 - 20)		bw/day		bw/day
Iodine				DNEL = 0.01mg/kg
7553-56-2 (1 - 2)				bw/day

Component	Acute effects local	Acute effects	Chronic effects local	Chronic effects
	(Inhalation)	systemic (Inhalation)	(Inhalation)	systemic (Inhalation)
Tetrahydrofuran	DNEL = 300mg/m^3	DNEL = 96mg/m ³	$DNEL = 150 mg/m^3$	DNEL = 72.4 mg/m ³
109-99-9 (76 - 78)	-		-	_
Pyridine		$DNEL = 7.5 mg/m^3$		DNEL = 2.5mg/m ³
110-86-1 (19 - 20)		_		_
Iodine				$DNEL = 0.07 mg/m^3$
7553-56-2 (1 - 2)				_

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water	Water Intermittent	Microorganisms in	Soil (Agriculture)
		sediment		sewage treatment	
Tetrahydrofuran	PNEC = 4.32mg/L	PNEC = 23.3 mg/kg	PNEC = 21.6mg/L	PNEC = 4.6mg/L	PNEC = 2.13mg/kg
109-99-9 (76 - 78)		sediment dw			soil dw
Pyridine	PNEC = 0.3mg/L	PNEC = 3.2mg/kg	PNEC = 3mg/L	PNEC = 2mg/L	PNEC = 0.46mg/kg
110-86-1 (19 - 20)		sediment dw			soil dw
Iodine	PNEC = 18.13µg/L	PNEC = 3.99mg/kg		PNEC = 11mg/L	PNEC = 5.95mg/kg
7553-56-2 (1 - 2)		sediment dw		-	soil dw

Component	Marine water	Marine water sediment	Marine water Intermittent	Food chain	Air
Tetrahydrofuran	PNEC = 0.432mg/L	PNEC = 2.33mg/kg		PNEC = 67mg/kg	
109-99-9 (76 - 78)		sediment dw		food	
Pyridine	PNEC = 0.03mg/L	PNEC = 0.32mg/kg			
110-86-1 (19 - 20)		sediment dw			
lodine	PNEC = 60.01µg/L	PNEC =			
7553-56-2 (1 - 2)		20.22mg/kg			
		sediment dw			

8.2. Exposure controls

Engineering Measures

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

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Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	See manufacturers	-	EN 374	(minimum requirement)
	recommendations			
Neoprene gloves				

Skin and body protection Long sleeved clothing.

Inspect gloves before use, observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use

appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used

and maintained properly

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits Large scale/emergency use

are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to

EN14387

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure

limits are exceeded or if irritation or other symptoms are experienced.

Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water

system.

Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Liquid **Physical State**

Appearance Colorless Odor sweet

Odor Threshold No data available **Melting Point/Range** -65 °C / -85 °F **Softening Point** No data available 65.4 °C / 149.7 °F **Boiling Point/Range** Flammability (liquid) Highly flammable

On basis of test data Not applicable Liquid

Flammability (solid,gas)

No data available **Explosion Limits**

Flash Point -14 °C / 6.8 °F Method - No information available

321 °C / 609.8 °F **Autoignition Temperature Decomposition Temperature** No data available No information available Hq No data available **Viscosity**

Water Solubility Miscible

Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Component log Pow Tetrahydrofuran 0.45 Pyridine 0.65 lodine 2.49

Vapor Pressure 160 mmHg @ 25 °C

Density / Specific Gravity 0.89

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Bulk DensityNot applicableLiquidVapor Density2.5 (Air = 1.0)(Air = 1.0)

Particle characteristics Not applicable (liquid)

9.2. Other information

Explosive Properties Vapors may form explosive mixtures with air

Evaporation Rate > 1 (Butyl Acetate = 1.0)

Section 10: Stability and reactivity

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Light sensitive. May form explosive peroxides. Stable under recommended storage

conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. The presence of oxygen or prolonged standing in or exposure to direct sunlight may lead to formation of unstable peroxides, which may explode spontaneously or

when heated.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Strong bases. Combustible material.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO₂). Nitrogen oxides (NO_x). Hydrogen iodide.

Section 11: Toxicological information

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

Product Information

(a) acute toxicity;

Oral Category 4

ATE = 1347 mg/kg

Dermal Based on ATE data, the classification criteria are not met

ATE = 4824 mg/kg

Inhalation Based on ATE data, the classification criteria are not met

ATE = 52.8 mg/l

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tetrahydrofuran	1650 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	180 mg/L (Rat) 1 h
·			53.9 mg/L (Rat) 4 h
Pyridine	LD50 = 866 mg/kg (Rat)	LD50 1000 - 2000 mg/kg(Rabbit)	LC50 = 12.898 mg/L (Rat) 4 h

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Iodine	315 mg/kg (Rat)	1425 mg/kg (Rabbit)	4.588 mg/L 4h (Rat)
Water	=	-	-

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(d) respiratory or skin sensitization;

Respiratory No data available Skin No data available

Component	Test method	Test species	Study result
Tetrahydrofuran Local Lymph Node Assay		mouse	non-sensitising
109-99-9 (76 - 78)	109-99-9 (76 - 78) OECD Test Guideline 429		
lodine OECD Test Guideline 429		mouse	non-sensitising
7553-56-2 (1 - 2)	Local Lymph Node Assay		_

No data available (e) germ cell mutagenicity;

Component	Test method	Test species	Study result
Tetrahydrofuran	OECD Test Guideline 476	in vivo	negative
109-99-9 (76 - 78)	Gene cell mutation	Mammalian	
	OECD Test Guideline 473		
	Chromosomal aberration assay	in vitro	negative
		Mammalian	

(f) carcinogenicity; Category 2

Limited evidence of a carcinogenic effect The table below indicates whether each agency

has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Tetrahydrofuran				Group 2B
Pyridine				Group 2B

No data available (a) reproductive toxicity:

Component		Test method	Test species / Duration	Study result
	Tetrahydrofuran	OECD Test Guideline 416	Rat	NOAEL = 3,000 ppm
	109-99-9 (76 - 78)		2 Generation	

(h) STOT-single exposure; Category 3

Results / Target organs Respiratory system, Central nervous system (CNS).

(i) STOT-repeated exposure; Category 2

Liver, Kidney, Central Vascular System (CVS), Gastrointestinal tract (GI). **Target Organs**

(j) aspiration hazard; No data available

delayed

Symptoms / effects, both acute and Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness,

tiredness, nausea and vomiting. Causes central nervous system depression.

11.2. Information on other hazards

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Endocrine Disrupting Properties

Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

Section 12: Ecological information

12.1. Toxicity **Ecotoxicity effects**

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Fish	Water Flea	Freshwater Algae
Tetrahydrofuran	2160 mg/l LC50 = 96 h	EC50 48 h 3485 mg/l	
	Pimephales promelas	EC50: >10000 mg/L/24h	
	Leuciscus idus: LC50: 2820	_	
	mg/L/48h		
Pyridine	LC50: = 4.6 mg/L, 96h static		
	(Oncorhynchus mykiss)		
	LC50: = 26 mg/L, 96h semi-static		
	(Cyprinus carpio)		
	LC50: 63.4 - 73.6 mg/L, 96h		
	flow-through (Pimephales		
	promelas)		
lodine	LC50 = 1.67 mg/L 96h	EC50 = 0.55 mg/L 48h	EC50 = 0.13 mg/L 72h

Component	Microtox	M-Factor
lodine	EC50 = 280 mg/L 3h	1

12.2. Persistence and degradability Not applicable for mixtures

Persistence

Persistence is unlikely, based on information available.

Degradation in sewage treatment plant

Contains substances known to be hazardous to the environment or not degradable in waste

water treatment plants.

Bioaccumulation is unlikely 12.3. Bioaccumulative potential

Component	log Pow	Bioconcentration factor (BCF)
Tetrahydrofuran	0.45	No data available
Pyridine	0.65	No data available
lodine	2.49	No data available

12.4. Mobility in soil

The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in

12.5. Results of PBT and vPvB assessment

No data available for assessment.

12.6. Endocrine disrupting properties

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances
Tetrahydrofuran	Group III Chemical	

12.7. Other adverse effects

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Persistent Organic Pollutant This product does not contain any known or suspected substance **Ozone Depletion Potential** This product does not contain any known or suspected substance

Section 13: Disposal considerations

13.1. Waste treatment methods

Waste from Residues/Unused **Products**

Contaminated Packaging

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

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Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and

empty container away from heat and sources of ignition.

European Waste Catalogue (EWC)

According to the European Waste Catalog, Waste Codes are not product specific, but

application specific.

Other Information

Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in

compliance with local regulations.

Switzerland - Waste Ordinance

Disposal should be in accordance with applicable regional, national and local laws and regulations. Ordinance on the Avoidance and the Disposal of Waste (Waste Ordinance,

ADWO) SR 814.600

https://www.fedlex.admin.ch/eli/cc/2015/891/en

Section 14: Transport information

IMDG/IMO

14.1. UN number UN1993

14.2. UN proper shipping name Flammable liquid, n.o.s. **Technical Shipping Name** Tetrahydrofuran, Pyridine

14.3. Transport hazard class(es) 3 14.4. Packing group II

ADR

UN1993 14.1. UN number

Flammable liquid, n.o.s. 14.2. UN proper shipping name **Technical Shipping Name** Tetrahydrofuran, Pyridine 3

14.3. Transport hazard class(es) 14.4. Packing group

П

IATA

14.1. UN number UN1993

14.2. UN proper shipping name Flammable liquid, n.o.s. **Technical Shipping Name** Tetrahydrofuran, Pyridine

14.3. Transport hazard class(es) 14.4. Packing group II

14.5. Environmental hazards

No hazards identified

No special precautions required. 14.6. Special precautions for user

Not applicable, packaged goods 14.7. Maritime transport in bulk according to IMO instruments

Section 15: Regulatory information

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

International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
Tetrahydrofuran	109-99-9	203-726-8	-	-	X	X	KE-33454	X	Х
Pyridine	110-86-1	203-809-9	-	-	X	X	KE-29929	X	Х
Iodine	7553-56-2	231-442-4	-	-	Х	X	KE-21023	X	-
Water	7732-18-5	231-791-2	-	-	Х	Х	KE-35400	Х	-

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
Tetrahydrofuran	109-99-9	X	ACTIVE	Х	-	X	Х	Х
Pyridine	110-86-1	X	ACTIVE	Х	-	Х	Х	Х
lodine	7553-56-2	X	ACTIVE	Х	-	Х	X	Х
Water	7732-18-5	Х	ACTIVE	Х	-	X	Х	Х

Legend: X - Listed '-' - Not Listed KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Tetrahydrofuran	109-99-9	-	Use restricted. See entry 75. (see link for restriction details)	-
Pyridine	110-86-1	-	-	-
lodine	7553-56-2	-	Use restricted. See entry 75. (see link for restriction details)	-
Water	7732-18-5	-	- '	-

REACH links

https://echa.europa.eu/substances-restricted-under-reach

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Tetrahydrofuran	109-99-9	Not applicable	Not applicable
Pyridine	110-86-1	Not applicable	Not applicable
lodine	7553-56-2	Not applicable	Not applicable
Water	7732-18-5	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

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Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)? Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

National Regulations

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification

Water endangering class = 2 (self classification)

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
Tetrahydrofuran	WGK1	
Pyridine	WGK2	Class I: 20 mg/m³ (Massenkonzentration)
Iodine	WGK2	

Component		France - INRS (Tables of occupational diseases)
	Tetrahydrofuran	Tableaux des maladies professionnelles (TMP) - RG 84
-	Pyridine	Tableaux des maladies professionnelles (TMP) - RG 84

Swiss Regulations

Article 4 para. 4 of the Ordinance on the protection of young people in the workplace (SR 822.115) and Article 1 lit. f of the EAER regulation on hazardous work and young people (SR 822.115.2).

Take note on Article 13 Maternity Ordinance (SR 822.111.52) with regards expectant and nursing mothers.

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Tetrahydrofuran 109-99-9 (76 - 78)		Group I	
lodine 7553-56-2 (1 - 2)	Prohibited and Restricted Substances		

15.2. Chemical safety assessment

Chemical Safety Assessment/Reports (CSA/CSR) are not required for mixtures

Section 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H335 - May cause respiratory irritation

H336 - May cause drowsiness or dizziness

H351 - Suspected of causing cancer

H373 - May cause damage to organs through prolonged or repeated exposure

EUH019 - May form explosive peroxides

H225 - Highly flammable liquid and vapor

H290 - May be corrosive to metals

H312 - Harmful in contact with skin

H332 - Harmful if inhaled

H372 - Causes damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

Legend

CAS - Chemical Abstracts Service

TSCA - United States Toxic Substances Control Act Section 8(b)

EINECS/ELINCS - European Inventory of Existing Commercial Chemical DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances/EU List of Notified Chemical Substances Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances **IECSC** - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

ENCS - Japanese Existing and New Chemical Substances AICS - Australian Inventory of Chemical Substances NZIoC - New Zealand Inventory of Chemicals

IARC - International Agency for Research on Cancer

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration PBT - Persistent, Bioaccumulative, Toxic

POW - Partition coefficient Octanol:Water vPvB - very Persistent, very Bioaccumulative

Predicted No Effect Concentration (PNEC)

EC50 - Effective Concentration 50%

ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from

Ships

ATE - Acute Toxicity Estimate VOC - (volatile organic compound)

TWA - Time Weighted Average

LD50 - Lethal Dose 50%

Key literature references and sources for data

https://echa.europa.eu/information-on-chemicals

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

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

Physical hazards On basis of test data **Health Hazards** Calculation method **Environmental hazards** Calculation method

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hvaiene.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts. Chemical incident response training.

Creation Date 23-Nov-2011 06-Dec-2024 **Revision Date Revision Summary** Not applicable.

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. COMMISSION REGULATION (EU) 2020/878 amending Annex II to Regulation (EC) No 1907/2006

For Switzerland - Compiled in accordance with the technical provisions referred to in Annex 2, Number 3, ChemO (SR 813.11 - Ordinance on Protection against Dangerous Substances and Preparations).

Disclaimer

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End of Safety Data Sheet