

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

Revision Date 06-Oct-2023

Revision Number 8

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

1.1. Product identifier

Product Description:	3,3",4,4"-Benzophenonetetracarboxylic dianhydride
Cat No. :	401930000; 401930025; 401930050; 401935000
Synonyms	4,4 - Carbonyldiphthalic anhydride; BTDA
Index No	607-100-00-9
CAS No	2421-28-5
EC No	219-348-1
Molecular Formula	C17 H6 O7
REACH registration number	01-2119980057-33

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

Recommended Use Sector of use	Laboratory chemicals. SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category	PC21 - Laboratory chemicals
Process categories	PROC15 - Use as a laboratory reagent
Environmental release category	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against	No Information available

1.3. Details of the supplier of the safety data sheet

Company

UK entity/business name Fisher Scientific UK Bishop Meadow Road, Loughborough, Leicestershire LE11 5RG, United Kingdom

EU entity/business name

Thermo Fisher Scientific Janssen Pharmaceuticalaan 3a, 2440 Geel, Belgium

E-mail address

begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99 **CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Physical hazards

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

Based on available data, the classification criteria are not met

Health hazards

Serious Eye Damage/Eye Irritation Skin Sensitization Specific target organ toxicity - (single exposure)

Environmental hazards

Chronic aquatic toxicity

Category 2 (H319) Category 1 Sub-category 1B (H317) Category 3 (H335)

Category 3 (H412)

Full text of Hazard Statements: see section 16

2.2. Label elements



Signal Word

Warning

Hazard Statements

- H319 Causes serious eye irritation
- H335 May cause respiratory irritation
- H317 May cause an allergic skin reaction
- H412 Harmful to aquatic life with long lasting effects

Precautionary Statements

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

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

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

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

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

Revision Date 06-Oct-2023

				UK SI 2020/1567
1,3-Isobenzofurandione, 5,5'-carbonylbis-	2421-28-5	EC No. 219-348-1	97-100	Skin Sens. 1B (H317) Eye Irrit. 2 (H319) STOT SE 3 (H335) Aquatic Chronic 3 (H412)
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-	2479-49-4	EC No. 219-613-1	1-5	-

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
1,3-Isobenzofurandione, 5,5'-carbonylbis-	Eye Irrit. 2 (H319) :: C>=1%	-	-
	STOT SE 3 (H335) :: C>=1%		

REACH registration number	01-2119980057-33

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.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Get medical attention. Wash off immediately with plenty of water for at least 15 minutes.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.
Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.
Self-Protection of the First Aider	Use personal protective equipment as required.
4.2. Most important symptoms and	effects, both acute and delayed

None reasonably foreseeable. May cause allergic skin reaction. . Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

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

Notes to Physician

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

Extinguishing media which must not be used for safety reasons No information available.

5.2. Special hazards arising from the substance or mixture

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂).

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. Avoid dust formation.

6.2. Environmental precautions

Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information. Avoid release to the environment. Collect spillage.

6.3. Methods and material for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

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. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place.

Technical Rules for Hazardous Substances (TRGS) 510Class 11Storage Class (LGK) (Germany)Class 11

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

ACR40193

Exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

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)
1,3-Isobenzofurandione, 5,5'-carbonylbis-				DNEL = 3mg/kg bw/day
2421-28-5 (97-100)				

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
1,3-Isobenzofurandione, 5,5'-carbonylbis- 2421-28-5 (97-100)	DNEL = 1.1mg/m ³	DNEL = 1.8mg/m ³	DNEL = 0.37mg/m ³	DNEL = 0.6mg/m ³

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water	Water Intermittent	Microorganisms in	Soil (Agriculture)
		sediment		sewage treatment	
1,3-Isobenzofurandione, 5,5'-carbonylbis- 2421-28-5 (97-100)	PNEC = 0.07mg/L	PNEC = 2.4mg/kg sediment dw	PNEC = 0.7mg/L	PNEC = 40mg/L	PNEC = 0.27mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
1,3-Isobenzofurandione,	PNEC = 0.007mg/L				
5,5'-carbonylbis-		sediment dw			
2421-28-5 (97-100)					

8.2. Exposure controls

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

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

Glove materialBreakthrough timeGlove tNitrile rubberSee manufacturers0.1recommendations0.1	thicknessEU standardGlove comments11mmEN 374(minimum requirement)	
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Revision Date 06-Oct-2023

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

Neoprene gloves	See manufacturers recommendations	0.65mm	
Skin and body prote	ection Long sle	eved clothing.	

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure 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.

Remove 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
Large scale/emergency use	Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced Recommended Filter type: Particulates filter conforming to EN 143
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:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls Prevent product from entering drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Powder Solid	
Appearance	Amber	
Odor	Odorless	
Odor Threshold	No data available	
Melting Point/Range	218 °C / 424.4 - 438.8 °F	
Softening Point	No data available	
Boiling Point/Range	No information available	
Flammability (liquid)	Not applicable	Solid
Flammability (solid,gas)	Not flammable	
Explosion Limits	Lower 76g/m ³	
Flash Point	Not applicable	Method - No information available
Autoignition Temperature	No data available	
Decomposition Temperature	360 °C	
pH	No information available	
Viscosity	Not applicable	Solid
Water Solubility	0.014 g/L @ 25 °C	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/wate	er)	
Component	log Pow	
1,3-Isobenzofurandione,	3.30 (25°C)	
5,5'-carbonylbis-		
Vapor Pressure	23 hPa @ 20 °C	
Density / Specific Gravity	1.545	
Bulk Density	No data available	
Vapor Density	Not applicable	Solid
Particle characteristics	No data available	

9.2. Other information

Molecular Formula	
Molecular Weight	
Evaporation Rate	

C17 H6 O7 322.22 Not applicable - Solid

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity	None known, based on information available	
10.2. Chemical stability	Stable under normal conditions.	
10.3. Possibility of hazardous reactions		
Hazardous Polymerization Hazardous Reactions	Hazardous polymerization does not occur. None under normal processing.	
10.4. Conditions to avoid	Incompatible products. Excess heat. Avoid dust formation.	
10.5. Incompatible materials	Strong oxidizing agents. Strong acids. Strong bases Water.	

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO₂).

SECTION 11: TOXICOLOGICAL INFORMATION

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

Product Information

(a) acute toxicity;	
Oral	Based on available data, the classification criteria are not met
Dermal	Based on available data, the classification criteria are not met
Inhalation	Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1,3-Isobenzofurandione, 5,5'-carbonylbis-	12800 mg/kg (Rat)	>3160 kg/kg (Rabbit)	4.44 mg/l / 6h

(b) skin corrosion/irritation;	Based on available data, the classification criteria are not met
(c) serious eye damage/irritation;	Category 2
(d) respiratory or skin sensitization; Respiratory Skin	Based on available data, the classification criteria are not met Sub-category 1B
	May cause sensitization by skin contact
(e) germ cell mutagenicity;	Based on available data, the classification criteria are not met

(f) carcinogenicity;	Based on available data, the classification criteria are not met		
	There are no known carcinogenic chemicals in this product		
(g) reproductive toxicity;	Based on available data, the classification criteria are not met		
(h) STOT-single exposure;	Category 3		
Results / Target organs	Respiratory system.		
(i) STOT-repeated exposure;	Based on available data, the classification criteria are not met		
Target Organs	None known.		
(j) aspiration hazard;	Not applicable Solid		
Symptoms / effects,both acute and delayed	Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.		

11.2. Information on other hazards

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

Harmful 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
1,3-Isobenzofurandione, 5,5'-carbonylbis-	5592 mg/l / 96h (Oncorhynchus	70.7 mg/l / 48h (Daphnia magna)	68.6 mg/l / 72h (Desmodesmus
	mykiss)		subspicatus)

12.2. Persistence and degradability

Persistence	No information available.		
Degradability	See values below.		
Component		Degradability	
1,3-Isobenzofurandione, 5,5'-carbonylbis-		0-2% 28d	
242	21-28-5 (97-100)		
Degradation in sewage Contains substances known to be hazardous to the environment or not degradable in wa		e hazardous to the environment or not degradable in waste	
treatment plant	water treatment plants.	water treatment plants.	

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
1,3-Isobenzofurandione, 5,5'-carbonylbis-	3.30 (25°C)	18.13

12.4. Mobility in soil

No information available

<u>12.5. Results of PBT and vPvB</u> assessment	Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).
<u>12.6. Endocrine disrupting</u> properties Endocrine Disruptor Information	This product does not contain any known or suspected endocrine disruptors
12.7. Other adverse effects Persistent Organic Pollutant Ozone Depletion Potential	This product does not contain any known or suspected substance This product does not contain any known or suspected substance CTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products	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.
Contaminated Packaging	Dispose of this container to hazardous or special waste collection point.
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. Do not empty into drains. Do not let this chemical enter the environment.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO	Not regulated
<u>14.1. UN number</u> 14.2. UN proper shipping name 14.3. Transport hazard class(es) 14.4. Packing group	
ADR	Not regulated
<u>14.1. UN number</u> <u>14.2. UN proper shipping name</u> <u>14.3. Transport hazard class(es)</u> <u>14.4. Packing group</u>	
IATA	Not regulated
<u>14.1. UN number</u> <u>14.2. UN proper shipping name</u> 14.3. Transport hazard class(es) 14.4. Packing group	
14.5. Environmental hazards	No hazards identified

14.6. Special precautions for user No special precautions required.

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

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
1,3-Isobenzofurandione,	2421-28-5	219-348-1	-	-	Х	Х	KE-04762	Х	Х
5,5'-carbonylbis-									
1,2-Benzenedicarboxylic acid,	2479-49-4	219-613-1	-	-	Х	Х	-	Х	Х
4,4'-carbonylbis-									

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
1,3-Isobenzofurandione, 5,5'-carbonylbis-	2421-28-5	Х	ACTIVE	X	-	Х	Х	Х
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-	2479-49-4	X	ACTIVE	-	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)
1,3-Isobenzofurandione, 5,5'-carbonylbis-	2421-28-5	-	Use restricted. See item 75. (see link for restriction details)	-
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-	2479-49-4	-	-	-

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
1,3-Isobenzofurandione, 5,5'-carbonylbis-	2421-28-5	Not applicable	Not applicable
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-	2479-49-4	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

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

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 .

National Regulations

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

WGK Classification

See table for values

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
1,3-Isobenzofurandione,	WGK1	
5,5'-carbonylbis-		

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
1,3-Isobenzofurandione, 5,5'-carbonylbis- 2421-28-5 (97-100)	Prohibited and Restricted Substances		
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis- 2479-49-4 (1-5)	Prohibited and Restricted Substances		

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

SECTION 16: OTHER INFORMATION

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

- H317 May cause an allergic skin reaction
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation
- H412 Harmful to aquatic life with long lasting effects

Legend

IARC - International Agency for Research on Cancer

Predicted No Effect Concentration (PNEC)

LD50 - Lethal Dose 50%

CAS - Chemical Abstracts Service	TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances PICCS - Philippines Inventory of Chemicals and Chemical Substances IECSC - Chinese Inventory of Existing Chemical Substances KECL - Korean Existing and Evaluated Chemical Substances	
WEL - Workplace Exposure Limit	TWA - Time Weighted Average

WEL - Workplace Exposure Limit ACGIH - American Conference of Governmental Industrial Hygienists DNEL - Derived No Effect Level RPE - Respiratory Protective Equipment

ACR40193

Page 11/12

3,3",4,4"-Benzophenonetetracarboxylic dianhydride

LC50 - Lethal Concentration 50% NOEC - No Observed Effect Concentration PBT - Persistent, Bioaccumulative, Toxic

PBI - Persistent, Bioaccumulative, Toxic

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

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

 OECD - Organisation for Economic Co-operation and Development
 ATE

 BCF - Bioconcentration factor
 VOC

 Key literature references and sources for data
 https://echa.europa.eu/information-on-chemicals

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

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

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)

Training Advice

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

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.

Revision Date	06-Oct-2023
Revision Summary	Not applicable.

This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet