

according to the OSHA Hazard Communication Standard

Ceftiofur Formulation

Version	Revision Date:	SDS Number:	Date of last issue: 07/06/2024
8.0	09/28/2024	7674006-00014	Date of first issue: 12/15/2020

SECTION 1. IDENTIFICATION

Product name	:	Ceftiofur Formulation			
Manufacturer or supplier's details					
Company name of supplier	:	Merck & Co., Inc			
Address	:	126 E. Lincoln Avenue			
		Rahway, New Jersey U.S.A. 07065			
Telephone	:	908-740-4000			
Emergency telephone	:	1-908-423-6000			
E-mail address	:	EHSDATASTEWARD@merck.com			
Recommended use of the o	cher	nical and restrictions on use			
Recommended use	:	Veterinary product			
Restrictions on use	:	Not applicable			

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accort 1910.1200)	rdan	ce with the OSHA Hazard Communication Standard (29 CFR
Respiratory sensitization	:	Category 1

		• •
Skin sensitization	:	Category 1
Specific target organ toxicity	:	Category 2

- repeated exposure (Oral)

GHS	label	elements	5

Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H317 May cause an allergic skin reaction. H334 May cause allergy or asthma symptoms or breathing diffi- culties if inhaled. H373 May cause damage to organs through prolonged or re- peated exposure if swallowed.
Precautionary Statements	:	Prevention: P260 Do not breathe mist or vapors. P272 Contaminated work clothing must not be allowed out of the workplace. P280 Wear protective gloves. P285 In case of inadequate ventilation wear respiratory protec- tion.
		Response:

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		P304 + P341 IF son to fresh air P333 + P313 If tion. P342 + P311 If tor.	F ON SKIN: Wash with plenty of soap and water. F INHALED: If breathing is difficult, remove per- and keep comfortable for breathing. skin irritation or rash occurs: Get medical atten- experiencing respiratory symptoms: Call a doc- ntaminated clothing before reuse.
		Disposal: P501 Dispose o disposal plant.	of contents and container to an approved waste

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	: Mixture	
Components		
Chemical name	CAS-No.	Concentration (% w/w)
Ceftiofur	103980-44-5	>= 4.7619 - <= 5.8824
Benzyl alcohol	100-51-6	>= 0.9524 - <= 1.1765
Silicon, amorphous	112945-52-5	>= 0.9524 - <= 1.1765

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical
		advice.
If inhaled	:	If inhaled, remove to fresh air.
		If not breathing, give artificial respiration.
		If breathing is difficult, give oxygen.
		Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with soap and plenty of water.
		Remove contaminated clothing and shoes.
		Get medical attention.
		Wash clothing before reuse.
		Thoroughly clean shoes before reuse.
In case of eye contact	:	Flush eyes with water as a precaution.
		Get medical attention if irritation develops and persists.
If swallowed	:	If swallowed, DO NOT induce vomiting.
		Get medical attention if symptoms occur.
		Rinse mouth thoroughly with water.
Most important symptoms	:	May cause an allergic skin reaction.
and effects, both acute and		May cause allergy or asthma symptoms or breathing
delayed		difficulties if inhaled.
		May cause damage to organs through prolonged or repeated exposure if swallowed.
		Excessive exposure may aggravate preexisting asthma and





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		ion of first-aiders to physician	:	reactive airways of First Aid respond and use the recor when the potentia	disorders (e.g. emphysema, bronchitis, dysfunction syndrome). ers should pay attention to self-protection, nmended personal protective equipment al for exposure exists (see section 8). cally and supportively.
SEC	TION 5	. FIRE-FIGHTING ME	ASL	JRES	
	Suitabl	e extinguishing media	:	Water spray Alcohol-resistant Carbon dioxide (0 Dry chemical	
	Unsuita media	able extinguishing	:	None known.	
	Specifi fighting	c hazards during fire I	:	Exposure to com	pustion products may be a hazard to health.
	Hazard ucts	lous combustion prod-	:	Carbon oxides	
	Specifi ods	c extinguishing meth-	:	cumstances and Use water spray	measures that are appropriate to local cir- the surrounding environment. to cool unopened containers. ged containers from fire area if it is safe to do
		l protective equipment fighters	:		e, wear self-contained breathing apparatus. tective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- tive equipment and emer- gency procedures	:	Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
Environmental precautions	:	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g., by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.

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		absorbent. Local or natio disposal of the employed in t determine wh Sections 13 a	aining materials from spill with suitable nal regulations may apply to releases and is material, as well as those materials and items he cleanup of releases. You will need to ich regulations are applicable. nd 15 of this SDS provide information regarding or national requirements.					
SECTION	7. HANDLING AND ST	ORAGE						
Tech	nical measures		ing measures under EXPOSURE PERSONAL PROTECTION section.					
Local	/Total ventilation		: If sufficient ventilation is unavailable, use with local exhaust					
II Advic	e on safe handling	: Do not get on Do not breath Do not swallo Avoid contact Handle in acc practice, base assessment Keep containe Already sensi to asthma, all should consul respiratory irr						
Cond	itions for safe storage	: Keep in prope Keep tightly c Keep in a coc	erly labeled containers. losed. I, well-ventilated place. rdance with the particular national regulations.					
Mater	rials to avoid		vith the following product types:					

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
Ceftiofur	103980-44-5	TWA	100 mcg/m3 (OEB 2)	Internal
	Further informa	ation: RSEN, DS	EN	
Benzyl alcohol	100-51-6	TWA	10 ppm	US WEEL
Silicon, amorphous	112945-52-5	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3



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			TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3		
			TWA	6 mg/m ³ (Silica)	NIOSH REL		
Engir	neering measures	techno less q All eno desigr protec	ppropriate engineering blogies to control airbo uick connections). gineering controls sho and operated in acco t products, workers, a atory operations do no	orne concentrations uld be implemente ordance with GMP nd the environmen	s (e.g., drip- d by facility principles to t.		
Perso	onal protective equip	ment					
	iratory protection	mainta conce unkno Follow use N by air hazaro suppli releas circum	al and local exhaust v ain vapor exposures b ntrations are above re wn, appropriate respir or OSHA respirator reg IOSH/MSHA approved purifying respirators a dous chemical is limited ed respirator if there is e, exposure levels are nstance where air puri- ate protection.	elow recommende commended limits atory protection sh ulations (29 CFR 1 d respirators. Prote gainst exposure to ed. Use a positive p s any potential for to e unknown, or any o	d limits. Where or are ould be worn. 910.134) and oction provided any pressure air uncontrolled other		
	aterial	: Chem	ical-resistant gloves				
Skin a	and body protection ne measures	If the wists Wear potent aeroso : Work : If expo eye flu workin When Conta workp Wash The et	uniform or laboratory of osure to chemical is lik ushing systems and sa og place. using do not eat, drin minated work clothing	appropriate goggle ull face protection is the face with dust coat. afety showers close k or smoke. should not be allo g before re-use. facility should inclu	ety conditions, s. If there is a ts, mists, or use, provide to the wed out of the ude review of		
		approj indust	rial hygiene monitoring administrative contro	decontamination p g, medical surveilla	rocedures,		

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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Appearance
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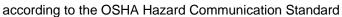
: suspension



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	Color		:	white to off-white	cream
	Odor		:	No data available	
	Odor T	hreshold	:	No data available	
	рН		:	No data available	
	Melting	point/freezing point	:	No data available	
	Initial b range	oiling point and boiling	:	No data available	
	Flash p	point	:	No data available	
	Evapor	ration rate	:	No data available	
	Flamm	ability (solid, gas)	:	Not applicable	
	Flamm	ability (liquids)	:	No data available	
		explosion limit / Upper ability limit	:	No data available	
		explosion limit / Lower ability limit	:	No data available	
	Vapor _l	oressure	:	No data available	
	Relativ	e vapor density	:	No data available	
	Relativ	e density	:	No data available	
	Density	/	:	0.850 - 1.050 g/cl No data available	
	Solubili Wat	ity(ies) ter solubility	:	No data available	
	Partitio octanol	n coefficient: n-	:	Not applicable	
		nition temperature	:	No data available	
	Decom	position temperature	:	No data available	
	Viscosi Visc	ty cosity, kinematic	:	No data available	
	Explosi	ive properties	:	Not explosive	
	Oxidizi	ng properties	:	The substance or	mixture is not classified as oxidizing.
	Molecu	lar weight	:	No data available	





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Pa	article	characteristics size	:	Not applicable	
Ri Cl Po tic Ci In Hi	eactiv hemic ossibil ons onditio	ity al stability lity of hazardous reac- ons to avoid atible materials ous decomposition	:	Not classified as Stable under nor Can react with st None known. Oxidizing agents	rong oxidizing agents.
In In Si In	-	ntact	-	_	
		oxicity ssified based on availa	ble i	nformation.	
	roduc cute o	: <u>t:</u> ral toxicity	:	Acute toxicity esti Method: Calculati	mate: > 5,000 mg/kg on method
<u>C</u>	ompo	onents:			
	eftiofi cute o	u r: ral toxicity	:	LD50 (Rat): > 7,7	60 mg/kg

Benzyl alcohol:

 Acute oral toxicity
 : LD50 (Rat): 1,200 mg/kg

 Acute inhalation toxicity
 : LC50 (Rat): > 5.4 mg/l

 Exposure time: 4 h
 Test atmosphere: dust/mist

 Method: OECD Test Guideline 403

 Assessment: The substance or mixture has no acute inhalation toxicity

Silicon, amorphous:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401 Remarks: Based on data from similar materials
Acute inhalation toxicity	:	LC50 (Rat): > 2.08 mg/l



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			tion toxicity	
Acute	e dermal toxicity	:	LD50 (Rabbit): > Remarks: Based	5,000 mg/kg on data from similar materials
	corrosion/irritation	able	information.	
<u>Com</u>	ponents:			
Benz Spec Meth Resu	od	:	Rabbit OECD Test Guid No skin irritation	eline 404
Silico	on, amorphous:			
Spec Meth Resu Rema	od Ilt	:	Rabbit OECD Test Guid No skin irritation Based on data fro	eline 404 om similar materials
	ous eye damage/eye ir classified based on avail			
<u>Com</u>	ponents:			
Benz Spec Resu Meth	ılt _.	:	Rabbit Irritation to eyes, OECD Test Guid	reversing within 21 days eline 405
Silico	on, amorphous:			
Spec Resu Meth Rema	ılt od	:	Rabbit No eye irritation OECD Test Guid Based on data fro	eline 405 om similar materials
Resp	piratory or skin sensiti	zatio	on	
Skin	sensitization			

May cause an allergic skin reaction.

Respiratory sensitization

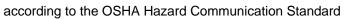
May cause allergy or asthma symptoms or breathing difficulties if inhaled.



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ersion 0	Revision Date: 09/28/2024	SDS Number: 7674006-00014	Date of last issue: 07/06/2024 Date of first issue: 12/15/2020
<u>Com</u>	oonents:		
Ceftic	ofur:		
	es of exposure	: Inhalation	
Resul Rema		: Sensitizer : May cause s	sensitization by inhalation.
Benz	yl alcohol:		
Test T	Гуре es of exposure	: Human repe : Skin contact	eat insult patch test (HRIPT)
Speci		: Humans	
Resul		: positive	
Asses	ssment	: Probability or rate in huma	or evidence of low to moderate skin sensitization ans
	cell mutagenicity	cilchle information	
	assified based on av ponents:	allable information.	
Ceftic			
	toxicity in vitro	: Test Type: E Result: nega	Bacterial reverse mutation assay (AMES) ative
		Test Type: I Result: nega	n vitro mammalian cell gene mutation test ative
		Test Type: u Result: nega	Inscheduled DNA synthesis assay ative
Geno	toxicity in vivo		Aicronucleus test
		Species: Ra	t Route: Intraperitoneal
		Result: nega	
II Benzy	yl alcohol:		
	toxicity in vitro	: Test Type: E Result: nega	Bacterial reverse mutation assay (AMES) ative
Geno	toxicity in vivo	: Test Type: I cytogenetic Species: Mo	
		Application Result: nega	Route: Intraperitoneal injection ative
Silico	on, amorphous:		
Geno	toxicity in vitro		Bacterial reverse mutation assay (AMES) CD Test Guideline 471
		iteouit. neud	





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Geno	otoxicity in vivo	cytogenetic te Species: Rat Application Ro Result: negati	utagenicity (in vivo mammalian bone-marrow st, chromosomal analysis) pute: Ingestion ve ued on data from similar materials
	inogenicity classified based on avail	able information	
	ponents:		
Benz	zyl alcohol:		
Spec Appli	cies ication Route osure time iod	: Mouse : Ingestion : 103 weeks : OECD Test G : negative	uideline 451
Silic	on, amorphous:		
Spec Appli Expo Resu Rem	ication Route osure time ult	: Rat : Ingestion : 103 weeks : negative : Based on data	a from similar materials
IARC			sent at levels greater than or equal to 0.1% is or confirmed human carcinogen by IARC.
OSH		nt of this product pr st of regulated carc	esent at levels greater than or equal to 0.1% is nogens.
NTP			sent at levels greater than or equal to 0.1% is ted carcinogen by NTP.
Not o Com	roductive toxicity classified based on avail ponents: iofur:	able information.	
	cts on fertility	: Test Type: Fe Application Ro Fertility: NOAI Result: No ad	oute: Oral EL: 1,000 mg/kg body weight
Effec	cts on fetal development	Application Ro	oute: Oral al Toxicity: NOAEL: 1,000 mg/kg body weight



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Benzy	l alcohol:			
Effects	s on fertility	:	Species: Rat Application Route Result: negative	y/early embryonic development e: Ingestion on data from similar materials
Effects	s on fetal development	:	Test Type: Embry Species: Mouse Application Route Result: negative	vo-fetal development e: Ingestion
Silico	n, amorphous:			
Effects	s on fetal development	:	Test Type: Embry Species: Rat Application Route Result: negative	vo-fetal development e: Ingestion

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure if swallowed.

Components:

Ceftiofur:

Routes of exposure Assessment	:	Oral May cause damage to organs through prolonged or repeated
		exposure.

Remarks: Based on data from similar materials

Repeated dose toxicity

Components:

Ceftiofur:

Species NOAEL Application Route Exposure time Target Organs Symptoms Remarks		Rat 30 mg/kg Oral 90 d Gastrointestinal tract Gastrointestinal disturbance May cause damage to organs.
Species NOAEL Application Route Exposure time Target Organs Remarks	:	Dog 30 mg/kg Oral 90 d Blood, Central nervous system May cause damage to organs.



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Spec NOA Appli	EL cation Route sure time	: Rat : 1.072 mg/l : inhalation (dus : 28 Days : OECD Test G	
Silico	on, amorphous:		
	EL cation Route sure time	: Rat : 1.3 mg/l : inhalation (due : 13 Weeks : Based on data	st/mist/fume) a from similar materials
Not c	ration toxicity classified based on ava prience with human ex		
Com	ponents:		
Cefti	ofur:		
	eral Information ation	ceptible perso : Symptoms: Na	tact may cause allergic reactions in very sus- ns. ausea, Vomiting, Abdominal pain, vaginitis, zziness, dry mouth, Fatigue, constipation, colitis
SECTION	12 ECOLOGICAL IN	FORMATION	

SECTION 12. ECOLOGICAL INFORMATION

Components:

Benzyl alcohol:

Denzyr alconol.		
Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 460 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 230 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 770 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		NOEC (Pseudokirchneriella subcapitata (green algae)): 310 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chron-	:	NOEC (Daphnia magna (Water flea)): 51 mg/l Exposure time: 21 d





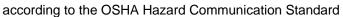
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ic toxic	sity)		Method: OECD To	est Guideline 211	
Silico	n, amorphous:				
Toxicit	y to fish	:	LC50 (Danio rerio (zebra fish)): > 10,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials		
	y to daphnia and other c invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials		
Toxicit plants	Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)) mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials		2 h est Guideline 201		
			mg/l Exposure time: 72 Method: OECD To		
Persis	tence and degradabili	ty			
Comp	onents:				
Benzy	l alcohol:				
Biodeg	gradability	:	Result: Readily bi Biodegradation: 9 Exposure time: 14	92 - 96 %	
Bioaco	cumulative potential				
Comp	onents:				
•	l alcohol: on coefficient: n- l/water	:	log Pow: 1.05		
	ty in soil a available				
	adverse effects a available				
SECTION 1	13. DISPOSAL CONSIE	DER	ATIONS		

Disposal methods

Waste from residues

: Dispose of in accordance with local regulations.





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Conta	minated packaging	: Empty containers handling site for	of waste into sewer. s should be taken to an approved waste recycling or disposal. specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable for product as supplied.

Domestic regulation

49 CFR Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards	:	Respiratory or skin sensitization Specific target organ toxicity (single or repeated exposure)
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

Glycerides, mixed decanoyl and octanoyl	73398-61-5
Ceftiofur	103980-44-5
Benzyl alcohol	100-51-6



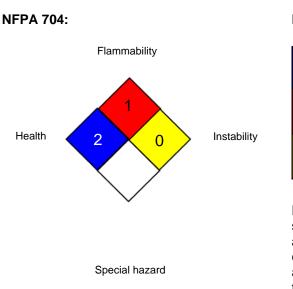
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Califo	ornia Permissible Exp		re Limits for Che		
	Silicon, amorphou	S		11	2945-52-5
The ingredients of this product are reported in the following inventories:					:
DSL		:	not determined		
AICS		:	not determined		
IECS	С	:	not determined		

SECTION 16. OTHER INFORMATION

Further information



HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

NIOSH REL OSHA Z-3	USA. NIOSH Recommended Exposure Limits USA. Occupational Exposure Limits (OSHA) - Table Z-3 Min- eral Dusts
US WEEL NIOSH REL / TWA	USA. Workplace Environmental Exposure Levels (WEEL) Time-weighted average concentration for up to a 10-hour
OSHA Z-3 / TWA US WEEL / TWA	workday during a 40-hour workweek 8-hour time weighted average 8-hr TWA

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with

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x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC -International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals: OECD - Organization for Economic Co-operation and Development: OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to	:	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety		eChem Portal search results and European Chemicals Agen-
Data Sheet		cy, http://echa.europa.eu/

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Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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