

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations Revision date: 7/14/2023 Supersedes: 1/2/2018 Version: 2.0

SECTION 1: Identification				
1.1. Identification				
Product form Product name	: Mixture : Dual Cure Opa	aquer Base		
1.2. Recommended use and restrictions on u	ISE			
Use of the substance/mixture	: For Rx Only			
1.3. Supplier				
Manufacturer BISCO, Inc. 1100 W. Irving Park Rd. Schaumburg, IL , 60193 U.S.A. T 1-800-247-3368 or 1-847-534-6000 sales@bisco.com - www.bisco.com				
1.4. Emergency telephone number				
Emergency number			at Emergency Communications Center tside the U.S.: 1-703-527-3887, collect calls accepted	
SECTION 2: Hazard(s) identification				
2.1. Classification of the substance or mixtur	re			
GHS US classification Skin corrosion/irritation Category 2 Serious eye damage/eye irritation Category 2 Skin sensitization, Category 1 Specific target organ toxicity - Single exposure, Categor Respiratory tract irritation Full text of H statements : see section 16	ory 3,	H315 H319 H317 H335	Causes skin irritation Causes serious eye irritation May cause an allergic skin reaction May cause respiratory irritation	
2.2. GHS Label elements, including precaution	on <mark>ary state</mark> me	ents		
GHS US labeling				
Hazard pictograms (GHS US)		•		
Signal word (GHS US) Hazard statements (GHS US)	 Warning H315 - Causes skin irritation H317 - May cause an allergic skin reaction H319 - Causes serious eye irritation H335 - May cause respiratory irritation 			
Precautionary statements (GHS US)	 P261 - Avoid breathing dust, fume, vapors. P264 - Wash hands thoroughly after handling P272 - Contaminated work clothing must not be allowed out of the workplace. P280 - Wear protective gloves/protective clothing/eye protection/face protection P302+P352 - If on skin: Wash with plenty of water and soap P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing. 			
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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/a doctor if you feel unwell
P321 - Specific treatment (see First aid measures on this label)
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P501 - Dispose in a safe manner in accordance with local/national regulations

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
BisGMA	CAS-No.: 1565-94-2	10 - 30	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 STOT SE 3, H335
Glass Filler	CAS-No.: N/A	10 - 30	Eye Irrit. 2, H319 STOT SE 3, H335
Urethane Dimethacrylate	CAS-No.: Proprietary	10 - 30	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 STOT SE 3, H335
2-Hydroxyethyl Methacrylate	CAS-No.: 868-77-9	10 - 30	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317
Triethylene Glycol Dimethacrylate	CAS-No.: 109-16-0	10 - 30	Skin Sens. 1B, H317
Titanium Dioxide	CAS-No.: 13463-67-7	5 - 10	Carc. 2, H351
N,N-bis(2-Hydroxyethyl)-p-Toluidine	CAS-No.: 3077-12-1	1 - 5	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures	
4.1. Description of first aid measures	
First-aid measures after inhalation First-aid measures after skin contact	 Remove person to fresh air and keep comfortable for breathing. Wash skin with plenty of water. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.

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First-aid measures after eye contact First-aid measures after ingestion	 Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell. 			
4.2. Most important symptoms and effects (acute and delayed)				
Symptoms/effects after skin contact Symptoms/effects after eye contact	Irritation. May cause an allergic skin reaction.Eye irritation.			

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures			
5.1. Suitable (and unsuitable) extinguishing	j media		
Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.		
5.2. Specific hazards arising from the chemical			
Hazardous decomposition products in case of fire : Toxic fumes may be released.			
5.3. Special protective equipment and precautions for fire-fighters			
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.		

SECTION 6: Accidental release measures			
6.1. Personal precautions, protective equ	ipment and emergency procedures		
6.1.1. For non-emergency personnel Emergency procedures	: Ventilate spillage area. Avoid contact with skin and eyes. Avoid breathing dust, fume, vapors.		
6.1.2. For emergency responders			
Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".		
6.2. Environmental precautions			
Avoid release to the environment.			
6.3. Methods and material for containment	nt and cleaning up		
Methods for cleaning up Other information	Take up liquid spill into absorbent material.Dispose of materials or solid residues at an authorized site.		
6.4. Reference to other sections			

For further information refer to section 13.

SECTION 7: Handling and storage	
7.1. Precautions for safe handling	
Precautions for safe handling	: Ensure good ventilation of the work station. Avoid contact with skin and eyes. Wear personal protective equipment. Avoid breathing dust, fume, vapors.

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Hygiene measures	: Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.
7.2. Conditions for safe storage, inc	luding any incompatibilities
Storage conditions	: Store in a well-ventilated place. Keep cool.
SECTION 8: Exposure controls/p	personal protection
8.1. Control parameters	
No additional information available	
8.2. Appropriate engineering contro	ls
Appropriate engineering controls Environmental exposure controls	Ensure good ventilation of the work station.Avoid release to the environment.
8.3. Individual protection measures/	Personal protective equipment
Hand protection:	
Protective gloves	
Eye protection:	
Safety glasses	
Skin and body protection:	
Wear suitable protective clothing	
Respiratory protection:	
In case of insufficient ventilation, wear suita	able respiratory equipment



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Viscous Liquid.
Color	:	Straw
Odor	:	Acrylic
Odor threshold	:	No data available
рН	:	No data available
Melting point	:	Not applicable
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Not applicable.
Vapor pressure	:	No data available

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Relative vapor density at 20°C Relative density Solubility Partition coefficient n-octanol/water (Log Pow) Auto-ignition temperature Decomposition temperature Viscosity, kinematic Viscosity, dynamic Explosion limits Explosive properties	 No data available
Explosive properties Oxidizing properties	No data availableNo data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information			
11.1. Information on toxicological effects			
Acute toxicity (dermal) :	Not classified Not classified Not classified		
Triethylene Glycol Dimethacrylate (109-16-0)			
LD50 oral rat	10837 mg/kg Source: NLM,THOMSON		
LD50 dermal	> 2000 mg/kg body weight (US EPA, 14 day(s), Mouse, Male, Experimental value, Skin, 14 day(s))		
ATE US (oral)	10837 mg/kg body weight		
2-Hydroxyethyl Methacrylate (868-77-9)			
LD50 oral rat	5564 mg/kg body weight (Rat, Experimental value, Oral)		

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2-Hydroxyethyl Methacrylate (868-77-9)		
LD50 dermal rabbit	> 5000 mg/kg (24 h, Rabbit, Male, Experimental value, Dermal)	
ATE US (oral)	5564 mg/kg body weight	
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-	-1)	
LD50 oral rat	959 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Remarks on results: other:	
LD50 dermal rat	 > 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal)), Guideline: EPA OPPTS 870.1200 (Acute Dermal Toxicity), Guideline: other: 	
ATE US (oral)	500 mg/kg body weight	
Titanium Dioxide (13463-67-7)	·	
LD50 oral rat	> 2000 mg/kg body weight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))	
LC50 Inhalation - Rat	> 5.09 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male, Experimental value, Inhalation (dust), 14 day(s))	
LC50 Inhalation - Rat (Dust/Mist)	> 6.82 mg/l Source: ECHA	
Skin corrosion/irritation :	Causes skin irritation.	
Triethylene Glycol Dimethacrylate (109-16-0)		
рН	6.8 - 7.2	
2-Hydroxyethyl Methacrylate (868-77-9)		
рН	No data available in the literature	
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-	-1)	
рН	6.91 (20 °C, OECD 105: Water Solubility)	
Titanium Dioxide (13463-67-7)	·	
рН	7 Source: ECHA	
Serious eye damage/irritation :	Causes serious eye irritation.	
Triethylene Glycol Dimethacrylate (109-16-0)		
рН	6.8 - 7.2	
2-Hydroxyethyl Methacrylate (868-77-9)		
pH	No data available in the literature	
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-	-1)	
рН	6.91 (20 °C, OECD 105: Water Solubility)	
Titanium Dioxide (13463-67-7)	1	
pH	7 Source: ECHA	
Respiratory or skin sensitization :	May cause an allergic skin reaction.	
	Not classified	
	Not classified	
Titanium Dioxide (13463-67-7)		
IARC group	2B - Possibly carcinogenic to humans	
Reproductive toxicity :	Not classified	

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STOT-single exposure : May cause respiratory irritation.			
Urethane Dimethacrylate (Proprietary)			
STOT-single exposure	May cause respiratory irritation.		
Glass Filler (N/A)			
STOT-single exposure	May cause respiratory irritation.		
BisGMA (1565-94-2)	·		
STOT-single exposure	May cause respiratory irritation.		
STOT-repeated exposure :	Not classified		
Triethylene Glycol Dimethacrylate (109-16-0)			
LOAEC (inhalation,rat,gas,90 days)	350 ppm Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Remarks on results: other:		
NOAEL (oral,rat,90 days)	1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)		
NOAEC (inhalation,rat,gas,90 days)	100 ppm Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Remarks on results: other:		
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12	-1)		
NOAEL (oral,rat,90 days)	100 mg/kg body weight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents), Guideline: EU Method B.7 (Repeated Dose (28 Days) Toxicity (Oral)), Guideline: other:		
	Not classified No data available		
2-Hydroxyethyl Methacrylate (868-77-9)			
Viscosity, kinematic	6.4 mm²/s (20 °C)		
Titanium Dioxide (13463-67-7)			
Viscosity, kinematic	Not applicable (solid)		
Symptoms/effects after skin contact : Symptoms/effects after eye contact :	Irritation. May cause an allergic skin reaction. Eye irritation.		

SECTION 12: Ecological information			
12.1. Toxicity			
Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.			
Triethylene Glycol Dimethacrylate (109-16-0)			
LC50 - Fish [1] 16.4 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)			
EC50 72h - Algae [1] > 100 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous nam Raphidocelis subcapitata, Selenastrum capricornutum)			
EC50 72h - Algae [2]	72.8 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)		
ErC50 algae > 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapital Static system, Fresh water, Experimental value, Nominal concentration)			
LOEC (chronic) 100 mg/l Test organisms (species): Daphnia magna Duration: '21 d'			

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Triethylene Glycol Dimethacrylate (109-16-0)			
OEC (chronic) 32 mg/l Test organisms (species): Daphnia magna Duration: '21 d'			
2-Hydroxyethyl Methacrylate (868-77-9)			
LC50 - Fish [1]	> 100 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oryzias latipes, Semi-static system, Fresh water, Experimental value, GLP)		
EC50 - Crustacea [1]	380 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)		
ErC50 algae 836 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitat Static system, Fresh water, Experimental value, GLP)			
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-	12-1)		
LC50 - Fish [1]	> 100 mg/l Test organisms (species): Cyprinus carpio		
EC50 - Crustacea [1]	48 mg/l Test organisms (species): Daphnia magna		
ErC50 algae	> 100 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Nominal concentration)		
Titanium Dioxide (13463-67-7)			
LC50 - Fish [1] > 100 mg/l			
EC50 - Crustacea [1] > 1000 mg/l (Invertebrata, Fresh water)			
EC50 - Other aquatic organisms [1]	> 100 mg/l Test organisms (species):		
EC50 72h - Algae [1]	> 50 mg/l Source: ECHA		
LOEC (chronic)	5 mg/l Test organisms (species): Daphnia magna Duration: '21 d'		
BisGMA (1565-94-2)			
LC50 - Fish [1]	0.537 mg/l Source: ECOSAR		

12.2. Persistence and degradability

Triethylene Glycol Dimethacrylate (109-16-0)		
Persistence and degradability	Readily biodegradable in water.	
2-Hydroxyethyl Methacrylate (868-77-9)		
Persistence and degradability	Biodegradability in soil: no data available. Readily biodegradable in water.	
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-1)		
Persistence and degradability Not readily biodegradable in water.		
Titanium Dioxide (13463-67-7)		
Persistence and degradability Biodegradability: not applicable.		
Chemical oxygen demand (COD) Not applicable (inorganic)		
ThOD Not applicable (inorganic)		
BisGMA (1565-94-2)		
Persistence and degradability Biodegradability in water: no data available.		

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12.3. Bioaccumulative potential			
Triethylene Glycol Dimethacrylate (109-16-0)			
Partition coefficient n-octanol/water (Log Pow)	2.3 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method)		
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).		
2-Hydroxyethyl Methacrylate (868-77-9)			
Partition coefficient n-octanol/water (Log Pow) 0.42 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 25 °C)			
Bioaccumulative potential Not bioaccumulative.			
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-1)			
Partition coefficient n-octanol/water (Log Pow) 2 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), °C)			
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).		
Titanium Dioxide (13463-67-7)			
Bioaccumulative potential Not bioaccumulative.			
BisGMA (1565-94-2)			
Partition coefficient n-octanol/water (Log Pow)	4.94 (Estimated value)		
Bioaccumulative potential No bioaccumulation data available.			

12.4. Mobility in soil

Triethylene Glycol Dimethacrylate (109-16-0)			
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.89 (log Koc, SRC PCKOCWIN v2.0, Calculated value)		
Ecology - soil	Highly mobile in soil.		
2-Hydroxyethyl Methacrylate (868-77-9)			
Surface tension No data available in the literature			
Organic Carbon Normalized Adsorption Coefficient (Log Koc) 0.164 - 0.708 (log Koc, SRC PCKOCWIN v2.0, Calculated value)			
Ecology - soil	Adsorbs into the soil.		
N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12	N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-1)		
Surface tension 63 mN/m (20 °C, 1 g/l, EU Method A.5: Surface tension)			
Organic Carbon Normalized Adsorption Coefficient	2.33 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)		
(Log Koc)			
(Log Koc)	Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)		
(Log Koc) Ecology - soil	Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)		
(Log Koc) Ecology - soil Titanium Dioxide (13463-67-7)	Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value) Low potential for adsorption in soil.		

12.5. Other adverse effects

No additional information available

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SECTION 13: Disposal considerations			
13.1. Disposal methods			
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.		
SECTION 14: Transport information			
In accordance with DOT / TDG / IMDG / IATA			
14.1. UN number			
Not regulated for transport			
14.2. UN proper shipping name			
Proper Shipping Name (DOT):Not applicableProper Shipping Name (TDG):Not applicableProper Shipping Name (IMDG):Not applicableProper Shipping Name (IATA):Not applicable			
14.3. Transport hazard class(es)			
DOT Transport hazard class(es) (DOT)	: Not applicable		
TDG Transport hazard class(es) (TDG)	: Not applicable		
IMDG Transport hazard class(es) (IMDG)	: Not applicable		
IATA Transport hazard class(es) (IATA)	: Not applicable		
14.4. Packing group			
Packing group (DOT) Packing group (TDG) Packing group (IMDG) Packing group (IATA)	 Not applicable Not applicable Not applicable Not applicable 		
14.5. Environmental hazards			
Other information	: No supplementary information available.		
14.6. Special precautions for user			
DOT No data available			
TDG No data available			
IMDG No data available			

IATA

No data available

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14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory, except for:

Urethane Dimethacrylate	CAS-No. Proprietary	10 - 30%
Glass Filler	CAS-No. N/A	10 - 30%

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Triethylene Glycol Dimethacrylate (109-16-0)

Listed on the Canadian DSL (Domestic Substances List)

2-Hydroxyethyl Methacrylate (868-77-9)

Listed on the Canadian DSL (Domestic Substances List)

N,N-bis(2-Hydroxyethyl)-p-Toluidine (3077-12-1)

Listed on the Canadian DSL (Domestic Substances List)

Titanium Dioxide (13463-67-7)

Listed on the Canadian DSL (Domestic Substances List)

BisGMA (1565-94-2)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Triethylene Glycol Dimethacrylate (109-16-0)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

Titanium Dioxide (13463-67-7)

Listed on IARC (International Agency for Research on Cancer) Listed on INSQ (Mexican National Inventory of Chemical Substances)

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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Component	State or local regulations
Titanium Dioxide(13463-67-7)	U.S New Jersey - Right to Know Hazardous Substance List; U.S Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

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Full text of H-phrases		
H302	Harmful if swallowed	
H315	Causes skin irritation	
H317	May cause an allergic skin reaction	
H318	Causes serious eye damage	
H319	Causes serious eye irritation	
H335 May cause respiratory irritation		
H351	Suspected of causing cancer	

Indication	of	changes.
muication	UI.	changes.

indication of changes.			
Section	Changed item	Change	Comments
	Revision date	Added	
	Precautionary statements (GHS US)	Modified	
	Signal word (GHS US)	Added	
	Hazard statements (GHS US)	Modified	
	Supersedes	Added	
	Issue date	Removed	
2.1	GHS-US classification	Modified	
3	Composition/Information on ingredients	Modified	
5.2	Hazardous decomposition products in case of fire	Added	
6	Emergency procedures	Modified	
7.1	Precautions for safe handling	Modified	

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.