Section 1. Identification of the substance/preparation and of the company/undertaking

Product name:
LOCTITE ECCOBOND UF 3812 55CC

Other means of identification:
LOCTITE ECCOBOND UF 3812 55CC

Product code:
IDH3110085
Recommended use of the chemical and restrictions on use

Intended use:
1-c- epoxide adhesive
Manufacturer/Importer/Distributor Representative Company
Henkel Thailand Ltd. The Offices at Centralworld,
35th Floor, 999/9 Rama 1 Rd.,
Kwang Patumwan, Khet Patumwan,
10330 Bangkok

Thailand

Phone: +66 (2209) 8000
Fax-no.: +66 (2209) 8008

E-mail address of person responsible for Safety Data Sheet:
ap-ua-psra.sea@henkel.com

Emergency Telephone for Chemical Accidents:
FOR EMERGENCIES ONLY (Spill, major leak, Fire, Exposure, or Accident). Call: +662 209 8008

Section 2. Hazards identification

GHS Classification:

Hazard Class	Hazard Category
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Respiratory sensitizer	Category 1
Skin sensitizer	Category 1
Chronic hazards to the aquatic environment	Category 2

GHS label elements:

Hazard pictogram:



Signal word:
Danger

Hazard statement:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H411 Toxic to aquatic life with long lasting effects.

Precaution:

Prevention:
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 [In case of inadequate ventilation] wear respiratory protection.

Response:
P302+P352 IF ON SKIN: Wash with plenty of water.
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.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Disposal:
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Section 3. Composition / information on ingredients

Substance or Mixture:
Mixture

Declaration of hazardous chemical:

Hazard component CAS-No.	Content	GHS Classification
hexahydro-4-methylphthalic anhydride 19438-60-9	30- 60 %	Serious eye damage/eye irritation 1 H318 Respiratory sensitizer 1 H334 Skin sensitizer 1 H317
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	10- 30 %	Acute toxicity 5; Oral H303 Serious eye damage/eye irritation 1 H318 Respiratory sensitizer 1 H334 Skin sensitizer 1 H317 Acute hazards to the aquatic environment 3 H402
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	10- 30 %	Skin corrosion/irritation 2 H315 Skin sensitizer 1A H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	10- 30 %	Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 2A H319 Skin sensitizer 1 H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	1- 10 %	Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 2A H319 Skin sensitizer 1 H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
2,2'-(Phenylene)bis[oxirane] 30424-08-9	1- 10 %	Acute toxicity 5; Oral H303 Acute toxicity 5; Dermal H313 Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 2A H319 Skin sensitizer 1A H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1- 10 %	Skin sensitizer 1B H317
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	1- 10 %	Skin corrosion/irritation 2 H315 Serious eye damage/eye irritation 2A H319 Skin sensitizer 1 H317

		Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
2-(Ethylphenyl)oxirane 58220-88-5	0.1- 1 %	Skin sensitizer 1 H317 Acute hazards to the aquatic environment 2 H401 Chronic hazards to the aquatic environment 2 H411
Carbon black - Nano 1333-86-4	0.1- 1 %	

Section 4. First aid measures

Inhalation:
Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:
Rinse with running water and soap.
Obtain medical attention if irritation persists.

Eye contact:
Rinse immediately with plenty of running water (for 10 minutes), seek medical attention from a specialist.

Ingestion:
Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

Section 5. Fire fighting measures

Suitable extinguishing media:
Carbon dioxide, foam, powder

Specific hazards arising from the chemical:
In case of fire, keep containers cool with water spray.

Special protection equipment and precautions for firefighters:
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Hazardous combustion products:
Oxides of carbon, oxides of nitrogen, irritating organic vapors.
Sulphur oxides

Section 6. Accidental release measures

Personal precautions:
Avoid dust formation.
Ensure adequate ventilation.
Avoid skin and eye contact.
Wear protective equipment.
See advice in section 8

Environmental precautions:
Do not empty into drains / surface water / ground water.

Clean-up methods:
Remove all sources of ignition.
Remove mechanically.

Use appropriate industrial vacuum cleaners or central vacuum systems for dust removal.
Ensure adequate ventilation.
Dispose of contaminated material as waste according to Section 13.

Section 7. Handling and storage

Handling:
Use only in well-ventilated areas.
Avoid skin and eye contact.
Prolonged or repeated skin contact should be avoided to minimise any risk of sensitisation.
See advice in section 8

Storage:
Store in sealed original container.
Refer to Technical Data Sheet.
Protect from direct sunlight.
Keep container tightly sealed.

Section 8. Exposure controls / personal protection

Components with specific control parameters for workplace:

HEXAHYDROPHTHALIC ANHYDRIDE, ALL ISOMERS, INHALABLE FRACTION AND VAPOR 85-42-7	**Value type**	Ceiling Limit Value:
	mg/m³	0.005
	Remarks	ACGIH
CARBON BLACK, INHALABLE FRACTION 1333-86-4	**Value type**	Time Weighted Average (TWA):
	mg/m³	3
	Remarks	ACGIH

Respiratory protection:
Do not inhale dust.
Ensure adequate ventilation.
An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area
In case of dust formation, we recommend wearing of appropriate respiratory protection equipment with particle filter P (EN 14387).
This recommendation should be matched to local conditions.

Hand protection:
Chemical-resistant protective gloves (EN 374).
Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:
Wear protective glasses.
Protective eye equipment should conform to EN166.

Body protection:
Wear suitable protective clothing.
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Engineering controls:
Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

General protection and hygiene measures:
The workplace should be equipped with an emergency shower and eye-rinsing facility.

Hygienic measures:
Wash hands before work breaks and after finishing work.
Do not eat, drink or smoke while working.
Take off contaminated clothing and wash before reuse.

Section 9. Physical and chemical properties

Appearance:	Black liquid
Odor:	Mild
Odor threshold (CA):	No data available.
pH:	Not applicable, Product is non-soluble (in water).
Melting point / freezing point:	Not applicable, Product is a liquid
Specific gravity:	1.23
Boiling point:	No data available.
Flash point:	> 93 °C (> 199.4 °F)
Evaporation rate:	No data available.
Flammability (solid, gas):	non flammable
Lower explosive limit:	No data available.
Upper explosive limit:	No data available.
Vapor pressure:	Not available.
Vapor density:	Not available.
Density:	1.23 g/cm3
Solubility:	No data available.
Partition coefficient: n-octanol/water:	No data available.
Auto ignition:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.
VOC content:	No data available.

Section 10. Stability and reactivity

Reactivity/Incompatible materials:
Reaction with strong acids.
Reacts with strong oxidants.
Chemical stability:
Stable under recommended storage conditions.
Conditions to avoid:
Stable
Hazardous decomposition products:
Oxides of carbon.

Section 11. Toxicological information

Health Effects:

Skin: Causes skin irritation.
May cause an allergic skin reaction.
Eyes: Causes serious eye damage.
Inhalation: May cause allergic respiratory reaction.
Symptoms of Overexposure**:** None known.

Acute oral toxicity:

hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 423 (Acute Oral toxicity)
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	LD50
	Value	4,040 mg/kg
	Species	rat
	Method	not specified
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LD50
	Value	> 5,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 420 (Acute Oral Toxicity)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 420 (Acute Oral Toxicity)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 420 (Acute Oral Toxicity)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	Acute toxicity estimate (ATE)
	Value	2,500 mg/kg
	Species	
	Method	Expert judgement
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 420 (Acute Oral Toxicity)
2-(Ethylphenyl)oxirane 58220-88-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	not specified
Carbon black - Nano 1333-86-4	Value type	LD50
	Value	> 8,000 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)

Acute inhalative toxicity:

Carbon black - Nano 1333-86-4	Value type	LC50
	Value	> 0.0046 mg/l
	Exposure time	4 h
	Species	rat
	Method	equivalent or similar to OECD Guideline 403 (Acute Inhalation Toxicity)

Acute dermal toxicity:

hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rabbit
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 402 (Acute Dermal Toxicity)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	Acute toxicity estimate (ATE)
	Value	2,500 mg/kg
	Species	
	Method	Expert judgement
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
2-(Ethylphenyl)oxirane 58220-88-5	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	not specified

Skin corrosion/irritation:

hexahydro-4-methylphthalic anhydride 19438-60-9	Result	moderately irritating
	Exposure time	24 h
	Species	rabbit
	Method	Expert judgement
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	irritating
	Exposure time	4 h
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700	Result	irritating
	Exposure time	
	Species	
	Method	Weight of evidence

25068-38-6		
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	moderately irritating
	Exposure time	24 h
	Species	rabbit
	Method	Draize Test
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	irritating
	Exposure time	
	Species	
	Method	Weight of evidence
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	irritating or corrosive
	Exposure time	15 min
	Species	Human, EpiSkinTM (SM), Reconstructed Human Epidermis (RHE)
	Method	EU Method B.46 (In vitro skin irrit.: reconstructed human epidermis model test)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	not corrosive
	Exposure time	240 min
	Species	Human, EpiSkinTM (SM), Reconstructed Human Epidermis (RHE)
	Method	OECD Guideline 431 (In Vitro Skin Corrosion: Reconstructed Human Epidermis (RHE) Test Method)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	irritating
	Exposure time	
	Species	
	Method	Weight of evidence
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Result	not irritating
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Carbon black - Nano 1333-86-4	Result	not irritating
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)

Serious eye damage/irritation:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	irritating
	Exposure time	
	Species	
	Method	Weight of evidence
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	irritating
	Exposure time	
	Species	
	Method	Weight of evidence
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	irritating
	Exposure time	
	Species	
	Method	expert judgment
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Carbon black - Nano 1333-86-4	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Result	sensitising
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	OECD Guideline 406 (Skin Sensitisation)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	Sub-Category 1A (sensitising)
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	Sub-Category 1A (sensitising)
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Result	Sub-Category 1B (sensitising)
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	OECD Guideline 406 (Skin Sensitisation)
Carbon black - Nano 1333-86-4	Result	not sensitising
	Test type	Mouse local lymphnode assay (LLNA)
	Species	mouse
	Method	OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay)

Germ cell mutagenicity:

hexahydro-4-methylphthalic anhydride 19438-60-9	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	Ames Test
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	positive
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 486 (Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells in vivo)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 472 (Genetic Toxicology: Escherichia coli, Reverse Mutation Assay)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	EU Method B.13/14 (Mutagenicity)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative with metabolic activation
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	not specified
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 488 (In Vivo Transgenic Cell Gene Mutation Assays)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	mouse
	Method	not specified
Carbon black - Nano	Result	negative

1333-86-4	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Carbon black - Nano 1333-86-4	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Carbon black - Nano 1333-86-4	Result	negative
	Type of study / Route of administration	sister chromatid exchange assay in mammalian cells
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 479 (Genetic Toxicology: In Vitro Sister Chromatid Exchange Assay in Mammalian Cells)
Carbon black - Nano 1333-86-4	Result	negative
	Type of study / Route of administration	in vitro mammalian cell micronucleus test
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Carbon black - Nano 1333-86-4	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 490 (In Vitro Mammalian Cell Gene Mutation Tests Using the Thymidine Kinase Gene)
Carbon black - Nano 1333-86-4	Result	negative
	Type of study / Route of administration	inhalation
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 489 (In Vivo Mammalian Alkaline Comet Assay)

Repeated dose toxicity:

Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	NOAEL=250 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	13 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	NOAEL=50 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	14 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	NOAEL=50 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	14 wdaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	NOAEL=100 mg/kg
	Route of application	dermal
	Exposure time / Frequency of treatment	13 w3 times/w
	Species	mouse
	Method	OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)
Carbon black - Nano 1333-86-4	Result	NOAEL=> 1,000 mg/kg
	Route of application	oral: gavage
	Exposure time / Frequency of treatment	90 ddaily
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Carbon black - Nano 1333-86-4	Result	NOAEL=1 mg/m3
	Route of application	inhalation
	Exposure time / Frequency of treatment	13 w6 h/d, 5 d/w
	Species	rat
	Method	not specified

Section 12. Ecological information

General ecological information: Do not empty into drains / surface water / ground water.

Ecotoxicity: H411 Toxic to aquatic life with long lasting effects.

Toxicity:

hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	LC50
	Value	> 100 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	EC50
	Value	> 100 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	EC50
	Value	135 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC10
	Value	77.5 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
hexahydro-4-methylphthalic anhydride 19438-60-9	Value type	EC10
	Value	85 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	18 h
	Species	
	Method	not specified
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	LC50
	Value	660 mg/l
	Acute Toxicity Study	Fish
	Exposure time	48 h
	Species	Leuciscus idus
	Method	DIN 38412-15
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	EC50
	Value	103 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	24 h
	Species	Daphnia magna
	Method	not specified
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	EC10
	Value	54 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC50
	Value	95.6 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)

cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Value type	EC10
	Value	85 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	18 h
	Species	
	Method	not specified
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	LC50
	Value	5.7 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Leuciscus idus
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	EC50
	Value	2.55 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	EC50
	Value	1.8 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge, industrial
	Method	other guideline:
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	LC50
	Value	1.75 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	EC50
	Value	1.7 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	EC50
	Value	> 11 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOEC
	Value	4.2 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge, industrial
	Method	other guideline:
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	LC50
	Value	1.2 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	EPA-660 (Methods for Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	EC50
	Value	2.7 mg/l
	Acute Toxicity Study	Daphnia

	Exposure time	48 h
	Species	Daphnia magna
	Method	other guideline:
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	EC50
	Value	> 11 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	other guideline:
	Value type	NOEC
	Value	4.2 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	other guideline:
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge, industrial
	Method	other guideline:
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	LC50
	Value	2.4 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	EC50
	Value	1.2 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	EC50
	Value	21 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Desmodesmus subspicatus
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOEC
	Value	3.2 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Desmodesmus subspicatus
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Value type	EC50
	Value	160 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge
	Method	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	LC50
	Value	> 160 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	EC50
	Value	> 100 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	EC50
	Value	> 100 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Raphidocelis subcapitata (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)

reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Value type	EC50
	Value	> 1,000 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge of a predominantly domestic sewage
	Method	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	Value type	LC50
	Value	1.75 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	Value type	EC50
	Value	1.7 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	Value type	EC50
	Value	> 11 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	NOEC
	Value	4.2 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Scenedesmus capricornutum
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	Value type	IC50
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge, industrial
	Method	other guideline:
2-(Ethylphenyl)oxirane 58220-88-5	Value type	LC50
	Value	2.4 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Oncorhynchus mykiss
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
2-(Ethylphenyl)oxirane 58220-88-5	Value type	EC50
	Value	1.2 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
2-(Ethylphenyl)oxirane 58220-88-5	Value type	ErC50
	Value	21 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Desmodesmus subspicatus
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
2-(Ethylphenyl)oxirane 58220-88-5	Value type	EC50
	Value	160 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	3 h
	Species	activated sludge
	Method	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)

Persistence and degradability:

hexahydro-4-methylphthalic anhydride 19438-60-9	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	2 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)

cyclohexane-1,2-dicarboxylic anhydride 85-42-7	Result	readily biodegradable
	Route of application	aerobic
	Degradability	98 %
	Method	EU Method C.4-A (Determination of the "Ready" BiodegradabilityDissolved Organic Carbon (DOC) Die-Away Test)
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	5 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	Result	not inherently biodegradable
	Route of application	not specified
	Degradability	12 %
	Method	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	5 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	16 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	0.8 %
	Method	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	5 %
	Method	OECD Guideline 301 F (Ready Biodegradability: Manometric Respirometry Test)
2-(Ethylphenyl)oxirane 58220-88-5	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	16 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)

Bioaccumulative potential / Mobility in soil:

hexahydro-4-methylphthalic anhydride 19438-60-9	LogPow	2.09
	Temperature	40 °C
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
cyclohexane-1,2-dicarboxylic anhydride 85-42-7	LogPow	2.17
	Temperature	
	Method	not specified
Reaction mass bisphenol-F-(epichlorhydrin) 9003-36-5	LogPow	2.7 - 3.6
	Temperature	
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, number average molecular weight ≤ 700 25068-38-6	LogPow	3.242
	Temperature	25 °C
	Method	EU Method A.8 (Partition Coefficient)
Biphenyl-4-(2,3-epoxypropoxy)propane 1675-54-3	LogPow	> 2.64 - 3.78
	Temperature	25 °C
	Method	OECD Guideline 117 (Partition Coefficient (n-octanol / water), HPLC Method)
2,2'-(Phenylene)bis[oxirane] 30424-08-9	LogPow	1.36 - 2.68
	Temperature	
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)

reaction products of 2-methylimidazole and 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	LogPow	2.37
	Temperature	
	Method	OECD Guideline 107 (Partition Coefficient (n-octanol / water), Shake Flask Method)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane 25068-38-6	LogPow	3.242
	Temperature	25 °C
	Method	EU Method A.8 (Partition Coefficient)

Section 13. Disposal considerations

Product

Method of disposal:
Dispose of in accordance with local and national regulations.

Packaging

Disposal of uncleaned packages:
Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

Section 14. Transport information

Road transport ADR:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)

Railroad transport RID:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)

Inland water transport ADN:

Class:	9
Packing group:	III
Classification code:	M6
Hazard ident. number:	90
UN no.:	3082
Label:	9
Technical name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)

Marine transport IMDG:

Class:	9
Packing group:	III
UN no.:	3082
Label:	9
EmS:	F-A ,S-F
Seawater pollutant:	Marine pollutant
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin)

Air transport IATA:

Class:	9
Packing group:	III
Packaging instructions (passenger):	964
Packaging instructions (cargo):	964
UN no.:	3082
Label:	9
Proper shipping name:	Environmentally hazardous substance, liquid, n.o.s. (Epoxy resin)

Further information for transport:

The transport classifications in this section apply generally to packed and bulk goods alike. For containers with a net volume of no more than 5 L for liquid substances or a net mass of no more than 5 kg for solid substances per individual or inner package, the exemptions SP 375 (ADR), A197 (IATA), 2.10.2.7 (IMDG), NZ 4.3(10) may be applied, which can result in a deviation from the transport classification for packed goods.

Section 15. Regulatory information

Regulatory Information:

Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555

Global inventory status:

Regulatory list	Notification
TCSI	yes
TSCA	yes
ISHL (JP)	yes
KECI (KR)	yes

Section 16. Other information

Disclaimer:
This Safety Data Sheet has been generated based on Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555 only. No warranty or representation of any kind is given with respect to the substantive or export laws of any other jurisdiction or country. Please confirm that the information provided herein conforms to the substantive export or other law of any other jurisdiction prior to export. Please contact Henkel Product Safety and Regulatory Affairs for additional assistance.
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