



Safety Data Sheet (SDS) According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

Issuing Date: 2018-05-24

Revision Date: 2024-03-04

Version: 2

SECTION 1. Identification

Product identifier

Product No 12692
Product name SignalStain® Apoptosis (Cleaved Caspase-3) IHC Detection Kit

Kit Component
9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb
12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control
9997: Tris Buffered Saline with Tween® 20 (TBST-10X)
8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)
11724: SignalStain® DAB Diluent
11725: SignalStain® DAB Chromogen Concentrate
8112: SignalStain® Antibody Diluent
5425: Normal Goat Serum

UN number UN1993

Recommended use of the chemical and restrictions on use

Identified uses This product is intended for research purposes only.
Manufacturer, importer, supplier

Manufacturer address Cell Signaling Technology, Inc.
3 Trask Lane
Danvers, MA 01923
United States
TEL: +1 978 867 2300
FAX: +1 978 867 2400

Website www.cellsignal.com
Email address support@cellsignal.com
Emergency telephone number In case of emergency call CHEMTREC 1-800-424-9300

SECTION 2. Hazard(s) identification

Classification

Classification and label elements described below are inclusive of all hazards of the combined kit. The most severe classifications are listed for each endpoint. Refer to individual kit component SDS for classification and label elements for each component present in the kit.

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Acute inhalation toxicity	Category 4

Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity	Category 1B
Reproductive toxicity	Category 1B
Flammable liquids	Category 2

GHS Label elements, including precautionary statements



Signal Word

Danger

Hazard statement(s)

Highly flammable liquid and vapor.

Harmful if swallowed.

Harmful if inhaled.

May cause an allergic skin reaction.

Causes serious eye irritation.

Suspected of causing genetic defects.

May cause cancer.

May damage fertility or the unborn child.

Precautionary Statement(s)

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

Keep container tightly closed.

Ground/Bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Avoid breathing dust/fume/gas/mist/vapors/spray.

Wash face, hands and any exposed skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Contaminated work clothing should not be allowed out of the workplace.

Call a POISON CENTER or doctor/physician if you feel unwell

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.

IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

IF IN EYES: 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.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

In case of fire: Use dry chemical, CO₂, water spray or alcohol-resistant foam to extinguish

Store locked up.

Dispose of contents/container to an approved waste disposal plant.

Supplementary Hazard Information

May be harmful if swallowed.

Hazards not otherwise classified (HNOC)

Not applicable.

SECTION 3. Composition/information on ingredients**Kit Component 11724: SignalStain® DAB Diluent**

DANGER: May damage fertility or the unborn child.

Chemical name	CAS No	Weight-%
1-Imidazole	288-32-4	0.1-0.5

Kit Component 11725: SignalStain® DAB Chromogen Concentrate

DANGER: Highly flammable liquid and vapor. Harmful if swallowed. Harmful if inhaled. Causes serious eye irritation. Suspected of causing genetic defects. May cause cancer.

Chemical name	CAS No	Weight-%
acetonitrile	75-05-8	50
3,3-Diaminobenzidine tetrahydrochloride hydrate	868272-85-9	2.5

Kit Component 9997: Tris Buffered Saline with Tween® 20 (TBST-10X)

Chemical name	CAS No	Weight-%
trometamol	77-86-1	<2

Kit Component 8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)

WARNING: May cause an allergic skin reaction.

Chemical name	CAS No	Weight-%
2-methyl-2H-isothiazol-3-one	2682-20-4	<0.01
5-chloro-2-methyl-2H-isothiazol-3-one	26172-55-4	<0.01

Kit Component 9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb

Chemical name	CAS No	Weight-%
glycerol	56-81-5	30-60
sodium azide	26628-22-8	<0.02

Kit Component 8112: SignalStain® Antibody Diluent

Chemical name	CAS No	Weight-%
sodium azide	26628-22-8	<0.1

Kit Component 5425: Normal Goat Serum

Chemical name	CAS No	Weight-%
goat serum	-	>99
Sodium o-(ethylmercurithio)benzoate	54-64-8	<0.1

Kit Component **12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control**

Chemical name	CAS No	Weight-%
glycerol	56-81-5	30-60
sodium azide	26628-22-8	<0.02

SECTION 4. First-aid measures

Eye contact	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. Get medical attention immediately if irritation persists.
Skin contact	Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. If skin irritation persists, call a physician.
Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician.
Ingestion	Clean mouth with water and afterwards drink plenty of water. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed

Liquid, aerosols and vapors of this product are irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. 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.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Advice for emergency responders

General advice	For further assistance, contact your local Poison Control Center.
Protection of first-aiders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment Carbon dioxide (CO ₂) Water spray Dry chemical Alcohol-resistant foam
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Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of toxic and corrosive gases/vapors.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Protective Equipment and Precautions 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

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Take precautionary measures against static discharges.
- Other information** No information available.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

- Methods for containment** Prevent further leakage or spillage if safe to do so.
- Methods for cleaning up** Contain the spill. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

SECTION 7. Handling and storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Do not breathe vapors or spray mist. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

- Technical measures/Storage conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.
- Packaging material** No information available.
- Incompatible products** Strong oxidizing agents, Strong acids, Lithium alkyls, Bromine compounds

SECTION 8. Exposure controls/personal protection

Control parameters

Chemical name	ACGIH TLV	OSHA PEL	NIOSH REL
glycerol	-	TWA mist, total particulate: 15 mg/m ³ TWA mist, respirable fraction: 5 mg/m ³	-
acetonitrile	S* TWA: 20 ppm	TWA : 40 ppm TWA : 70 mg/m ³ TWA : 5 mg/m ³ S*	IDLH : 137 ppm IDLH : 25 mg/m ³ TWA : 20 ppm TWA : 34 mg/m ³
sodium azide			

	Ceiling: 0.29 mg/m ³ Ceiling: 0.11 ppm	-	Ceiling: 0.1 ppm Ceiling: 0.3 mg/m ³
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Appropriate engineering controls

Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

Eye/face protection	Safety glasses with side-shields.
Skin and body protection	Wear protective gloves/clothing.
Respiratory protection	In case of inadequate ventilation wear respiratory protection.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

SECTION 9. Physical and chemical properties

Information on the known physical chemical properties of each component within Kit are given below. If not included, information is either not available or not applicable. Refer to individual kit component SDS for further information.

Information on basic physical and chemical properties

Kit Component	9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb
Physical state	Liquid
Appearance	Clear
Color	Colorless
pH	7.5
Remarks	@ 20 °C
Kit Component	12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control
Physical state	Liquid
Appearance	Clear
Color	Colorless
pH	7.5
Remarks	@ 20 °C
Kit Component	9997: Tris Buffered Saline with Tween® 20 (TBST-10X)
Physical state	Liquid
Appearance	Clear
Color	Colorless
pH	7.4
Kit Component	8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)
Physical state	Liquid
Appearance	Clear
Color	Orange
Kit Component	11725: SignalStain® DAB Chromogen Concentrate
Physical state	Liquid
Color	Brown / Purple
Boiling point or initial boiling point and boiling range	>82 °C
Flash point	<23°C/<73°F

Kit Component	11724: SignalStain® DAB Diluent
Physical state	Liquid
Appearance	Clear
Color	Colorless

Kit Component	8112: SignalStain® Antibody Diluent
Physical state	Liquid
Appearance	Clear
Color	Light yellow
pH	7.4
Remarks	@ 20 °C

Kit Component	5425: Normal Goat Serum
Physical state	Liquid

SECTION 10. Stability and reactivity

Reactivity

No information available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing.

Conditions to Avoid

Heat, flames and sparks, Extremes of temperature and direct sunlight, Over a period of time, sodium azide may react with copper, lead, brass, or solder in plumbing systems to form an accumulation of the HIGHLY EXPLOSIVE compounds of lead azide & copper azide.

Incompatible Materials

Strong oxidizing agents, Strong acids, Lithium alkyls, Bromine compounds

Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors, Nitrogen oxides (NO_x), Carbon oxides (CO_x), Hydrogen chloride, Sodium oxides

SECTION 11. Toxicological information

Information on likely routes of exposure

Product Information

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Inhalation

Kit Component	11725: SignalStain® DAB Chromogen Concentrate
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Inhalation Harmful by inhalation

Kit Component **8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)**
Inhalation Avoid breathing vapors or mists

Kit Component **9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb**
Inhalation Avoid breathing vapors or mists

Kit Component **12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control**
Inhalation Avoid breathing vapors or mists

Eye contact

Kit Component **9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb**
Eye contact Avoid contact with eyes

Kit Component **12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control**
Eye contact Avoid contact with eyes

Kit Component **9997: Tris Buffered Saline with Tween® 20 (TBST-10X)**
Eye contact Avoid contact with eyes

Kit Component **11725: SignalStain® DAB Chromogen Concentrate**
Eye contact Irritating to eyes

Skin contact

Kit Component **9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb**
Skin contact Avoid contact with skin

Kit Component **12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control**
Skin contact Avoid contact with skin

Kit Component **8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)**
Skin contact Repeated or prolonged skin contact may cause allergic reactions with susceptible persons

Kit Component **11725: SignalStain® DAB Chromogen Concentrate**
Skin contact May cause irritation

Ingestion

Kit Component **9579: Cleaved Caspase-3 (Asp175) (D3E9) Rabbit mAb**
Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

Kit Component **12960: Rabbit (DA1E) mAb IgG XP® SignalStain® Isotype Control**
Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

Kit Component **11725: SignalStain® DAB Chromogen Concentrate**
Ingestion Harmful if swallowed

Information on toxicological effects

Component Information

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
glycerol	= 12600 mg/kg (Rat)	> 10 g/kg (Rabbit)	> 570 mg/m ³ (Rat) 1 h

acetonitrile	= 2460 mg/kg (Rat) = 160 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	= 26.8 mg/L (Rat) 4 h = 7551 ppm (Rat) 8 h
trometamol	5900 mg/kg (Rat)	-	-
1-Imidazole	= 220 mg/kg (Rat)	-	-
sodium azide	= 27 mg/kg (Rat)	= 20 mg/kg (Rabbit) = 50 mg/kg (Rat)	-
2-methyl-2H-isothiazol-3-one	53 mg/kg (Rat)	-	-
5-chloro-2-methyl-2H-isothiazol-3-one	= 53 mg/kg (Rat)	-	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Symptoms

Liquid, aerosols and vapors of this product are irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. 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.

Skin and Eye Corrosion/Irritation

Kit Component

Serious eye damage/eye irritation

11725: SignalStain® DAB Chromogen Concentrate

Irritating to eyes

Sensitization

Kit Component

Skin Sensitization

8114: SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)

May cause an allergic skin reaction

Mutagenic effects

Kit Component

Mutagenic effects

11725: SignalStain® DAB Chromogen Concentrate

Suspected of causing genetic defects.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.

Kit Component

Carcinogenicity

11725: SignalStain® DAB Chromogen Concentrate

May cause cancer.

Reproductive toxicity

Kit Component

Reproductive toxicity

11724: SignalStain® DAB Diluent

Product is or contains a chemical which is a known or suspected reproductive hazard.

Systemic Target Organ Toxicity (STOT)

No information available

Aspiration Hazard

No information available.

SECTION 12. Ecological information

Ecotoxicity

Component Information

Chemical name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
glycerol	-	LC50 51 - 57 mL/L (Oncorhynchus mykiss) 96 h	EC50 500 mg/L (Daphnia magna) 24 h
acetonitrile	-	LC50 1600 - 1690 mg/L (Pimephales promelas) 96 h LC50 1650 mg/L (Poecilia reticulata) 96 h LC50 1850 mg/L (Lepomis macrochirus) 96 h LC50 1000 mg/L (Pimephales promelas) 96 h	EC50 5838 mg/L (Daphnia pulex) 18 h
trometamol	-	-	NOEC >100 mg/L (Selenastrum capricornutum) 96 h
1-Imidazole	EC50 82 mg/L (Desmodesmus subspicatus) 96 h EC50 130 mg/L (Desmodesmus subspicatus) 72 h	LC50 280 mg/L (Leuciscus idus) 48 h	EC50 341.5 mg/L (Daphnia magna) 48 h
sodium azide	EC50 0.35 mg/L (Pseudokirchneriella subcapitata) 96 h	LC50 0.8 mg/L (Oncorhynchus mykiss) 96 h LC50 5.46 mg/L (Pimephales promelas) 96 h LC50 0.7 mg/L (Lepomis macrochirus) 96 h	LC100 1 mg/L (Orconectes rusticus) 96 h
5-chloro-2-methyl-2H-isothiazol-3-one	EC50 0.11 - 0.16 mg/L (Pseudokirchneriella subcapitata) 72 h EC50 0.31 mg/L (Anabaena flos-aquae) 120 h EC50 0.03 - 0.13 mg/L (Pseudokirchneriella subcapitata) 96 h	LC50 1.6 mg/L (Oncorhynchus mykiss) 96 h	EC50 4.71 mg/L (Daphnia magna) 48 h EC50 0.71 - 0.99 mg/L (Daphnia magna) 48 h EC50 0.12 - 0.3 mg/L (Daphnia magna) 48 h

Persistence and degradability

Kit Component Persistence and degradability	9997: Tris Buffered Saline with Tween® 20 (TBST-10X) Product is biodegradable
Kit Component Persistence and degradability	8112: SignalStain® Antibody Diluent Product is biodegradable
Kit Component Persistence and degradability	11725: SignalStain® DAB Chromogen Concentrate Readily biodegradable

Bioaccumulation

Kit Component Bioaccumulation	9997: Tris Buffered Saline with Tween® 20 (TBST-10X) Does not bioaccumulate
Kit Component Bioaccumulation	8112: SignalStain® Antibody Diluent Not likely to bioaccumulate

Chemical name	Octanol-Water Partition Coefficient
glycerol	-1.76
acetonitrile	-0.34
1-Imidazole	-0.08
5-chloro-2-methyl-2H-isothiazol-3-one	-0.75

Mobility

Kit Component Mobility	9997: Tris Buffered Saline with Tween® 20 (TBST-10X) Will likely be mobile in the environment due to its water solubility
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Kit Component
Mobility

8112: SignalStain® Antibody Diluent
Mobile

Other adverse effects

No information available.

SECTION 13. Disposal considerations

Waste Disposal Methods

Dispose of in accordance with all applicable national environmental laws and regulations.

Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way. Dispose of wastes in an approved waste disposal facility.

SECTION 14. Transport information

This material is subject to regulation as a hazardous material for shipping:

DOT

UN number	UN1993
UN proper shipping name	Flammable Liquid, N.O.S. (Contains: acetonitrile; cyanomethane)
Transport hazard class(es)	3
Packing group	II

IATA

UN number	UN1993
UN proper shipping name	Flammable Liquid, N.O.S. (Contains: acetonitrile; cyanomethane)
Transport hazard class(es)	3
Packing group	II

SECTION 15. Regulatory information

North American Inventory Listing

Refer to kit component SDS for full Toxic Substance Control Act (TSCA) reporting requirements.

Chemical name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
glycerol	Listed	Not Listed	Listed	Not Listed
acetonitrile	Listed	Not Listed	Listed	Not Listed
trometamol	Listed	Not Listed	Listed	Not Listed
1-Imidazole	Listed	Not Listed	Listed	Not Listed
sodium azide	Listed	Not Listed	Listed	Not Listed
2-methyl-2H-isothiazol-3-one	Listed	Section 5: 1 %	Listed	Not Listed
5-chloro-2-methyl-2H-isothiazol-3-one	Listed	Section 5: 1 %	Listed	Not Listed

SARA 313

Refer to kit component SDS for full SARA Section 313 reporting requirements.

Chemical name	CAS No	SARA 313 - Threshold Values %
acetonitrile	75-05-8	1.0
sodium azide	26628-22-8	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

Refer to kit component SDS for full Clean Water Act (CWA) reporting requirements.

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
acetonitrile	Not Listed	Listed	Listed	Not Listed	Not Listed

CERCLA

Refer to kit component SDS for full Comprehensive Environmental Response Compensation and Liability Act (CERCLA) reporting requirements.

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
acetonitrile	5000 lb	Not Listed
sodium azide	1000 lb	1000 lb

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Refer to kit component SDS for applicable State Right-To-Know (RTK) information.

Chemical name	New Jersey	Massachusetts	Pennsylvania
glycerol	Listed	Listed	Listed
acetonitrile	Listed	Listed	Listed
disodium hydrogenorthophosphate	Listed	Listed	Listed
sodium azide	Listed	Listed	Listed

SECTION 16. Other information

Issuing Date: 2018-05-24

Revision Date: 2024-03-04

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