

MOEL's Public Notice No. 2016-19 (Standards for Classification and Labeling of Chemical Substances and Safety Data Sheets)

WAI4 - KGHS - KOREAN

Issue Date 05-Sep-2019

Revision Date 05-Sep-2019

Revision Number 1

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

### Product Identifier

**Product Name** Chlorine Dioxide

**Product No** AC4099-AMP

**Pure substance/mixture** Mixture

### Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Use as laboratory reagent

**Uses advised against** No Information available

### **Supplier**

Fisher Scientific Korea D5,D6, Incheon Airport Logistics Complex 150, Gonghangdong-Ro Mapo-Gu 296 Beon-Gil Jung-Gu, Incheon 400-340 Tel: +82-2-6196-5500 Fax: +82-2-6196-5501	Thermo Fisher Scientific© Water and Lab Products 22 Alpha Road Chelmsford, MA 01824, USA 1-978-232-6000
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### **E-mail address**

Chem.KR@thermofisher.com info.water@thermo.com

### Emergency Telephone Number

**Emergency telephone:** Medical: +(82) 070-7686-0086 or + 1-703-741-5970  
CHEMTREC: 1-800-424-9300 or + 1-703-527-3887  
Korea: 00-308-13-2549 (24 hours a day, 7 days a week)

Made in USA

## SECTION 2: HAZARDS IDENTIFICATION

### Classification of the substance or mixture

#### Physical hazards

Based on available data, the classification criteria are not met

#### Health hazards

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Specific target organ toxicity - (single exposure)

Category 3

## Environmental hazards

Based on available data, the classification criteria are not met

## Label Elements



## Signal Word

## Warning

## Hazard Statements

H336 - May cause drowsiness or dizziness

## Precautionary Statements

### Prevention

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

P271 - Use only outdoors or in a well-ventilated area

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

### Response

P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing

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

### Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

P405 - Store locked up

### Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant

## Other Hazards

Repeated exposure may cause skin dryness or cracking

## NFPA

Health  
2

Flammability  
2

Instability  
0

Physical hazards  
N/A

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.2. Mixtures

Component	Common Name	CAS-No	Index No.	Weight %
Water	No information available	7732-18-5	KE-35400	90 - 95
Acetone	No information available	67-64-1	KE-29367	2.5 - <5
Proprietary Ingredients	No information available	999-99-9	Not listed	1 - 1.5
Potassium Dihydrogen Phosphate	No information available	7778-77-0	KE-28622	0.5 - 1
N,N-diethyl-p-phenylenediamine	No information	62637-92-7	Not listed	<0.1

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oxalate	available			
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## SECTION 4: FIRST AID MEASURES

### First aid measures

<b>General Advice</b>	If symptoms persist, call a physician.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
<b>Inhalation</b>	Move to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
<b>Ingestion</b>	Clean mouth with water and drink afterwards plenty of water.
<b>Self-Protection of the First Aider</b>	Use personal protective equipment. See section 8 for more information. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

### Most important symptoms and effects, both acute and delayed

<b>Most important symptoms and effects</b>	Breathing difficulties
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### Indication of any immediate medical attention and special treatment needed

<b>Notes to Physician</b>	Treat symptomatically
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## SECTION 5: FIREFIGHTING MEASURES

### Suitable Extinguishing Media

Cool closed containers exposed to fire with water spray.

### Unsuitable Extinguishing Media

No information available

### Specific Hazards Arising from the Chemical

Combustible material. Containers may explode when heated.

### 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

<b>Personal Precautions</b>	Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental Precautions</b>	Should not be released into the environment. See Section 12 for additional ecological

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information.

## 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** Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

## SECTION 7: HANDLING AND STORAGE

### Precautions for Safe Handling

**Handling** Wear personal protective equipment  
Ensure adequate ventilation  
Do not get in eyes, on skin, or on clothing  
Avoid ingestion and inhalation  
Keep away from open flames, hot surfaces and sources of ignition

### Conditions for Safe Storage, Including any Incompatibilities

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place  
Keep away from heat and sources of ignition

**Incompatible Products** No information available

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control Parameters

Component	CAS-No	Korea	ACGIH TLV	OSHA PEL
Water	7732-18-5	Not listed	Not listed	Not listed
Acetone	67-64-1	STEL: 750 ppm TWA: 500 ppm	TWA: 250 ppm STEL: 500 ppm	(Vacated) TWA: 750 ppm (Vacated) TWA: 1800 mg/m <sup>3</sup> (Vacated) STEL: 2400 mg/m <sup>3</sup> (Vacated) STEL: 1000 ppm TWA: 1000 ppm TWA: 2400 mg/m <sup>3</sup>
Proprietary Ingredients	999-99-9	Not listed	Not listed	Not listed
Potassium Dihydrogen Phosphate	7778-77-0	Not listed	Not listed	Not listed
N,N-diethyl-p-phenylenedia mine oxalate	62637-92-7	Not listed	Not listed	Not listed

Component	CAS-No	European Union	The United Kingdom	Germany
Water	7732-18-5	Not listed	Not listed	Not listed
Acetone	67-64-1	TWA: 500 ppm (8h) TWA: 1210 mg/m <sup>3</sup> (8h)	STEL: 1500 ppm 15 min STEL: 3620 mg/m <sup>3</sup> 15 min TWA: 500 ppm 8 hr TWA: 1210 mg/m <sup>3</sup> 8 hr	TWA: 500 ppm (8 Stunden). AGW - exposure factor 2 TWA: 1200 mg/m <sup>3</sup> (8 Stunden). AGW - exposure factor 2 TWA: 500 ppm (8 Stunden). MAK TWA: 1200 mg/m <sup>3</sup> (8 Stunden). MAK Höhepunkt: 1000 ppm Höhepunkt: 2400 mg/m <sup>3</sup>
Proprietary Ingredients	999-99-9	Not listed	Not listed	Not listed
Potassium Dihydrogen Phosphate	7778-77-0	Not listed	Not listed	Not listed
N,N-diethyl-p-phenylenedia mine oxalate	62637-92-7	Not listed	Not listed	Not listed

### Biological Exposure Indices

AC4099-AMP

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Component	CAS-No	Biological Exposure Indices
Water	7732-18-5	Not listed
Acetone	67-64-1	25 mg/L Medium: urine Time: end of shift Determinant: Acetone
Proprietary Ingredients	999-99-9	Not listed
Potassium Dihydrogen Phosphate	7778-77-0	Not listed
N,N-diethyl-p-phenylenedia mine oxalate	62637-92-7	Not listed

## Appropriate engineering controls

**Engineering Measures** Ensure adequate ventilation, especially in confined areas

## Individual protection measures, such as personal protective equipment

**Personal protective equipment** Use only those certified by the Korea Occupational Safety and Health Administration.

**Eye/face Protection** Wear chemical splash goggles and face shield. If splashes are likely to occur, wear:. Face-shield.

**Skin and Body Protection** Wear protective gloves/clothing.

**Respiratory Protection** None under normal use conditions. In case of inadequate ventilation wear respiratory protection.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Colorless to pale pink
Odor	Odorless
Odor Threshold	No information available
pH	6.3
PH Range	4.8-7.8

Property	Values	Remarks • Method
Melting point/freezing point	No information available	
Boiling Point/Range	94 °C / 201.2 °F	
Flash Point (High in °C)	75 °C / 167 °F	
Evaporation Rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor Density	No information available	
Specific Gravity	No information available	
Water Solubility	Soluble in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition Temperature	-	
Decomposition Temperature	No information available	
Kinematic viscosity	No information available	

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Dynamic viscosity	No information available
Explosive Properties	No information available
Oxidizing Properties	No information available

## Other Information

Softening Point	No information available
Molecular Weight	No information available
VOC Content(%)	No information available
Density	No Information available
Bulk Density	No information available

## SECTION 10: STABILITY AND REACTIVITY

### Reactivity

No Information available

### Chemical Stability

Stable under normal conditions

### Possibility of Hazardous Reactions

None under normal processing

### Conditions to Avoid

Keep away from open flames, hot surfaces and sources of ignition.

### Incompatible Materials

No information available

### Hazardous Decomposition Products

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

## SECTION 11: TOXICOLOGICAL INFORMATION

### Product Information

#### Information on likely routes of exposure

Inhalation	Not an expected route of exposure.
Ingestion	May be harmful if swallowed.
Eyes	Avoid contact with eyes.
Skin	Avoid contact with skin.

#### Information on Toxicological Effects

Symptoms	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting
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#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization	No information available
Mutagenic Effects	No information available
Carcinogenicity	No information available.
Reproductive Effects	No information available
STOT - single exposure	No information available

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**STOT - repeated exposure**  
**Target Organs** No information available  
None known.

**Aspiration hazard** No information available

## Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document .  
**ATEmix (inhalation-dust/mist)** 2505 mg/L

## SECTION 12: ECOLOGICAL INFORMATION

### Ecotoxicity

2.2% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Component	Freshwater Algae	Freshwater Fish	Water Flea
Acetone 67-64-1	-	LC50: = 8300 mg/L, 96h (Lepomis macrochirus) LC50: 4.74 - 6.33 mL/L, 96h (Oncorhynchus mykiss) LC50: 6210 - 8120 mg/L, 96h static (Pimephales promelas)	EC50: 12600 - 12700 mg/L, 48h (Daphnia magna) EC50: 10294 - 17704 mg/L, 48h Static (Daphnia magna)

### Persistence and Degradability

No information available

### Bioaccumulation/ Accumulation

No information available

### Mobility

No information available.

Component	log Pow
Acetone 67-64-1	-0.24

### Other adverse effects

No information available

## SECTION 13: DISPOSAL CONSIDERATIONS

### Waste treatment methods

**Waste Disposal Methods** Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

## SECTION 14: TRANSPORT INFORMATION

**Road and Rail Transport** Not Regulated

**IATA** Not regulated

**IMDG/IMO** Not regulated  
**Marine Pollutant** Not Applicable

**Special Precautions for User** No special precautions required

## SECTION 15: REGULATORY INFORMATION

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## Safety, health and environmental regulations/legislation specific for the substance or mixture

Legend: X - Listed '-' - Not Listed

### International Inventories

Component	CAS-No	KECL	TSCA	EINECS	IECSC	DSL	NDSL	PICCS	ENCS	AICS
Water	7732-18-5	KE-35400	X	231-791-2	X	X	-	X	-	X
Acetone	67-64-1	KE-29367	X	200-662-2	X	X	-	X	X	X
Proprietary Ingredients	999-99-9	-	-	-	-	-	-	-	-	-
Potassium Dihydrogen Phosphate	7778-77-0	KE-28622	X	231-913-4	X	X	-	X	X	X
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	-	X	263-662-1	X	X	-	-	-	-

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable	Not applicable	Annex I - Y42
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential
Water	7732-18-5	Listed	Not applicable	Not applicable
Acetone	67-64-1	Listed	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Listed	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

### Korean National Regulations

Component	CAS-No	Act on Registration and Evaluation of Chemical Substances (K-REACH)	Authorised Chemicals	Existing Substances Subject to Registration
Water	7732-18-5	Annex 1 - KE-35400 Exempt (Index No. 25)	Not applicable	Not applicable
Acetone	67-64-1	Annex 1 - KE-29367	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Annex 1 - KE-28622	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	Chemical Control Act - Toxic Chemicals	Chemical Control Act - Prohibited Chemicals	Chemical Control Act - Use Restricted Chemicals
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	Chemical Control Act - Accident Precaution Chemicals (% in mixtures)	Chemical Control Act - Accident Precaution Chemicals - Quantity limits Storage (% in	Chemical Control Act - Accident Precaution Chemicals - Quantity limits Manufacture/Use



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			mixtures)	(% in mixtures)
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	Waste Control Law	Ministry of Environment - CMR risk	Ministry of Environment - Critically Controlled Substance
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	ISHA - Harmful Agents Subject to Work Environment Monitoring	ISHA - Prohibited substances	ISHA - Substances requiring permission
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Listed	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	ISHA - Substances subject to control	ISHA - Harmful Agents Requiring Health Examination	ISHA - Permissible Exposure Limits
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Listed	Listed	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

Component	CAS-No	ISHA - Subject to Process Safety Reports (minimum quantity)	ISHA - Threshold Limit Values (TLVs) Chemicals	ISHA - Special management materials
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	STEL: 750 ppm TWA: 500 ppm	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

**National Fire Association - Dangerous Substances** Minimum quantity requiring a permit

Component	CAS-No	Class 1 - Oxidising solids	Class 2 - Flammable solid	Class 3 - Spontaneously Combustible Substances and Dangerous Substances When Wet	Class 4 - Flammable liquids	Class 5 - Self-reactive substances	Class 6 - Oxidising liquids
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable	Not applicable	2. Group 1 Petroleum (Soluble) 400 L	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

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Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylene diamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

## Control Parameters

Component	CAS-No	Korea	Biological Exposure Indices
Water	7732-18-5	Not listed	Not listed
Acetone	67-64-1	STEL: 750 ppm TWA: 500 ppm	25 mg/L Medium: urine Time: end of shift Determinant: Acetone
Proprietary Ingredients	999-99-9	Not listed	Not listed
Potassium Dihydrogen Phosphate	7778-77-0	Not listed	Not listed
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not listed	Not listed

## US Management Information

OSHA - Occupational Safety and Health Administration

Not applicable

Component	CAS-No	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Water	7732-18-5	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable

## CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	CAS-No	CERCLA EHS RQs	Hazardous Substances RQs	SARA 313 - Threshold Values %
Water	7732-18-5	Not applicable	Not applicable	Not applicable
Acetone	67-64-1	Not applicable	5000 lb	Not applicable
Proprietary Ingredients	999-99-9	Not applicable	Not applicable	Not applicable
Potassium Dihydrogen Phosphate	7778-77-0	Not applicable	Not applicable	Not applicable
N,N-diethyl-p-phenylenediamine oxalate	62637-92-7	Not applicable	Not applicable	Not applicable

## CLP Classification - Regulation (EC) No 1272/2008

Warning.

H336 - May cause drowsiness or dizziness. EUH066 - Repeated exposure may cause skin dryness or cracking. Combustible liquid.

P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray. P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. P312 - Call a POISON CENTER or doctor/ physician if you feel unwell.

## SECTION 16: OTHER INFORMATION

Prepared By	Regulatory Affairs
Prepared For	Thermo Fisher Scientific Inc.©
Issue Date	05-Sep-2019
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Reason for revision

Initial Release.

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### Disclaimer

IMPORTANT: The information contained in this SDS is correct to the best of our knowledge as of the issue date (or subsequent revision date, if any), and is to be used only as a guide. This SDS does not constitute a guarantee (express or implied) of any kind and we make no warranties of any kind as to the accuracy or completeness of the information contained herein or the merchantability or fitness of the product or this information for a particular purpose. It is the responsibility of each individual buyer/user to determine the suitability of this information and the product for its intended purposes. Product sales are subject to Thermo Fisher Scientifics standard terms and conditions of sale. This information relates only to the designated product as shipped and may not be valid if the product is used in combination with any other materials or is not used in accordance with our instructions, or is altered in any way. It is the responsibility of the buyer/user to ensure that its activities comply with all applicable government requirements. Since conditions of use of the product are not under direct control of Thermo Fisher Scientific, it is the duty of the buyer/user to determine the necessary conditions for the safe use of the product. Thermo Fisher Scientific will not be liable for any injuries or damages resulting from handling, use, misuse or contact with the product.

**End of Safety Data Sheet**