



# SAFETY DATA SHEET

**MATERION**

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

**Name of the substance** Zinc powder  
**Identification number** 030-001-01-9 (Index number)  
**Registration number** -  
**Document number** 2DV  
**Synonyms** ZINC \* ZINC DUST; ZINC POWDER (PYROPHORIC)  
**Materion Code** 2DV  
**Issue date** 08-August-2013  
**Revision date** 15-January-2018

### 1.3. Details of the supplier of the safety data sheet

#### Supplier

**Company name** Materion Advanced Chemicals Inc.  
**Address** 407 N. 13th Street  
1316 W. St. Paul Avenue  
Milwaukee, WI 53233  
United States  
**Division** Milwaukee  
**Telephone** 414.212.0257  
**e-mail** advancedmaterials@materion.com  
**Contact person** Laura Hamilton

### 1.4. Emergency telephone number

**Supersedes date** 22-September-2015  
**Version number** 04

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

**Identified uses** Not available.  
**Uses advised against** None known.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

The product has been assessed and/or tested for its physical, health and environmental hazards following the regulations ABN1 NBR 14725-4: (Safety data sheet for chemicals (SDS)) (Aug. 26, 2009) The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies. According to GHS criteria.

#### Classification according to Regulation (EC) No 1272/2008 as amended

##### Physical hazards

Pyrophoric solids	Category 1	H250 - Catches fire spontaneously if exposed to air.
Substances and mixtures which, in contact with water, emit flammable gases	Category 1	H260 - In contact with water releases flammable gases which may ignite spontaneously.

##### Health hazards

Acute toxicity, oral	Category 4	H302 - Harmful if swallowed. H302 - Harmful if swallowed.
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##### Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard	Category 1	H400 - Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term aquatic hazard	Category 1	H410 - Very toxic to aquatic life with long lasting effects.

## Hazard summary

DANGER

HIGHLY FLAMMABLE SOLID.

Pyrophoric - catches fire if exposed to air. In contact with water releases flammable gases which may ignite spontaneously. Will be easily ignited by heat, spark or flames. High concentrations of dust may form explosive mixture with air.

Harmful if swallowed.

Causes eye irritation. Causes mild skin irritation. Dangerous for the environment if discharged into watercourses. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

## 2.2. Label elements

### Label according to Regulation (EC) No. 1272/2008 as amended

**Contains:**

Zinc

**Hazard pictograms**



**Signal word**

Danger

**Hazard statements**

H228	Flammable solid.
H250	Catches fire spontaneously if exposed to air.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H261	In contact with water releases flammable gases.
H261	In contact with water releases flammable gases.
H302	Harmful if swallowed.
H302	Harmful if swallowed.
H316	Causes mild skin irritation.
H320	Causes eye irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

### Precautionary statements

**Prevention**

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P222	Do not allow contact with air.
P223	Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P223	Do not allow contact with water.
P231 + P232	Handle under inert gas. Protect from moisture.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/eye protection/face protection.

**Response**

P301 + P312	If swallowed: Call a poison centre/doctor if you feel unwell.
P305 + P351 + P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P330	Rinse mouth.
P332 + P313	If skin irritation occurs: Get medical advice/attention.
P335 + P334	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P337 + P313	If eye irritation persists: Get medical advice/attention.
P370 + P378	In case of fire: Use appropriate media for extinction.
P391	Collect spillage.

**Storage**

P402 + P404	Store in a dry place. Store in a closed container.
P422	Store contents under appropriate liquid or inert gas.

**Disposal**

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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**Supplemental label information**

None.

## 2.3. Other hazards

The Safety Information Sheet Chemicals of hazardous chemical can be obtained through phone, email or on the company website.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Zinc	100	7440-66-6 231-175-3	-	030-001-01-9	
<b>Classification:</b>	Flam. Sol. 2;H228, Pyr. Sol. 1;H250, Water-React. 1;H260, Water-React. 2;H261, Water-React. 3;H261, Acute Tox. 4;H302, Aquatic Acute 1;H400, Aquatic Chronic 1;H410				T

#### List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.

DSD: Directive 67/548/EEC.

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Community workplace exposure limit(s).

#### Composition comments

The full text for all R- and H-phrases is displayed in section 16.

## SECTION 4: First aid measures

#### General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If you feel unwell, seek medical advice (show the label where possible). Show this safety data sheet to the doctor in attendance. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.

#### 4.1. Description of first aid measures

##### Inhalation

Move to fresh air. If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

##### Skin contact

Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Wash off with warm water and soap. If skin irritation occurs: Get medical advice/attention.

##### Eye contact

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.

##### Ingestion

IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician. If swallowed, seek medical advice immediately and show this container or label. IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. Rinse mouth. Rinse mouth thoroughly. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

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

Irritation of eyes and mucous membranes.

#### 4.3. Indication of any immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

## SECTION 5: Firefighting measures

#### General fire hazards

Flammable solid. No unusual fire or explosion hazards noted.

#### 5.1. Extinguishing media

##### Suitable extinguishing media

Powder. Dry sand.

##### Unsuitable extinguishing media

Water. Do not use water jet as an extinguisher, as this will spread the fire.

#### 5.2. Special hazards arising from the substance or mixture

Spontaneously flammable in air. In contact with water releases flammable gases which may ignite spontaneously.

### 5.3. Advice for firefighters

#### Special protective equipment for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection.

#### Special firefighting procedures

In case of fire and/or explosion do not breathe fumes. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Do not get water inside container. Water runoff can cause environmental damage.

#### Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk. Use water spray to cool unopened containers. In the event of fire and/or explosion do not breathe fumes. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

Local authorities should be advised if significant spillages cannot be contained. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.

#### For emergency responders

Keep unnecessary personnel away.

### 6.2. Environmental precautions

Avoid release to the environment. Refer to special instructions/safety data sheets. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

### 6.3. Methods and material for containment and cleaning up

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Stop the flow of material, if this is without risk. Collect spillage. Do not get water on spilled substance or inside containers. Prevent product from entering drains. Prevent entry into waterways, sewer, basements or confined areas.

### 6.4. Reference to other sections

Not available.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Do not allow contact with air. Vapours may form explosive mixtures with air. Keep away from any possible contact with water, because of violent reaction and possible flash fire. Handle under inert gas. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. All equipment used when handling the product must be grounded. Use explosion-proof equipment. Do not taste or swallow. Avoid breathing mist or vapour. Avoid contact with eyes. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Use appropriate container to avoid environmental contamination. Avoid release to the environment. Do not empty into drains.

### 7.2. Conditions for safe storage, including any incompatibilities

#### CAUTION

The pressure in sealed containers can increase under the influence of heat. Keep away from heat and sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Use appropriate container to avoid environmental contamination. Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store in a dry place. Store in cool place. Never allow product to get in contact with water during storage. Keep away from food, drink and animal feeding stuffs. Keep out of the reach of children. Keep in an area equipped with sprinklers.

### 7.3. Specific end use(s)

Not available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Material	Type	Value	Form
Zinc (CAS 7440-66-6)	TWA	2 mg/m3	Inhalable fraction.
		0,1 mg/m3	Respirable fraction.

Material	Type	Value	Form
Zinc (CAS 7440-66-6)	TWA	2 mg/m <sup>3</sup> 0,1 mg/m <sup>3</sup>	Inhalable fraction. Respirable fraction.
<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).		
<b>Recommended monitoring procedures</b>	Follow standard monitoring procedures.		
<b>Derived no effect levels (DNELs)</b>	Not available.		
<b>Predicted no effect concentrations (PNECs)</b>	Not available.		
<b>Exposure guidelines</b>	No exposure standards allocated.		
<b>8.2. Exposure controls</b>			
<b>Appropriate engineering controls</b>	Ventilate as needed to control airborne dust. Use explosion-proof ventilation equipment if airborne dust levels are high. Provide eyewash station.		
<b>Individual protection measures, such as personal protective equipment</b>			
<b>General information</b>	Not available.		
<b>Eye/face protection</b>	Chemical goggles are recommended. Eye wash fountain is recommended.		
<b>Skin protection</b>			
- <b>Hand protection</b>	Wear protective gloves. Not normally needed.		
- <b>Other</b>	Wear suitable protective clothing. Wear protective gloves. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.		
<b>Respiratory protection</b>	Wear positive pressure self-contained breathing apparatus (SCBA).		
<b>Thermal hazards</b>	Not available.		
<b>Hygiene measures</b>	When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practices.		
<b>Environmental exposure controls</b>	Contain spills and prevent releases and observe national regulations on emissions. Environmental manager must be informed of all major releases.		
<b>SECTION 9: Physical and chemical properties</b>			
<b>9.1. Information on basic physical and chemical properties</b>			
<b>Appearance</b>			
<b>Physical state</b>	Solid.		
<b>Form</b>	Solid.		
<b>Colour</b>	Not available.		
<b>Odour</b>	Not available.		
<b>Odour threshold</b>	Not available.		
<b>pH</b>	Not available.		
<b>Melting point/freezing point</b>	419,53 °C (787,15 °F)		
<b>Initial boiling point and boiling range</b>	907 °C (1664,6 °F)		
<b>Flash point</b>	Not available.		
<b>Evaporation rate</b>	Not available.		
<b>Flammability (solid, gas)</b>	Flammable solid.		
<b>Upper/lower flammability or explosive limits</b>			
<b>Flammability limit - lower (%)</b>	Not available.		
<b>Flammability limit - upper (%)</b>	Not available.		
<b>Vapour pressure</b>	< 0,0000001 kPa at 25 °C		
<b>Vapour density</b>	Not available.		
<b>Relative density</b>	Not available.		
<b>Solubility(ies)</b>			
<b>Solubility (water)</b>	Not available.		

<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Explosive properties</b>	Not available.
<b>Oxidising properties</b>	Not available.

## 9.2. Other information

<b>Density</b>	7,13 g/cm <sup>3</sup> estimated at 25 °C
<b>Molecular formula</b>	Zn
<b>Molecular weight</b>	65,38 g/mol
<b>Specific gravity</b>	7,13 at 25 °C

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	Not available.
<b>10.2. Chemical stability</b>	Risk of ignition.
<b>10.3. Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use. Hazardous polymerisation does not occur.
<b>10.4. Conditions to avoid</b>	Moisture. Contact with water liberates flammable gas. Heat, flames and sparks. High temperatures.
<b>10.5. Incompatible materials</b>	None known.
<b>10.6. Hazardous decomposition products</b>	No hazardous decomposition products are known.

## SECTION 11: Toxicological information

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

### Information on likely routes of exposure

<b>Inhalation</b>	Due to lack of data the classification is not possible.
<b>Skin contact</b>	Causes mild skin irritation.
<b>Eye contact</b>	Causes eye irritation.
<b>Ingestion</b>	Harmful if swallowed.

**Symptoms** Irritant effects.

### 11.1. Information on toxicological effects

**Acute toxicity** Harmful if swallowed.

Product	Species	Test Results
Zinc (CAS 7440-66-6)		
<b>Acute</b>		
<b>Oral</b>		
LD50	Rat	630 mg/kg

\* Estimates for product may be based on additional component data not shown.

<b>Skin corrosion/irritation</b>	Causes mild skin irritation.
<b>Serious eye damage/eye irritation</b>	Causes eye irritation.
<b>Respiratory sensitisation</b>	Due to lack of data the classification is not possible.
<b>Skin sensitisation</b>	Due to lack of data the classification is not possible.
<b>Germ cell mutagenicity</b>	Due to lack of data the classification is not possible.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)</b>	Not listed.
<b>Reproductive toxicity</b>	Due to lack of data the classification is not possible.
<b>Specific target organ toxicity - single exposure</b>	Due to lack of data the classification is not possible.
<b>Specific target organ toxicity - repeated exposure</b>	Due to lack of data the classification is not possible.
<b>Aspiration hazard</b>	Due to lack of data the classification is not possible.

**Mixture versus substance information** Not available.

**Other information** Not available.

## SECTION 12: Ecological information

**12.1. Toxicity** Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Product	Species	Test Results
Zinc (CAS 7440-66-6)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea (Daphnia magna) 2,8 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss) 0,56 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**12.2. Persistence and degradability** No data is available on the degradability of this product.

**12.3. Bioaccumulative potential** Not available.

**Partition coefficient n-octanol/water (log Kow)** Not available.

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** Not available.

**12.5. Results of PBT and vPvB assessment** Not a PBT or vPvB substance or mixture.

**12.6. Other adverse effects** Not available.

### 12.7. Additional information

#### Estonia Dangerous substances in groundwater Data

Zinc (CAS 7440-66-6)	Zinc (Zn) 50 ug/l Zinc (Zn) 5000 ug/l
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#### Estonia Dangerous substances in soil Data

Zinc (CAS 7440-66-6)	Zinc (Zn) 1000 mg/kg Zinc (Zn) 200 mg/kg Zinc (Zn) 500 mg/kg
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## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Residual waste** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground.

**Contaminated packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

**EU waste code** The Waste code should be assigned in discussion between the user, the producer and the waste disposal company. Waste codes should be assigned by the user based on the application for which the product was used.

**Disposal methods/information** Contract with a disposal operator licensed by the Law on Disposal and Cleaning. This material and its container must be disposed of as hazardous waste. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. After recovery of solvent dispose of residue as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of contents/container (in accordance with related regulations). Collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

## SECTION 14: Transport information

### ADR

14.1. - 14.6.: Not regulated as dangerous goods.

### RID

**14.1. UN number** UN1436

**14.2. UN proper shipping name** ZINC POWDER or ZINC DUST

**14.3. Transport hazard class(es)**

**Class** 4.3  
**Subsidiary risk** 4.2  
**Label(s)** 4.3+4.2

**14.4. Packing group** III

**14.5. Environmental hazards** No.

**14.6. Special precautions for user** Not available.

**ADN**

14.1. - 14.6.: Not regulated as dangerous goods.

**IATA**

**14.1. UN number** UN1436

**14.2. UN proper shipping name** Zinc dust

**14.3. Transport hazard class(es)**

**Class** 4.3  
**Subsidiary risk** 4.2

**14.4. Packing group** III

**14.5. Environmental hazards** No.

**ERG Code** 4SW

**14.6. Special precautions for user** Not available.

**Other information**

**Passenger and cargo aircraft** Allowed with restrictions.

**Cargo aircraft only** Allowed with restrictions.

**IMDG**

**14.1. UN number** UN1436

**14.2. UN proper shipping name** ZINC POWDER or ZINC DUST

**14.3. Transport hazard class(es)**

**Class** 4.3  
**Subsidiary risk** 4.2

**14.4. Packing group** III

**14.5. Environmental hazards**

**Marine pollutant** No.

**EmS** F-G, S-O

**14.6. Special precautions for user** Not available.

**IATA; IMDG; RID**



## SECTION 15: Regulatory information

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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended**

Not listed.



**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

Zinc (CAS 7440-66-6)

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

#### **Authorisations**

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

#### **Restrictions on use**

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Zinc (CAS 7440-66-6)

**Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.**

Not listed.

#### **Other EU regulations**

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Zinc (CAS 7440-66-6)

#### **Other regulations**

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006.

#### **National regulations**

Not available.

#### **15.2. Chemical safety assessment**

No Chemical Safety Assessment has been carried out.

### **SECTION 16: Other information**

#### **List of abbreviations**

Not available.

## References

ACGIH  
EPA: AQUIRE database  
NLM: Hazardous Substances Data Base  
US. IARC Monographs on Occupational Exposures to Chemical Agents  
Korea. Accidental Release Prevention Substances (Presidential Decree of Toxic Chemical Control Law, Executive Order No. 19203)  
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)  
Korea. Harmful Substances Prohibited from Manufacturing (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 29)  
Korea. Harmful Substances Requiring Permission for Manufacture or Use (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 30)  
Korea. OELs. Regulation for Permitted Concentration of Hazardous Substances (Ministry of Labor (MOL) Public Notice No. 1986-45, as amended)  
Korea. Prohibited Chemical Substances (TCCL Article 11)  
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)  
Korea. Restricted Chemical Substances (TCCL Article 11)  
Korea. Toxic Chemical Control Law (TCCL), Existing Chemicals Inventory (KECI)  
Korea. Toxic Chemical Control Law (TCCL), pre-1997 List  
Korea. Toxic Chemicals (TCCL Article 10)  
Korea. Toxic Release Inventory (TRI) Chemicals (TCCL Article 14)  
Taiwan. Dangerous Materials (Rules on Hazard Communication of Dangerous Materials and Toxic Materials)  
Taiwan. Industrial Precursor Chemicals (Categories and Regulations Governing Inspection and Declaration of Industrial Precursor Chemicals, MOEA Decree No. 87, as amended)  
Taiwan. OELs. (Standards on Workplace Atmosphere of Dangerous and Hazardous Materials)  
Taiwan. Toxic Chemical Substances (TCS) (List of Toxic Chemical Substances announced by the Environmental Protection Administration)  
Taiwan. Toxic Materials (Rules on Hazard Communication of Dangerous Materials and Toxic Materials)  
HSDB® - Hazardous Substances Data Bank  
IARC Monographs. Overall Evaluation of Carcinogenicity  
National Toxicology Program (NTP) Report on Carcinogens  
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  
Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits  
GOST 30333-2007 - Chemical production safety passport. General requirements  
JJIS Z 7250: 2010 Safety data sheet for chemical products-Content and order of sections  
JIS Z 7251: 2010 Labeling of chemicals based on GHS

## Training information

Not available.

## Disclaimer

Additional information is given in the Material Safety Data Sheet.

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