

SAFETY DATA SHEET

1. Identification

Product identifier: ZINC METAL POWDER

Other means of identification

Product No.: 4282, 8681

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Details of the supplier of the safety data sheet

Manufacturer

Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax:
Contact Person: Environmental Health & Safety
E-mail: info@avantormaterials.com

Emergency telephone number:

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard Classification

Health Hazards

Acute toxicity (Oral)	Category 4
Carcinogenicity	Category 2
Toxic to reproduction	Category 1A

Environmental Hazards

Acute hazards to the aquatic environment	Category 1
Chronic hazards to the aquatic environment	Category 1

Label Elements

Hazard Symbol:



Signal Word: Danger

Hazard Statement:	May form combustible dust concentrations in air. Harmful if swallowed. Suspected of causing cancer. May damage fertility or the unborn child. Very toxic to aquatic life.
Precautionary Statement	
Prevention:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.
Response:	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. IF exposed or concerned: Get medical advice/attention. Collect spillage.
Storage:	Store locked up.
Disposal:	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.
Other hazards which do not result in GHS classification:	None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	Common name and synonyms	CAS number	Content in percent (%)*
ZINC		7440-66-6	90 - 100%
ZINC OXIDE		1314-13-2	1 - 5%
LEAD		7439-92-1	0.1 - 1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
Ingestion:	Rinse mouth thoroughly. Get medical attention if symptoms occur.
Inhalation:	Move to fresh air. Get medical attention if symptoms persist.
Skin Contact:	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.
Eye contact:	Flush thoroughly with water. If irritation occurs, get medical assistance.

Most important symptoms/effects, acute and delayed

Symptoms: May cause irritation to skin, eyes, and respiratory tract.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: Move containers from fire area if you can do so without risk. In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Dry chemical.

Unsuitable extinguishing media: Water, CO2 or Foam

Specific hazards arising from the chemical: Dust may form an explosive mixture in the atmosphere. In contact with water releases flammable gases which may ignite spontaneously.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Powdered material may form explosive dust-air mixtures. Use water SPRAY only to cool containers! Do not put water on leaked material.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: Avoid dust formation. Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination.

Notification Procedures: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental Precautions: Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling: Avoid generation and spreading of dust. Ground/bond container and receiving equipment. Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities: Keep containers tightly closed. Store in cool, dry place. Store in a well-ventilated place. Keep away from moisture.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

SDS_US - SDSMIX000088

Chemical Identity	type	Exposure Limit Values	Source
ZINC OXIDE - Respirable fraction.	TWA	2 mg/m3	US. ACGIH Threshold Limit Values (2011)
	STEL	10 mg/m3	US. ACGIH Threshold Limit Values (2011)
ZINC OXIDE - Dust.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
ZINC OXIDE - Fume.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
ZINC OXIDE - Dust.	Ceil_Time	15 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
ZINC OXIDE - Fume.	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
ZINC OXIDE - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
ZINC OXIDE - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
ZINC OXIDE - Total dust.	TWA	10 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
ZINC OXIDE - Fume.	STEL	10 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	5 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
ZINC OXIDE - Respirable fraction.	TWA	5 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
LEAD - as Pb	TWA	0.05 mg/m3	US. ACGIH Threshold Limit Values (2011)
	REL	0.050 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
LEAD	TWA	0.05 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	OSHA_ACT	0.03 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
LEAD - as Pb	TWA	0.05 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
LEAD (Lead: Sampling time: Not critical.)	300 µg/l (Blood)	ACGIH BEL (03 2013)

Appropriate Engineering Controls

No data available.

Individual protection measures, such as personal protective equipment

General information:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof ventilation equipment.

Eye/face protection:

Use tight fitting goggles if dust is generated.

Skin Protection

Hand Protection:

Wear protective gloves.

Other:

Wear suitable protective clothing.

Respiratory Protection:

In case of inadequate ventilation use suitable respirator.

Hygiene measures:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and chemical properties

Appearance

Physical state:	solid
Form:	Powder.
Color:	Blue grey
Odor:	Odorless
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	419 °C
Initial boiling point and boiling range:	907 °C
Flash Point:	not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Relative density:	7.14 (20 °C)
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	460 °C
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	Moist zinc dust can react exothermically and ignite spontaneously in air.
Chemical Stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	Hazardous polymerization does not occur. Material reacts with water.
Conditions to Avoid:	Heat, sparks, flames. Moisture.
Incompatible Materials:	Water. Moisture. Strong oxidizing agents. Strong acids. Strong bases. Halogens and halogenated compounds.
Hazardous Decomposition Products:	not applicable

11. Toxicological information

Information on likely routes of exposure

Ingestion:	Harmful if swallowed.
Inhalation:	May cause irritation to the respiratory system.

Skin Contact: May cause irritation.

Eye contact: May cause temporary eye irritation.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: ATEmix (Rat): 650 mg/kg

Dermal
Product: No data available.

Inhalation
Product: No data available.

Specified substance(s):
ZINC OXIDE LC 50 (Mouse, 4 h): > 5.7 mg/l

Repeated dose toxicity
Product: No data available.

Skin Corrosion/Irritation
Product: May cause skin irritation.

Serious Eye Damage/Eye Irritation
Product: May irritate eyes.

Respiratory or Skin Sensitization
Product: Not a skin sensitizer.

Carcinogenicity
Product: Suspected of causing cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

LEAD Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

LEAD Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro
Product: No mutagenic components identified

In vivo
Product: No mutagenic components identified

Reproductive toxicity
Product: May damage fertility or the unborn child.

Specific Target Organ Toxicity - Single Exposure
Product: None known.

Specific Target Organ Toxicity - Repeated Exposure
Product: None known.

Aspiration Hazard

Product: Not classified

Other effects: None known.

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Specified substance(s):

ZINC
LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 0.211 - 0.269 mg/l Mortality
LC 50 (Rainbow trout, donaldson trout (*Oncorhynchus mykiss*), 96 h): 0.24 mg/l Mortality
LC 50 (Bluegill (*Lepomis macrochirus*), 96 h): 12.9 mg/l Mortality
EC 50 (Killifish (*Nothobranchius guentheri*), 24 h): 4 - 5.3 mg/l Mortality

ZINC OXIDE
LC 50 (Striped bass (*Morone saxatilis*), 48 h): 0.25 - 2.46 mg/l Mortality
LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 2,246 mg/l Mortality

LEAD
LC 50 (Rainbow trout, donaldson trout (*Oncorhynchus mykiss*), 96 h): 1.17 mg/l Mortality
LC 50 (Smallmouth bass (*Micropterus dolomieu*), 96 h): 2.2 mg/l Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

ZINC
EC 50 (Water flea (*Daphnia magna*), 48 h): 2.8 mg/l Intoxication
LC 50 (Water flea (*Daphnia magna*), 48 h): 0.068 mg/l Mortality
LC 50 (Brine shrimp (*Artemia salina*), 48 h): 1.7 mg/l Mortality
LC 50 (Green mussel (*Perna viridis*), 48 h): 7 mg/l Mortality

ZINC OXIDE
LC 50 (Water flea (*Daphnia magna*), 48 h): 0.098 mg/l Mortality

LEAD
EC 50 (Fleshy prawn (*Penaeus chinensis*), 30 h): 1.88 mg/l Mortality
LC 50 (Water flea (*Daphnia magna*), 48 h): 3.6 - 5.3 mg/l Mortality
LC 50 (Fleshy prawn (*Penaeus chinensis*), 96 h): 0.105 - 0.298 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD Ratio**Product:** No data available.**Bioaccumulative Potential****Bioconcentration Factor (BCF)****Product:** No data available on bioaccumulation.**Partition Coefficient n-octanol / water (log Kow)****Product:** No data available.**Mobility in Soil:** No data available.**Other Adverse Effects:** Very toxic to aquatic life with long lasting effects.**13. Disposal considerations****Disposal instructions:** Discharge, treatment, or disposal may be subject to national, state, or local laws.**Contaminated Packaging:** Since emptied containers retain product residue, follow label warnings even after container is emptied.**14. Transport information****DOT**

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

15. Regulatory information**US Federal Regulations****TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)****US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
ZINC	1000 lbs.
LEAD	10 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

Acute (Immediate)

Chronic (Delayed)

Fire

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
ZINC	1000 lbs.
ZINC OXIDE	
LEAD	10 lbs.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
ZINC	10000 lbs
ZINC OXIDE	10000 lbs
LEAD	10000 lbs

SARA 313 (TRI Reporting)

<u>Chemical Identity</u>	<u>Reporting threshold for other users</u>	<u>Reporting threshold for manufacturing and processing</u>
ZINC	10000 lbs	25000 lbs.
ZINC OXIDE	10000 lbs	25000 lbs.
LEAD	100 lbs	

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations
US. California Proposition 65

LEAD	Carcinogenic.
LEAD	Developmental toxin.
LEAD	Male reproductive toxin.
LEAD	Female reproductive toxin.

US. New Jersey Worker and Community Right-to-Know Act

<u>Chemical Identity</u>
ZINC
ZINC OXIDE

US. Massachusetts RTK - Substance List

<u>Chemical Identity</u>
ZINC
ZINC OXIDE

US. Pennsylvania RTK - Hazardous Substances

<u>Chemical Identity</u>
ZINC
ZINC OXIDE

US. Rhode Island RTK

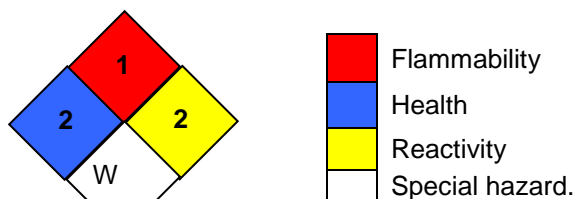
<u>Chemical Identity</u>
ZINC
ZINC OXIDE

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible
W: Water-reactive

Issue Date: 03-27-2015

Revision Date: No data available.

Version #: 2.0

Further Information: No data available.

Disclaimer:

THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.