

## **SAFETY DATA SHEET**

**Product Name:** ZINC OXIDE, LOW-MICRON  
**Effective Date:** 29October2012  
**Scope:** This SDS is valid for TKB's zinc oxide in commerce within European Economic Authority (EEA) member countries only. This SDS is not valid outside the EEA.

### **1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

#### **1.1 Product Identifier**

**Trade name:** ZINC OXIDE, LOW-MICRON  
**Synonyms:** ZINKOXID, OXYDE DE ZINC, OSSIDO DI ZINCO, ZINKOXIDE, ZINK OXID, OXIDO DEL CINC, TLENED CYNKU  
**CAS number:** 1314-13-2, **EINECS Number:** 215-222-5

#### **1.2 Relevant identified uses of the substance/mixture and uses advised against:**

In EEA member countries, use is restricted to only uses registered under REACH.

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

TKB Trading, LLC  
1101 9th Ave  
Oakland, CA 94606, USA  
Tel. 510 451 9011  
www.tkbtrading.com

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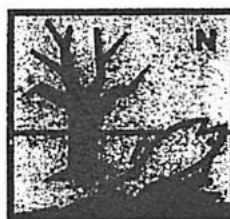
### **2. HAZARDS IDENTIFICATION**

#### **2.1 Classification of the substance or mixture**

- A. U.S.A.: Not Regulated.**
- B. EEA member countries: Regulated**

#### **2.2 Labeling in EEA countries:**

- i. ZINC OXIDE. Signal word: Warning.**
  - H410: Very toxic to aquatic life with long lasting effects.**
  - P273: Avoid release to the environment.**
  - P391: Collect spillage.**
  - P501: Dispose of contents/container as hazardous or special waste in accordance with applicable law.**



- ii. Risk phrases R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S60: This material and its container must be disposed of as hazardous waste. S61: Avoid release to the environment.
- iii. "Preparations" containing more than 25% of this material, under EU law, will also need to be classified as "Dangerous for the Environment."

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Constituent	Range	CAS no.	EC/EINECS	Other
Zinc Oxide (ZnO)	>99.5%	1314-13-2	215-222-5	Index: 030-013-00-7 (1)
Lead (as PbO)	<0.15%	1317-36-8	215-267-8	Impurity (1)
Cadmium (as CdO)	<0.025%	1306-19-0	215-146-2	Impurity (1)
Moisture (as H <sub>2</sub> O)	<0.3%	7732-18-5	213-791-2	Post manufacturing (2)
Zinc Carbonate (ZnCO <sub>3</sub> )	<1%	5970-47-8	222-477-6	Post manufacturing (3)
Processing Aid	<0.1%			Customer request additive (4)

- (1) This SDS is not a TDS (Technical Data Sheet) or Specification, and covers a range of product grades and customer specifications where the hazards and controls are substantially similar and covered by the same SDS.  
-> See the specific grade TDS or specification covering the tender for specific ZnO minimum assay and maximum Pb and Cd naturally occurring impurity levels.
- (2) Moisture is a post manufacturing degradation impurity. The product is manufactured in a high temperature distillation process, absent of volatiles. After finished product is manufactured, due to zinc oxide's hygroscopic crystal size, zinc oxide has a natural affinity to attract and hold some moisture from humidity in the air. This occurs post manufacturing and is beyond the manufacturers control. Product is manufactured and sold dry basis. However, since some moisture will be present at point of end use, it is mentioned as information for the end user in this SDS.
- (3) Zinc oxide naturally degrades by reacting with carbon dioxide (CO<sub>2</sub>) in ambient air, and is the basis for a shelf life expiration of the product (ZnO + CO<sub>2</sub> = ZnCO<sub>3</sub>). This occurs post manufacturing. As with moisture, product is manufactured and sold dry basis, and this item is listed on this SDS as information only for the end user information only as it may be present at end user, and is not a constituent of the product as manufactured. ZnCO<sub>3</sub> is a volatile decomposing around 260C (500F) to CO<sub>2</sub> gas and ZnO powder.
- (4) Treatment. Some rubber industry customers request a processing aid additive which is either propionic acid (as zinc propionate), caprylic acid (as zinc caprylate), and/or light process oil. The specific order must be reviewed to determine if the grade has an S or T indicating Surface Treated. Treatment would not be present on any material unless specifically requested by the customer.

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

In case of skin contact: Wash with plenty of water and soap.

In case of eye contact: Rinse immediately with plenty of water and seek medical advice.

In case of ingestion: Drink plenty of water; do not induce vomiting; call a physician.

In case of inhalation: Remove casualty to fresh air and keep warm and at rest.

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

Acute: Dry cough, headache.

Chronic: None. Overexposure has no lasting effects.

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

Bad caught and/or headache. Move person to fresh air. No special treatment known, excess dust must naturally purge or absorb to expel.

## 5. FIRE-FIGHTING MEASURES

Zinc oxide will not burn. Hazardous decomposition product(s): None.  
Use extinguishing media appropriate for the surrounding fire.  
Avoid release of fire control water containing zinc oxide to environment.

## 6. ACCIDENTAL RELEASE MEASURES

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

If spilled, shovel or sweep spills into suitable labeled container.

Vacuum small spills.

Spills not mixed with other chemicals may be recyclable.

Remove persons to safety.

See protective measures under points 7 and 8.

### 6.2 Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of escape or of entry into waterways, soil or drains, inform the responsible authorities as required.

Suitable material for taking up wet product: absorbing material, organic, sand

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

Recover the product with a vacuum cleaner or a damp cloth.

Do not sweep up to avoid unnecessary creation of airborne dust.

### 6.4 Reference to other sections

See also section 8 and 13

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling:

Wear protective clothing and dust respirator in bulk dust conditions.

See also section 8 for recommended protective equipment.

### 7.2 Conditions for safe storage, including any incompatibilities: Keep dry.

Preferred storage is in a cool and dry place to minimize potency degradation.

Keep dry.

Once product is opened, consume within a month to minimize potency adverse degradation effects or poor flow and hard particulate (ZnCO<sub>3</sub>).

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

Country/organisation	8 hour-TWA	15 min-STEL mg/m <sup>3</sup>
Germany (MAK)	5 mg/m <sup>3</sup> (fumes)	Einatembare Staub (Dust) = 10 mg/m <sup>3</sup>
	6 mg/m <sup>3</sup> (dust)	Alveolengängiger Staub = 3 mg/m <sup>3</sup>
France (INRS)	5 mg/m <sup>3</sup> (fume)	
	10 mg/m <sup>3</sup> (dust)	
UK (OEL)	5 mg/m <sup>3</sup> (fumes)	TWA – 8 hour: 5 mg/m <sup>3</sup> (nuisance dust)
	10 mg/m <sup>3</sup> (dust)	STEL – 15 minutes: 10 mg/m <sup>3</sup> (nuisance dust)
The Netherlands	5 mg/m <sup>3</sup> (fumes)	
Sweden	5 mg/m <sup>3</sup> (fumes)	
Denmark	4 mg/m <sup>3</sup> (fumes)	
	10 (dust)	
USA (Zinc Oxide)	5 mg/m <sup>3</sup> (fumes)	



	15 mg/m <sup>3</sup> (dust; total)	
	5 mg/m <sup>3</sup> (dust; respirable)	
USA (Lead)	5 ug/m <sup>3</sup>	
USA (Cadmium)	5 ug/m <sup>3</sup>	

**8.2 Exposure controls**

Eye protection: Safety glasses or goggles recommended if risk of excess dust in face  
 Protection for skin: Recommended in bulk dust conditions.  
 Protection for hands: Recommended to reduce drying of skin  
 Respiratory protection: In bulk dust conditions or when at or above OEL or PEL  
 Local exhaust ventilation: Yes.  
 Thermal Hazards: None  
 Environmental exposure controls: None

**8.3 Other**

Route(s) Of Entry: 1. Inhalation. 2. Mechanical irritation to skin and eyes.  
 Carcinogens: Not a NTP/IARC carcinogen.  
 Signs & Symptoms of Exposure: Dry throat, cough, dry itching skin.  
 Human: Excess bulk exposure may cause acute respiratory irritant or dry skin.

**9. PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

Boiling Point: Not applicable  
 Vapor Pressure: @1500C = 12mm Hg  
 Melting Point: 1975 C  
 Evaporation Rate: N/A (Butyl Acetate = 1)  
 Specific Gravity: 5.68  
 Solubility In Water: Insoluble (negligible, Zn 2.9 mg/l)  
 Molecular Weight: 81.38 (ZnO)  
 Soluble: In bases and acids  
 Oxidation qualities: Not applicable  
 Fire qualities: Will not burn  
 Odor, smell: Odorless.  
 pH: Neutral, 6.8 to 8 (7.37 nominal)  
 Vapor Density: Not applicable  
 Physical State: Powder or pellets  
 Typical particle size: 0.1 to 1 micron  
 Appearance: White, cream, or yellowish color  
 Explosive: Not explosive  
 Volatile: 0.3% nominal (due to loss of H<sub>2</sub>O or CO<sub>2</sub>)

**10. STABILITY AND REACTIVITY**

**10.1 Reactivity:** Stable under normal dry air conditions

**10.2 Chemical stability:** Product is stable.

**10.2.1 Decomposition.** Product decomposes in bases and acids, neutralizing pH.

**Shelf life:** Zinc oxide (ZnO) slowly reacts with carbon dioxide (CO<sub>2</sub>) in ambient air forming zinc carbonate (ZnCO<sub>3</sub>). After a year, carbonate may be up to 1% which raises concern of ZnO assay reduction and small hard ZnCO<sub>3</sub> particulates up to 500 to 800 micron size causing grit in product which does not effect its safety, but may effect the product's quality for some applications/uses.

**10.3 Possibility of hazardous reactions:** None

**10.4 Conditions to avoid or incompatible materials:**

1. Heated magnesium. 2. Chlorinated rubber above 215C.

10.5 Hazardous decomposition products: None.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity:

Routes of entry: Oral, Inhalation.  
Acute toxicity - Oral: LD 50 (rat, Lethal Dose (50%)): > 15000 mg ZnO/kg (OECD 401)  
Acute toxicity – Inhalation: LC 50 (rat, 4 hours): > 5.7 mg ZnO (Klimisch et al. 1982).  
Chronic toxicity: NOAEL: 50 mg/ Zn/day (based on human clinical studies).  
Mutation: No evidence of genetic toxicity, in-vitro tests.  
Reproduction toxicity: No evidence of reproduction toxicity.  
Acute toxicity – Dermal: No data available.  
Aspiration hazard: No data available  
Respiratory tract: Not irritant (Klimisch et al, 1982)  
Sensitization: No sensitizing potential (guinea pig). (Van Huygevoort, 1999 g,h)  
Skin irritation: Not irritating (rabbit). OECD 404. (Löser, 1977; Lansdown, 1991)  
Eye irritation: Not irritating (rabbit). OECD 405.  
Carcinogenicity: No evidence of carcinogenicity in laboratory animals or in man.  
Not an IARC carcinogen.  
Eye irritation: Not irritating (rabbit). (Van Huygevoort 1999; Thijssen, 1978; Löser, 1977)  
Ingestion: Product is Generally Recognized As Safe (GRAS) and a use is zinc vitamin supplement. There are reports that in the event of excess zinc oxide ingestion, the body uses a greater amount of copper vitamin which may lead to a copper deficiency.

Germ cell mutagenicity: No biologically relevant genotoxic activity (based on cross-reading between Zn compounds; no classification for mutagenicity required) (Chemical Safety report (CSR) zinc oxide. 2010).

Carcinogenicity: No experimental or epidemiological evidence exists to justify classification of zinc compounds for carcinogenic activity (based on cross-reading between Zn compounds; no classification for carcinogenicity required) (Chemical Safety report (CSR) zinc oxide. 2010)

Reproductive toxicity: No experimental or epidemiological evidence exists to justify classification of zinc compounds for reproductive or developmental toxicity (based on cross-reading between Zn compounds; no classification for reproductive toxicity required) (Chemical Safety report (CSR) zinc oxide. 2010)

Specific target organ toxicity (single exposure): No experimental or epidemiological sufficient evidence for specific target organ toxicity (single exposure) (no classification for target organ toxicity (single exposure: STOT-SE) required) (Heydon and Kagan, 1990; Gordon *et al.*, 1992; Mueller and Seger, 1985 [Cited in Chemical Safety report (CSR) zinc oxide. 2010])).

Specific target organ toxicity (repeated exposure): No experimental or epidemiological sufficient evidence for specific target organ toxicity (repeated exposure) (no classification for specific target organ toxicity (repeated exposure: STOT-RE) required) (Lam et al, 1985, 1988; Conner et al. 1988 [Cited in Chemical Safety report (CSR) zinc oxide. 2010])).

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## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity (zinc oxide)

Acute EC50 0.413 mg/l Zn, 48 hour – *Ceriodaphnia dubia*

Acute LC50 0.136 mg/l Zn, 72 hour – *Salinastrum capricornutum*

12.2 Persistence and degradability: None, N.A. (zinc is an element)

12.3 Bioaccumulative potential: N.A. (no bioaccumulate or biomagnify)

12.4 Mobility in soil: N.A.  
 12.5 Results of PBT and vPvB assessment: zinc oxide is not PBT or vPvB.  
 12.6 Other adverse effects: None

### 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste treatment methods




This material may be a special or hazardous waste for regulated metals.  
 Empty packaging may also be regulated in EEA member countries.  
 To prevent water pollution, do not open release.  
 Material may be recyclable. Contact U.S. Zinc for more information

### 14. TRANSPORT INFORMATION

NAFTA Tariff Class 2817.00.0000, Sched. B.  
 Country of Origin: U.S.A.  
 Responsible Party: U.S. Zinc, Houston, TX U.S.A.  
 Classification code: M7 (Formerly: Item number 12C)  
 Hazard identification/reconnaissance number: 90  
 NMFC Class 55

A. USDOT: This material is not regulated.

B. EEA member countries (European Economic Authority):  
 This material is listed as regulated in the EEA.  
 EEA transport information below:

	ADR/RID	IMDG	IATA
14.1 UN number	UN3077	UN3077	UN3077
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Oxide)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Oxide), Marine pollutant (Zinc oxide)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Oxide)
14.3 Transport hazard Classes(es)	9 	9 	9 
	Hazard identification number: 90	Sea (IMO): not regulated	IATA Label: Miscellaneous
14.4 Packing group	III	III	III
14.5 Environmental hazards	Yes	Yes, Dangerous to the Environment	Yes
14.6 Special precautions for users	No	No	Yes (see below)
Additional information	Tunnel code (E)	none	
IATA special precautions for users	IATA-Passenger Aircraft: 400 kg (packing group 956), IATA -Passenger Aircraft: 30 kg (packing group Y956) IATA-Cargo Aircraft: 400 kg (packing group 956) IATA-S.P.: A97, A158, A179		

### 15. REGULATORY INFORMATION

15.1 EEA: This SDS complies with GHS-CLP, and EEA/EUI REACH, and SDS rules  
 Labeling Signal Word: WARNING

## 15.2 U.S.A. Regulations

USDOT: Not transport regulated, 49CFR172.  
SARA 302: Yes, name listed (zinc). RQ=None, TPQ=None.  
SARA 311/312: Yes, acute hazard (29CFR1200 "haz com").  
SARA 313: Yes, Zn & Pb Compounds.  
CA Prop. 65: Yes, Pb & Cd.  
CAA 112, 61 HAP: No, not regulated, no HAP's.  
FIFRA 152 et seq.: No (product is not subject to FIFRA).  
CERCLA 102/103: Name List, RQ=None.  
NSF 60/61: Submitted: NSF, UL  
FCC: Listed.  
CONEG: Compliant.  
ODS/ODC 82: No.  
TSCA: Yes, on Inventory. Compliant with TSCA. Notification not required.  
RCRA 261: If governing spec is >100ppm Pb or >20ppm Cd, product must be TCLP tested for Pb and Cd to determine if waste product is subject to RCRA.  
USFDA: Listed as GRAS at 21CFR182.8991 (GRAS=Generally Recognized as Safe). Authorized uses as an ingredient in food contact include, but not limited to, Rubber articles (21CFR177.2600(c)(1)); Food can linings and coatings (21CFR175.300(b)(2)). Plastics (21CFR177.1010(a)).

## 15.2 TSCA equivalent 'inventory' regulations:

AICS = Yes  
SWISS = YES  
PICCS = Yes  
DSL = Yes  
NDSL = No  
ASIA-PAC = Yes  
EINECS = Yes, on Inventory  
ELINCS = No (notification/reporting not required)

## 15.3 REACH pre-registration numbers for U.S. Zinc's zinc oxide from other countries:

Origin P.R.C. (China): 05-2114620034-66-0000  
Origin Brazil: 05-2114626885-37-0000

15.4 "Preparations" containing more than 25% of this material, under EEA law, will also need to be classified as "Dangerous for the Environment" for transport in and between EEA member countries.

## 16. OTHER INFORMATION

### 16.1 Safety phrases S60 in additional languages:

(FR): Eliminer le produit et son recipient comme un déchet dangereux.  
(IT): Questo materiale e il suo contenitore devono essere smaltiti come rifiuti pericolosi.  
(DE): Dieses Produkt und sein Behälter sind als gefährlicher Abfall zu entsorgen.

### 16.2 Safety phrases S61 in additional languages:

(FR): Éviter le rejet dans l'environnement. Consulter les instructions spéciales/la fiche de données de sécurité.  
(IT): Non disperdere nell'ambiente. Riferirsi alle istruzioni speciali/ schede informative in materia di sicurezza.  
(DE): Freisetzung in die Umwelt vermeiden. Besondere Anweisungen einholen/Sicherheitsdatenblatt zu Rate ziehen.

### 16.3 Risk phrases R50/53 in additional languages

(FR): Très toxique pour les organismes aquatiques, peut entraîner des effets néfastes à long terme pour l'environnement aquatique.  
(DE): Sehr giftig für Wasserorganismen, kann in Gewässern längerfristig schädliche Wirkungen haben.  
(IT): Altamente tossico per gli organismi acquatici, può provocare a lungo termine effetti



negativi per l'ambiente acquatico

**16.4 Signal Word, H and P phrases in additional languages:**

**DE Deutsch (German). ZINKOXID. Signalwort: Achtung.**

**H410: Sehr giftig für Wasserorganismen mit langfristiger Wirkung.**

**P273: Freisetzung in die Umwelt vermeiden.**

**P391: Verschüttete Mengen aufnehmen.**

**P501: Diesen Stoff und seine(n) Behälter entsprechend geltendem Recht der Problemabfallentsorgung zuführen.**

**FR Français. OXYDE DE ZINC. Mention d'avertissement: Attention.**

**H410: Très toxique pour les organismes aquatiques, entraîne des effets néfastes à long terme.**

**P273: Éviter le rejet dans l'environnement.**

**P391: Recueillir le produit répandu.**

**P501: Éliminer le contenu/récipient dans des déchets dangereux ou spéciaux conformément à la loi qui s'applique.**

**IT Italiana. OSSIDO DI ZINCO. Avvertenza: Attenzione.**

**H410: Molto tossico per gli organismi acquatici con effetti di lunga durata.**

**P273: Non disperdere nell'ambiente. P391: Raccogliere il materiale fuoriuscito.**

**P501: Smaltire il prodotto/recipiente in conformità alla normativa vigente sui rifiuti speciali e pericolosi.**

**NL Dutch, Flemish (Nederland's). ZINKOXIDE. Signaalwoord: Waarschuwing.**

**H410: Zeer giftig voor in het water levende organismen, met langdurige gevolgen.**

**P273: Voorkom lozing in het milieu. P391: Gelekte/gemorste stof opruimen.**

**P501: Verwijder inhoud/container als gevaarlijk of bijzonder afval in overeenstemming met de geldende wetgeving.**

**ES Español. OXIDO DEL CINCO. Palabra de advertencia: Atención.**

**H410: Muy tóxico para los organismos acuáticos, con efectos nocivos duraderos.**

**P273: Evitar su liberación al medio ambiente.**

**P391: Recoger el vertido.**

**P501: Disponga del contenido/envase como basura peligrosa o especial de acuerdo con la ley aplicable.**

**DA Danish, Dansk (Denmark). ZINK OXID. Signalord: Advarsel.**

**H410: Meget giftig med langvarige virkninger for vandlevende organismer.**

**P273: Undgå udledning til miljøet.**

**P391: Udslip opsamlles.**

**P501: Indholdet/holderen bortskaffes som farligt affald i overensstemmelse med gældende regler.**

**PL Polish, Polska. TLENED CYNKU. Hasło ostrzegawcze: Uwaga.**

**H410: Działanie bardzo toksyczne na organizmy wodne, powodując długotrwałe skutki.**

**P273: Unikać uwolnienia do środowiska.**

**P391: Zebrać wyciek. P501: Wyzuwać pojemniki zawierające toksyczne i niebezpieczne substancje zgodnie z instrukcją**

**16.5 HMIS Hazard Rating (Paint and Coating Industry)**

Health	1 (slight)
Flammability	0
Reactivity	0
Personal Protection	E (in bulk dust conditions only, gloves, mask, and goggles are recommended)

**16.5 Table: Identified uses for ZnO and corresponding Generic Exposure Exposure Scenario (GES)**



<b>IU number</b>	<b>Identified Use (IU) name</b>	<b>GES code</b>
2	Zinc oxide production-Indirect	GESZnO 0
9	Component for production of inorganic zinc compounds	GESZnO 2
10	Electroplating	GESZnO 2
11	Electroplating	GESZnO 2
12	Zinc production by electrowinning	GESZnO 2
13	Laboratory reagent	GESZnO 3
14	Zinc production by pyrometallurgy	GESZnO 2
16	Component for production of organic zinc compounds	GESZnO 2
17	Component for production of inorganic pigments	GESZnO 1, GESZnO 4
18	Component for production of Coatings / paints, inks, enamels, varnishes	GESZnO 1, GESZnO 4
19	Use of ZnO-containing paints & coatings	GESZnO 7
20	Artists supply: Use of ZnO-containing paints & coatings	Generic consumer/environment*
21	Component for Paper coating	GESZnO 1, GESZnO 5
22	Use of ZnO-containing paper coatings	GESZnO 6
23	Component for Textile & leather coating / treatment	GESZnO 1, GESZnO 5
24	Use of ZnO-containing textile & leather coatings	GESZnO 6
25	Additive / component for production of ceramics	GESZnO 1, GESZnO 4
26	Additive / component for production of frits	GESZnO 1, GESZnO 4
27	Use of ZnO-containing glazes and glassy thin film coatings	GESZnO 6
28	Additive for the production of Friction agents	GESZnO 1, GESZnO 4
29	Use of ZnO-containing friction agents: Brake pads	GESZnO 6
30	Additive / component for production of glass	GESZnO 1, GESZnO 4
31	Surface treatment of flat glass	GESZnO 1, GESZnO 4
32	Use of ZnO-containing glass & ceramics in dinnerware	GESZnO 6
33	Use of ZnO-containing glass in displays	GESZnO 6
34	Use of ZnO-containing glassy thin film coatings	GESZnO 6
35	Additive in the manufacturing of electronic components	GESZnO 1, GESZnO 4
36	Additive in the manufacturing of ferrites	GESZnO 1, GESZnO 4
37	Additive in the manufacturing of varistors	GESZnO 1, GESZnO 4
38	ZnO in electrotechnical contact material	GESZnO 1, GESZnO 4
39	Batteries/Fuel cells	GESZnO 1, GESZnO 4, GESZnO 5
40	Component for production of rubber, resins and related preparations	GESZnO 1, GESZnO 5
41	Use of ZnO-containing rubber for tires (tyres)	GESZnO 7
42	Use of ZnO-containing rubber and other resins for medical devices and applications	GESZnO 7
43	Component for polymer-matrices, plastics and related preparations	GESZnO 1, GESZnO 5
44	Use of ZnO-containing polymers for floor, wall coverings and similar preparations	GESZnO 7
45	Use of ZnO-containing polymers for cable protecting & isolating coatings	GESZnO 7

46	Use of ZnO-containing polymers for tube & sheet articles	GESZnO 7
47	Use of ZnO-containing polymers for molded articles	GESZnO 7
48	Use of ZnO-containing plastic thin films coatings	Generic consumer/environment
49	Additive for the production of Sealants / Adhesives / Mastics	GESZnO 1, GESZnO 5
50	Use of ZnO-containing Sealants / Adhesives / Mastics	Generic consumer/environment
51	Additive for the production of Lubricants / Grease / Metal working fluids	GESZnO 1, GESZnO 5
52	Use of ZnO-containing Lubricants / Grease / Metal working fluids	Generic consumer/environment
53	Additive for the production of Polishes / wax blends	GESZnO 1, GESZnO 5
54	Use of ZnO-containing Polishes/ wax blends	Generic consumer/environment
55	Use of ZnO-containing catalysts	GESZnO 1, GESZnO 5
56	Use of ZnO-containing adsorbents	GESZnO 1, GESZnO 5
57	Additive for production of de-icing products	GESZnO 1, GESZnO 5
58	Use of ZnO-containing de-icing products	Generic consumer/environment
59	Additive for the production of pyrotechnic products	GESZnO 1, GESZnO 4
60	Use of ZnO-containing pyrotechnic products	Generic consumer/environment
61	Additive for the formulation of nutrition additives	GESZnO 1, GESZnO 4, GESZnO 5
62	Additive for the formulation of animal feedstuffs	GESZnO 1, GESZnO 4, GESZnO 5
63	Additive for the formulation of biocidal products	GESZnO 1, GESZnO 4, GESZnO 5
64	Use of ZnO-containing biocidal products	GESZnO 6, GESZnO 7, Generic consumer/environment
65	Additive for the formulation of cleaning products	GESZnO 1, GESZnO 4, GESZnO 5
66	Use of ZnO-containing cleaning products	GESZnO 6, GESZnO 7, Generic consumer/environment
67	Additive for the formulation of fertilizers	GESZnO 1, GESZnO 4, GESZnO 5
68	Use of ZnO-containing fertilizer's formulations	Generic consumer/environment
69	Additive in the formulation of cosmetics	GESZnO 1, GESZnO 4, GESZnO 5
70	Use of cosmetics	GESZnO 6, GESZnO 7, Generic consumer/environment
71	Additive in dentistry products	GESZnO 1, GESZnO 4, GESZnO 5
72	Additive in the formulation of pharma / veterinary products	GESZnO 1, GESZnO 4, GESZnO 5
73	Use of pharma / veterinary products	GESZnO 6, GESZnO 7, Generic consumer/environment

\* corresponds to "GES 8" in IUCLID

#### 16.6 Other

This Safety Data Sheet (SDS) provides information on the safety requirements working with this material. This SDS is not a guarantee of the product's properties. The information is believed to be accurate by the preparer utilizing reasonably available published data. We are not responsible for any inadvertent error or omission. End use of this product will include many factors beyond our control, and we cannot accept liability for any accident, injury or damage caused by its use.