

ZNTC, ZNTW, ZNTEp, ZNTEs

Safety Data Sheet

according to GHS

Date of issue: 7/27/2015

Version: 1.0

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

1.1. Product identifier

Product form : Mixture
 Product name : ZNTC, ZNTW, ZNTEp, ZNTEs
 CAS No : 7440-44-0
 Other means of identification : Non-Covalent Functionalized Multi-Wall Carbon Nanotubes

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

1.2.1. Relevant identified uses

Use of the substance/mixture : The product is used in epoxy resin and composite applications.
 Scientific research and development

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Zyvex Technologies
 1255 Kinnear Road
 43212 Columbus, OH
 T 614-481-2222 - F 614-481-2260
cballard@zyvextech.com

1.4. Emergency telephone number

Emergency number : Chemtrec (North America): 800.424.9300 Chemtrec (International): 703.527.3887
 CHEMTREC (24 HOURS)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to GHS

Sensitisation — Skin, category 1 H317

Full text of H statements : see section 16

2.2. Label elements

Labelling according to GHS

Hazard pictograms :



GHS07

Signal word :

Warning

Hazard statements :

H317 - May cause an allergic skin reaction

Precautionary statements :

P261 - Avoid breathing mist, spray, vapours
 P272 - Contaminated work clothing should not be allowed out of the workplace
 P280 - Wear protective clothing, protective gloves
 P302+P352 - IF ON SKIN: Wash with plenty of water
 P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
 P362+P364 - Take off contaminated clothing and wash it before reuse
 P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

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2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	Classification according to GHS
Arkema Graphistrength C100 (R&D) Multi-wall Carbon Nanotubes	(CAS No) Carbon 7440-44-0 US TSCA PMN 13-0573 US TSCA PMN 09-188	>= 87	Not classified
Proprietary Resin-Polymer Mixture	Not established	<= 13	Skin Sens. 1, H317

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- First-aid measures after skin contact : Gently wash with plenty of soap and water. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- First-aid measures after ingestion : Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

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

- Symptoms/injuries after inhalation : None under normal use.
- Symptoms/injuries after skin contact : May cause an allergic skin reaction. May cause slight irritation.
- Symptoms/injuries after eye contact : May cause minor eye irritation.

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

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : alcohol resistant foam. Carbon dioxide. Water spray.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : No particular fire or explosion hazard.

5.3. Advice for firefighters

- Firefighting instructions : Do not allow run-off from fire fighting to enter drains or water courses.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : Avoid all unnecessary exposure.

6.1.2. For emergency responders

- Protective equipment : Avoid contact with skin and eyes. Wear suitable gloves. Nitrile rubber.
- Emergency procedures : Avoid contact with skin and eyes. Evacuate unnecessary personnel. Stop leak if safe to do so. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Impound and recover large spill by mixing it with inert granular solids.

6.2. Environmental precautions

Do not discharge into drains or the environment.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : On land, sweep or shovel into suitable containers.

6.4. Reference to other sections

See Heading 8.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Avoid contact with skin and eyes.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash your hands immediately after handling this product, and once again before leaving the workplace.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container closed when not in use. Keep only in original container. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.
- Incompatible products : Strong acids. Strong bases. Strong oxidizing agents.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon nanotubes (7440-44-0)		
US NIOSH. Reference http://www.cdc.gov/niosh/docs/2013-145/pdfs/2013-145.pdf	8-hour TWA NIOSH Method 5040	1 ug/m ³

8.2. Exposure controls

- Appropriate engineering controls : Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Use a High efficiency particulate air filter (HEPA filter).
- Hand protection : Nitrile rubber gloves
- Eye protection : In case of dust production: protective goggles
- Skin and body protection : Wear protective clothing and gloves that perform according to ASTM F-1671.
- Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Powered Air-Purifying Respirator (PAPR)

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Black Semi-solid
- Colour : Black
- Odour : slight
- Odour threshold : No data available
- pH : No data available
- Relative evaporation rate (butyl acetate=1) : No data available
- Melting point : No data available
- Freezing point : No data available
- Boiling point : 210 - 215 °C
- Flash point : > 93.3 °C
- Auto-ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapour pressure : No data available
- Relative vapour density at 20 °C : No data available
- Relative density : No data available
- Solubility : insoluble in water.
- Log Pow : No data available
- Viscosity, kinematic : No data available
- Viscosity, dynamic : No data available
- Explosive properties : No data available
- Oxidising properties : No data available
- Explosive limits : No data available

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9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Incompatible materials.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Hazardous Polymerization may occur. Reacts with (some) acids.

10.4. Conditions to avoid

Exposure to extremely high temperatures.

10.5. Incompatible materials

Strong oxidizing agents. Strong mineral acids. Strong bases.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential adverse human health effects and symptoms	: May cause an allergic skin reaction.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
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12.2. Persistence and degradability

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Persistence and degradability	Not readily biodegradable.
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12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Additional information	: Avoid release to the environment
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.

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SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not considered a dangerous good for transport regulations

14.2. UN proper shipping name

Proper Shipping Name (ADR) : Not applicable
Proper Shipping Name (IMDG) : Not applicable
Proper Shipping Name (IATA) : Not applicable
Proper Shipping Name (ADN) : Not applicable
Proper Shipping Name (RID) : Not applicable

14.3. Transport hazard class(es)

ADR, IMDG, IATA, AND, RID

Transport hazard class(es) (ADR) : Not applicable

14.4. Packing group

Packing group (ADR) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable
Packing group (ADN) : Not applicable
Packing group (RID) : Not applicable

14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes: Original Document.

Abbreviations and acronyms:

CAS (Chemical Abstracts Service) number
GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
SDS: Safety Data Sheet

Data sources : Component Supplier SDSs.
European Chemicals Agency (ECHA) Registered Substances list.
Internal Company test data.
Organisation for Economic Co-operation and Development.

Full text of H- and EUH-statements:

Skin Sens. 1	Sensitisation — Skin, category 1
H317	May cause an allergic skin reaction

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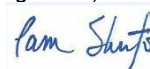
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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product