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## Safety data sheet: Z-NYLON

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

#### 1.1. PRODUCT IDENTIFIER

Trade name: Z-NYLON

#### 1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Identified use: thermal processing for 3D printing in Layer Plastic Deposition (LPD) technology.

Use advised against: other than listed above

#### 1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Supplier: Zortrax S.A.  
Lubelska 34  
10-409 Olsztyn  
Poland  
TEL. +48 89 672 40 01

Made in: EU

#### 1.4. EMERGENCY TELEPHONE NUMBER

Emergency telephone number: 112

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

According to Regulation (WE) No 1272/2008 [CLP]: No need for classification according to GHS criteria for this product.

#### 2.2. LABEL ELEMENTS

According to Regulation (WE) No 1272/2008 [CLP]: The product does not require a hazard warning label in accordance with GHS criteria.

#### 2.3. OTHER HAZARDS

Contact with hot product can cause severe burns.

Inhalation: At high temperatures, thermal decomposition products may be irritating to the respiratory system.

Skin contact: Danger of skin sensitization. At high temperatures, thermal decomposition products may be irritating to the skin.

Eye contact: At high temperatures, thermal decomposition products may be irritating to the eyes.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. SUBSTANCES

Not applicable

### 3.2. MIXTURES

Polyamide 12 (various varieties) Presence of additives Presence of stabilizers to prevent thermal oxidation and oxidation induced by sunlight (weather effect) Possible presence: soot

## SECTION 4. FIRST AID MEASURES

### 4.1. DESCRIPTION OF FIRST AID MEASURES

Eye contact:

Dust: Immediately rinse the affected eyes thoroughly with water holding them wide open. Remove any foreign particles remaining under the eyelids. If irritation persists, consult an ophthalmologist. In case of contact with hot product: After contact with molten polymer, cool eyes with cold water. Immediately seek advice of an ophthalmologist.

Skin contact:

In case of skin contact Immediately wash with soap and plenty of water. In case of contact with a hot product: Skin exposed to molten polymer should be cooled quickly with cold water. If adhered, do not peel off the product layer. Treat affected areas as thermal burns. Get medical advice.

Ingestion:

In case of complaints: seek medical advice.

Inhalation:

Inhalation of vapours arising from thermal decomposition: Move the victim to fresh air. If necessary, give oxygen or artificial respiration. If problems persist: Get medical advice.

### 4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Symptoms:

No significant reaction of the human body to the product known.

Hazards:

Risk of skin burns caused by hot melt at improper processing. Apart from that no hazard is expected under intended use and appropriate handling.

### 4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Continuation of first aid measures. Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## SECTION 5. FIREFIGHTING MEASURES

### 5.1. EXTINGUISHING MEDIA

Suitable extinguishing media: Water aerosol, foam carbon dioxide (CO<sub>2</sub>).

### 5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

300 - 350° C: The following substances may form: monomer and oligomer (white fumes). Thermal decomposition to toxic and corrosive products: carbon monoxide, ammonia, amine derivatives.

Temperature over 500° C: Toxic products form during combustion: carbon oxides, hydrogen cyanide (hydrocyanic acid), (traces).

### 5.3. ADVICE FOR FIREFIGHTERS

Special methods: Provide a system for quick emptying of containers. If there is fire nearby, remove the bags.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### 6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Sources of ignition should be kept well clear. Avoid contact with the skin and eyes. Avoid inhalation of dust. If necessary, wear dust masks and safety glasses.

### 6.2. ENVIRONMENTAL PRECAUTIONS

Should not be released into environment.

### 6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Sweep/shovel up. Avoid raising dust. Ensure adequate ventilation. Dispose of absorbed material in accordance with regulations.

### 6.4. REFERENCE TO OTHER SECTIONS

None

## SECTION 7. HANDLING AND STORAGE

### 7.1. PRECAUTIONS FOR SAFE HANDLING

Processing machines must be placed in room with good ventilation. Avoid the formation and deposition of dust. Handle in accordance with good industrial hygiene and safety practice.

## 7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Information about fire and explosion protection:

Make use of general rules of fire prevention. In case of formation of dust: take measures to prevent electrostatic charging. Avoid all sources of ignition: heat, sparks, open flame.

Storage:

Well closed/packed, cool and dry. Protect against moisture and heat. Contamination with other substances must be avoided. Storage together with hazardous substances must be avoided.

## 7.3. SPECIFIC END USE(S)

For the relevant identified uses listed in SECTION 1 the advice mentioned in this section is to be observed.

# SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## 8.1. CONTROL PARAMETERS

Soot					
Source	Date	Figure type	Value (ppm)	Value (mg/m <sup>3</sup> )	Notes
POL MAC	D6 2014	MAC-NDS	-	4	Inhale fraction
ACGIH (US)	D2 2012	TWA	-	3	Inhale fraction
Cuprous Iodide					
Source	Date	Figure type	Value (ppm)	Value (mg/m <sup>3</sup> )	Notes
POL MAC	D6 2014	MAC-NDS	-	0.2	As Cu
ACGIH (US)	D2 2012	TWA	0.01	-	Inhale fraction
ACGIH (US)	D3 2014	TWA	-	1	As Cu
ACGIH (US)	D3 2014	TWA	-	0.2	As Cu

## 8.2. EXPOSURE CONTROLS

Personal protective equipment:

Respiratory protection:

Breathing protection if dusts are formed. Particle filter (Type P1).

Hand protection:

Use additional heat protection gloves when handling hot molten masses (EN 407).

Eye protection:

Safety glasses with side-shields (frame goggles) (e. g. EN 166)

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit.

General safety and hygiene measures:

Avoid contact of molten material with skin. Avoid inhalation of dusts/mists/vapours. Eye wash fountains and safety showers must be easily accessible. Handle in accordance with good industrial hygiene and safety practice. Hands and/or face should be washed before breaks and at the end of the shift. Do not eat, drink or smoke at work. Consult the company Industrial Hygienist for recommendations on exposure testing and personal protective equipment.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	filament
Physical state:	solid (compressed)
Colors:	various
Odor:	none to slightly sweet
Odor threshold:	not applicable
pH:	no data available
Melting point/freezing point:	no data available
Initial boiling point and boiling range:	no data available
Flash point:	no data available
Evaporation rate:	no data available
Flammability:	flammable in constant flame
Upper/lower flammability or explosive limits:	no data available
Vapor pressure:	no data available
Vapor density:	no data available
Relative density:	1.027 g/cm <sup>3</sup>
Solubility:	insoluble
Partition coefficient: n-octanol/water:	no data available
Auto-ignition temperature:	product is not self-igniting
Decomposition temperature:	no data available
Viscosity:	no data available
Explosive properties:	no data available
Oxidizing properties:	no data available

### 9.2. OTHER INFORMATION

Meltdown temperature: 174 - 178° C [345 - 352° F]

## SECTION 10. STABILITY AND REACTIVITY

### 10.1. REACTIVITY

No reactions if stored and handled as prescribed/indicated.

## 10.2. CHEMICAL STABILITY

The product is stable if stored and handled as prescribed/indicated.

## 10.3. POSSIBILITY OF HAZARDOUS REACTIONS

The product is stable of stored and handled as prescribed/indicated.

## 10.4. CONDITIONS TO AVOID

Store at a temperature below 60° C [140° F]. Heat, flames and sparks. Exposure to moisture (to maintain the technical properties of the product).

## 10.5. INCOMPATIBLE MATERIALS

Acid and oxidizer.

## 10.6. HAZARDOUS DECOMPOSITION PRODUCTS

Decomposition temperature:

>350° C [662° F]

At 300 - 350° C [572 - 662° F]

The following toxins may form: monomer and oligomer (white fumes). Thermal decomposition to toxic and corrosive products: carbon monoxide, ammonia, amine derivatives.

Temperature over 500° C [932° F]

Toxic products are formed during combustion: carbon oxides, hydrogen cyanide (hydrocyanic acid), (traces).

# SECTION 11. TOXICOLOGICAL INFORMATION

## 11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

**Acute toxicity:**

Inhalation:

Inhalation of vapors - thermal decomposition products: at high temperatures, thermal decomposition products may be irritating to the respiratory system.

Ingestion:

Polymer. Considering composition, the product should not be harmful under normal conditions of use.

In skin contact:

Polymer. Considering the structure, the product should not be harmful under normal conditions of use.

**Local effects (Erosion / Irritation / Serious eye damage):**

Skin contact:

Polymer - due to its composition - must be considered as: slightly irritating or irritating to the skin.  
In humans: contact with hot product can cause severe burns. At high temperatures, thermal decomposition products may be irritating to the skin.

Eye contact:

Polymer - due to its composition - must be considered as: slightly irritating or irritatin to eyes.  
In humans: contact with hot product can cause severe burns.

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1. TOXICITY

All available and relevant data on this product and/or the components listed in Chapter 3 and/or on analogous substances / metabolites have been taken into account in the hazard assessment.

High toxicity to the aquatic environment: Substance harmful to aquatic life.

Hazard to fish:	Based on available information, it cannot be concluded that this mixture is hazardous. Copper iodide: LC50, 96 h (Oncorhynchus mykiss): 1.67 mg/l (Method: no information available).
Aquatic invertebrates:	Based on the available information, it cannot be concluded that this mixture is hazardous. Copper iodide: LC50, 48 h (Daphnia magna (Water flea)): 0.55 - 0.59 mg/l
Aquatic plants:	Harmful to algae. Copper iodide: EC r50, 96h (Chlamydomonas reinhardtii): 0.047 mg/l (Method: OECD Test Guideline 201, Growth inhibition)
Microorganisms:	Copper iodide: EC50, 3h (Activated sludge): 280 mg/l (Method: OECD Guidance 209)
Toxicity to aquatic organisms / Long-term toxicity: Copper iodide:	NOEC, 72d (Desmodesmus subspicatus (green algae)): 0.025 mg/l (Method: OECD Test Guideline 201, Growth inhibition)

### 12.2. PERSISTENCE AND DEGRADABILITY

The product is non-biodegradable.

### 12.3. BIOACCUMULATIVE POTENTIAL

Bioaccumulation is not expected.

### 12.4. MOBILITY IN SOIL

No data available

### 12.5. RESULTS OF PBT AND VPVB ASSESSMENT

The product does not meet the criteria for PBT or vPvB classification.

### 12.6. OTHER ADVERSE EFFECTS

See SECTION 6.2.

## SECTION 13. DISPOSAL CONSIDERATIONS

### 13.1. WASTE TREATMENT METHODS

Disposal by recycling or incineration is suggested, whereby all national and local regulations must be followed.

## SECTION 14. TRANSPORT INFORMATION

### 14.1. UN NUMBER

DOT, ADR, IMDG, IATA – not applicable

### 14.2. UN PROPER SHIPPING NAME

DOT, ADR, IMDG, IATA – not applicable

### 14.3. TRANSPORT HAZARD CLASS(ES)

DOT, ADR, IMDG, IATA – not applicable

### 14.4. PACKING GROUP

DOT, ADR, IMDG, IATA – not applicable

### 14.5. ENVIRONMENTAL HAZARDS

DOT, ADR, IMDG, IATA – not applicable

### 14.6. SPECIAL PRECAUTIONS FOR USER

None known.

### 14.7. TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL AND THE IBC CODE

Regulation:	not evaluated
Shipment approved:	not evaluated
Pollution name:	not evaluated
Pollution category:	not evaluated
Ship type:	not evaluated



## SECTION 15. REGULATORY INFORMATION

### 15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Water hazard class: not hazardous to water.

### 15.2. CHEMICAL SAFETY ASSESSMENT

A safety data sheet for this product is legally not required and is provided by us just as a courtesy to our customers. Product is not classified as hazardous. Chemical safety assessment not required.

## SECTION 16. OTHER INFORMATION

This Safety Data Sheet has been prepared on the basis of the currently available data on the product as well as of the Manufacturer's experience and knowledge. It should be treated as a guide for safe transportation, storage and handling. The given information is not to be considered as a warranty or quality specification. Additionally, it is the user's responsibility to handle the product in accordance with local regulations and standards.

End of Safety Data Sheet



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