



# WINDFORM™ FX

## Material Safety Data Sheet

### General

May be used to comply with OSHA's Hazard Communication Standard, Standard must be reviewed for specific requirements.

Revised on: 30/10/2009

### 1 Chemical Product and Company Identification

Product name: Windform™ FX  
Chemical Family: Polyamer Resin Powder  
Product Use: Material only and exclusively for Rapid Prototyping Selective Laser Sintering  
Supplier: C.R.P. Technology s.r.l.  
Address: Via Cesare della Chiesa 21  
I-41100 Modena  
Telephone: +39 059 821135  
Fax: +39 059 822071  
E-mail: info@crptechnology.com  
Emergency number: +39 059 821135

### 2 Composition / information on ingredients

This product is not considered to be hazardous according to 29CFR 1910.1200 (Hazard Communication Standard).

### 3 Hazards identification

Dust may form explosive mixture in air. Possible irritation of respiratory system (by dust inhalation). Contact with the product, when handled at high temperatures, can cause serious burns. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Primary routes of entry: eye, skin, ingestion, inhalation.

Eye contact: Dust or vapours that contact the eye may be irritating or cause mechanical injury. In case of contact with eyes rinse thoroughly with plenty of water and seek medical advice.

Skin contact: May cause mild irritation. In case of contact with skin wash with warm water. Consult a doctor if skin irritation persists. Molten material will produce burns.

Ingestion: Cause irritation to the digestive tract.

Inhalation: Dust or vapours may be irritating to the respiratory tract. Ensure supply of fresh air.

### 4 First aid measures

Inhalation: If a problem develops or vapours are inhaled due to thermal decomposition of the product, bring those affected to fresh air and, in case of persistent problem, consult a physician.

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Skin contact:	Immediately wash with soap and water affected areas. See physician if irritation persists.
Eye contact:	Immediately wash eyes with flowing water for at least 15 minutes and consult a physician if irritation persists.
Ingestion:	If large quantities of this material are swallowed, induce vomiting as directed by medical personnel, never give anything by mouth to an unconscious person. See physician if a problem develops.
Advice to doctor:	Treat symptomatically.

### 5 Fire and Explosion Data and Fire-fighting measures

Flash point: >360 °F (183 °C)	Method Used: NA
Upper Flammable Limit (UFL): NA	Lower Flammable Limit (LFL): NA
Auto Ignition: NA	Flammability Classification: NA
Rate of Burning : NA	



NFPA Ratings  
0 = Minimal  
1 = Slight  
2 = Moderate  
3 = Serious  
4 = Severe

Fire and explosion hazards:	Avoid dust clouds and accumulation to minimize the potential for explosions. Keep away from heat, sparks, flame and all other ignition sources.
Specific hazards:	300 - 350 °C: possible formation of: Monomer and oligomer (white fumes)  Temperature exceeding 350 °C: Thermal decomposition giving toxic and corrosive products: Carbon monoxide Ammonia Amino derivatives  Temperature exceeding 500 °C: Formation of toxic products through combustion: Carbon oxides Hydrogen cyanide (hydrocyanic acid) (traces)
Suitable extinguishing media:	Use water mist, dry chemical, carbon dioxide or chemical foam.
Unsuitable extinguishing media:	High volume water jet. Fine dust dispersed in air may ignite, risk of dust explosion.
Special protective equipment for fire-fighters:	full protective clothing for chemicals and self-contained breathing apparatus.

### 6 Accidental release measures

Personal precautions:	Avoid formation of dust clouds. Keep away from ignition sources.
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Wear protective clothing (impervious gloves and apron). Also use dust-tight goggles and approved masks/respirators, if necessary, as described in Section 8.

Methods for cleaning up: Avoid dust formation while sweeping with natural fibres bristles or vacuum into closed container with explosion-proof equipment with appropriate electrical classification. Do not use water or liquid detergents. Due regard to the electrically conductive nature of the product. Contamination of electrical equipment should be avoided. If a vacuum system is used in the cleanup, it should be fully capable of handling a conductive material with no risk of electrical shock to the operator.

### 7 Handling and storage

Handling: Prevent the formation of dust. In case of thermal processing, provide extraction of the vapours or sufficient ventilation.

Fire and explosion protection: Protect against electrostatic charges. Keep away from ignition sources and heat. Dust and air can create explosive mixtures!

Storage: Store in a dry and cool place. Keep containers tightly sealed. Protect from humidity and water. No further special precautions required.

### 8 Exposure controls / personal protection

#### Exposure Guidelines

Follow all applicable exposure limits.

Component Exposure Limits:

	ACGIH TLV	OSHA PEL
Polymer resin powder	10 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>

This substance is regulated by OSHA as a Particulate Not Otherwise Specified (PNOS). The exposure limits listed for both OSHA and ACGIH refer to total dust; the OSHA PEL for the respirable fraction is 5 mg/m<sup>3</sup> and ACGIH TLV/TWA is 3 mg/m<sup>3</sup>

Hygiene practices: Do not inhale, eat, drink, smoke while working. Wash hands after use and use barrier skin cream. An eye wash fountain is recommended.

Respiratory protection: Usage of dust filters class P2 is recommended.

Hand protection: Adequate butyl rubber gloves, > 120 min (EN 374). In case of thermal processing, heat insulating protective gloves are to be used.

Eye protection: Safety glasses with side shields are recommended. Dust-tight goggles in case of dusty operations and areas where vapours accumulate.

Skin protection: Protective work clothes.

Other protective Equipment: Provide local exhaust ventilation where heat can cause polymer breakdown and where there is a need to draw dusts and fumes from worker breathing zones.

### 9 Physical and chemical properties

Form: Powder

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Colour:	White
Odour:	Odourless
Melting temperature:	184 - 192°C
Boiling temperature:	Not applicable
Decomposition temperature:	350 °C
Ignition temperature:	450 °C
Explosion limits:	Dusts with air can create an explosive mixture.
Vapour pressure (20 °C):	Not applicable
Bulk Density (20 °C):	300 - 600 kg/m <sup>3</sup> (20°C)
Solubility in water (20 °C):	Insoluble
Solubility in other solvents:	Insoluble in most organic solvents
pH-value:	Not applicable

### 10 Stability and reactivity data

Chemical stability:	Stable under normal conditions of handling, use and transportation.
Hazardous decomposition products:	At high temperatures CO, CO <sub>2</sub> , smoke and NO <sub>x</sub> may be formed.
Thermal decomposition:	Decomposition temperature 350 °C
Hazardous decomposition products:	300 - 350 °C: possible formation of: Monomer and oligomer (white fumes)  Temperature exceeding 350 °C: Thermal decomposition giving toxic and corrosive products: Carbon monoxide Ammonia Amino derivatives  Temperature exceeding 500 °C: Formation of toxic products through combustion: Carbon oxides Hydrogen cyanide (hydrocyanic acid) (traces)
Conditions to avoid:	Avoid dispersion of dust in air. Avoid ignition sources where dust is produced. Avoid incompatible materials. Avoid heating above thermal decomposition temperature (350°C).

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Incompatibility (materials to avoid): Strong bases, acids and oxidising agents.

### 11 Toxicological information

Ingestion: slightly harmful by ingestion  
Dermal: slightly harmful in contact with skin  
Inhalation: dust inhalation: possible irritation of respiratory system. At high temperature, products of thermal decomposition can be irritating to respiratory system.  
Irritation: Slightly or not irritating to eyes (Physical effect of dust). Contact with the product, when handled at high temperatures, can cause serious burns. At high temperature, products of thermal decomposition can be irritating to eyes.  
Carcinogenicity: This product is not listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

### 12 Ecological information

The ecological assessment of this material is based on an evaluation of its components. This product is classified as not dangerous to the environment.

The product is water-insoluble. Do not allow product to reach ground water, water basins or the sewage system. The local wastewater regulations are to be observed.

### 13 Disposal considerations

#### US EPA Waste Number & Descriptions

Waste disposal method: recycle if possible or destroy by incineration in accordance with local regulations.

Packaging that cannot be cleaned should be disposed of as product.

This product is not defined or designated as hazardous by current provisions of RCRA Hazard Class (40 CFR 261)

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Consult your local or regional authorities.

### 14 Transport information

Shipping name: Synthetic resin powders.

DOT Road Shipment Information (49 CFR 172.101)

Hazard Class: No hazardous according UN-regulations.

Land transport ADR/RID

ADR/RID Class: No hazardous according UN-regulations.

Maritime Transport IMDG

IMDG Class: No hazardous according UN-regulations.

Marine pollutant: No.

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### Air transport ICAO-TI and IATA-DGR

ICAO/IATA Class: No hazardous according UN-regulations.

## 15 Regulatory information

### US Federal

TSCA: all materials are listed on the TSCA Inventory  
CERCLA: not listed  
SARA302 EHS: not listed  
SARA313: not listed  
SARA312 Hazard Class: not listed

### *State right-to-know Status*

*None listed*

## 16 Other information

This data sheet applies only to the supplied product in accordance with specification by CRP Technology srl.  
If compounds or mixtures with other products are made, ensure that no new hazards arise.

The information contained in this data sheet has been made in good faith and is supported by the latest knowledge concerning this product at the time this MSDS was printed. However, individual statements will be revised. Based on the preceding information, which corresponds to the current state of our knowledge and experiences, it is our intention to describe our product regarding any kind of safety requirements but do not connect this with any warranty or assurance of characteristics.

The consumer's attention is brought to the possible risks during use other than that originally assumed.

This MSDS may only be used and reproduced for purposes of prevention and safety.

The enumeration of the texts regarding legislation, orders and administrative regulations may not be seen as complete.

The receiver of the product is referred to the entire official texts concerning the use, the storage, and the handling of the product, for which he alone is responsible.

The user of the product is obliged to transfer the necessary information in the form of this safety data sheet to all persons who come into contact with the product (during usage, storage, cleaning of the containers, various employments), who are responsible for the industrial safety, as well as for environmental and health protection.

**DISCLAIMER OF LIABILITY:** The following supersedes any provision in your company's forms, letters, and papers. CRP Technology makes no warranty whether expressed or implied, including warranties of merchantability or of fitness for a particular purpose for this product. No statements or recommendations contained in the product literature are to be construed as inducements to infringe any relevant patent now or hereafter in existence. Under no circumstances shall CRP Technology be liable for incidental, consequential, or other damages from alleged negligence, breach or warranty, strict liability or any other theory, arising out of the use or handling of this product. The sole liability of CRP Technology for any claims arising out of the manufacture, use or sale of its products shall be for the buyer's purchase price.

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