



WINDFORM™ GF

Material Safety Data Sheet

General

This data sheet corresponds to the instructions in the 91/155/EEC directive, including all currently valid amendments.

Revised on: 12/09/2005

1 Chemical Product and Company Identification

Product name: Windform™ GF
Chemical Family: Polyamide Composite
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

Chemical Identity	percent	Classification symbol
Polyamide Resin (CAS# 25038-74-8)	50 - 95	Xi* ;R36
Aluminium powder (CAS# 7429-90-5)	5 - 50	F ; R-15 R-10
Glass (CAS# 65997-17-3)	5 - 50	Xi* ;R36

*This material is not listed in Annex 1 of Directive 88/379/ECC. It has classified the material according to the conventional method based upon information from similar materials.

Chemical characterization: Polyamide/Aluminium/Glass Material.

This product is considered to be hazardous according to European Union Directives 67/548/ECC and 99/45/EC and to 29CFR 1910.1200 (Hazard Communication Standard).

Hazardous Materials Identification System (HMIS):

(degree of hazard: 0=low, 4=extreme)
Health 1
Flammability 2
Physical 2

Personal Protection:

Dust mask, skin, eye protection

3 Hazards identification

WARNING: CAUSES IRRITATION. WEAR APPROPRIATE PROTECTIVE EQUIPMENT. FOR INDUSTRIAL USE ONLY.

Emergency Overview

Contact with water liberates extremely flammable gases.

Product may form explosive dust/air mixtures if high concentration of product dust is suspended in air. Damp air can increase risk of explosion. This product is irritating to the eyes, respiratory system and skin. Product is harmful when inhaled; it may affect the lungs. Avoid contact with eyes.

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

Eye contact: Use safety glasses. 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.



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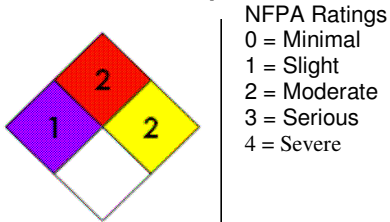
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Skin contact:	Use protective latex (rubber) gloves. May cause irritation. In case of contact with skin wash with warm water. Consult a doctor if skin irritation persists. Molten material will produce burns.
Ingestion:	Cause irritation to the digestive tract.
Inhalation:	This product is irritating to the respiratory system. Symptoms can include coughing, difficulty breathing and nasal irritation. This product can cause metal fume fever with resulting flu-like symptoms. Can cause lung damage.
Medical conditions aggravated by exposure:	may aggravate an existing dermatitis or respiratory condition.
Chronic:	Prolonged or repeated exposure may cause more severe irritation.
Toxicology carcinogenicity:	No.
Potential environmental Effects:	not known.

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 consult a physician.
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.
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.

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		

Fire and explosion hazards: Dusts can form an explosive mixture with air. Damp air and moisture can increase this risk. Product can burn violently in presence of oxidizing substances and certain metal oxides. Reactions with strong acids and alkalis can cause release of flammable hydrogen gas.



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Special exposure hazards:	Thermal decomposition products include oxides of aluminium. Reactions with strong acids and alkalis cause release of flammable hydrogen gas.
Suitable extinguishing media:	Dry inert bulk material, e.g., sand or solid extinguishing-agent class D
Unsuitable extinguishing media:	Water, carbon dioxide and foam.
Fire Fighting Equipment/ Instructions:	Wear full protective clothing, including helmet, self-contained positive-pressure or pressure-demand breathing apparatus, protective clothing and facemask. Do not use water. Do not get water inside container. Move container from area if it can be done without risk. Do not use foam or halogenated extinguishing media as pressure may cause dusting. Avoid inhalation of material or combustion by-products. Dust accumulation from this product can present an explosion hazard in the presence of an ignition source. For additional information, refer to National Fire Protection Association (NFPA) pamphlet #654, "Prevention of Fire and dust Explosion in the Chemical, Dye, Pharmaceutical and Plastics Industry".

6 Accidental release measures

Personal precautions:	Avoid formation of dust clouds. Keep away from ignition sources and avoid contact with water. Wear protective clothing (impervious gloves and apron). Also use dust-tight goggles and approved masks/respirators.
Methods for cleaning up:	Avoid dust formation while sweeping with natural fibres bristles or vacuum into closed container with explosion-proof vacuum equipment with appropriate electrical classification. Maintain in good house keeping standards to prevent accumulation of dust. Do not use water or liquid detergents. Place material in an appropriate container for disposal.

7 Handling and storage

Handling:	Avoid dust accumulation of this material to reduce potential explosions hazard. Use non-sparking tools when opening or closing containers. Use spark-proof, bonded, and grounded conveying and processing equipment to prevent static charge build-up. Keep this product from heat, sparks, or open flame.
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, cool and well-ventilated place. Keep containers tightly sealed. Protect from humidity and water. No further special precautions required.

8 Exposure controls / personal protection

Polyamide and Glass are regulated by OSHA as a Particulate Not Otherwise Regulated (PNOR).

OSHA Permissible Exposure

Limits (PEL): 15 mg/m³ as total nuisance particulates; 5 mg/m³ as respirable fraction.

ACGIH Threshold Limit Values TLV :

10 mg/ m³ as total nuisance particulates; 3 mg/m³ as respirable fraction.



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Aluminum powder (7429-90-5)

ACGIH: 10 mg/m³ TWA (metal dust)
OSHA: 15 mg/m³ TWA (respirable dust)
NIOSH: 10 mg/m³ TWA (respirable dust)

Aluminum powder (231-072-3)

ACGIH: 10 mg/m³ TWA (metal dust)
Austria: 6 mg/m³ MAK
Belgium: 10 mg/m³ VLE
Denmark: 10 mg/m³ TWA (powder and dust); 5 mg/m³ TWA (fumes)
France: 10 mg/m³ VME (metal); 5 mg/m³ VME (dust)
Germany: 200 µg/L; Parameter = Aluminium; Material = urine; Sampling time = end of exposure/shift
1.5 mg/m³ MAK (respirable fraction)
Greece: 10 mg/m³ TWA (inhalable fraction); 5 mg/m³ TWA (respirable fraction)
Ireland: 10 ppm TWA (total inhalable dust); 4 ppm TWA (respirable dust)
Netherlands: 10 mg/m³ MAC
Portugal: 10 mg/m³ TWA (metal dust)
Spain: 10 mg/m³ VLA-ED (as dust)
Sweden: 5 mg/m³ LLV (total dust); 2 mg/m³ LLV (respirable dust)
United Kingdom: 10 mg/m³ TWA (total inhalable dust); 4 mg/m³ TWA (respirable dust)

Use explosion proof local exhaust ventilation. Ventilation should remove and prevent buildup of any dust generated from the handling of this product.

Hygiene practices: Do not inhale, eat, drink, smoke while working.
Wash hands after use.

Respiratory protection: Usage of dust filters class P1 is recommended.

Hand protection: Adequate gloves. 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.

9 Physical and chemical properties

Form: Fine powder
Colour: Light Grey
Odour: Odourless
Melting temperature: > 80 °C
Boiling temperature: NA
Vapour pressure (20 °C): Not applicable
Bulk Density (20 °C): ~0,5g/cm³



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Solubility in water (20 °C): Insoluble

pH-value: Not applicable

10 Stability and reactivity data

Hazardous decomposition products: Oxides of aluminium, hydrocarbon gases, carbon dioxide, carbon monoxide and other toxic fumes can be released at high temperatures or upon burning.

Thermal decomposition: > 300 °C

Hazardous reactions: reactions with acids and strong oxidizing agents.

Incompatibility (materials to avoid): Acids, combustible materials, oxidizing materials, metals, bases, halogens, halocarbons, reducing agents, alcohols.

Hazardous Polymerization: will not occur.

11 Toxicological information

Inhalation of aluminium powder may cause metal fume fever, a flu-like illness generally lasting 24 hours or less.

LD50/LC50: NA

Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP

12 Ecological information

This product is classified as not dangerous to the environment.

Ecotoxicity - Aquatic Toxicity: No ecotoxicity data are available for this product's components.

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

Waste disposal method: Dispose of waste in a licensed landfill or by incineration in accordance with local regulations. Do not allow product to reach sewage system. Do not dispose the product with household garbage.

For this product, no waste code-number in accordance with the European waste list is established.

The waste code-number has to be defined in accordance with the European waste list (EU decision on the waste list 2000/532/EC) in cooperation with the disposer.

US EPA Waste Number & Descriptions

Aluminium powder is classified as follows: D001, D003. No EPA Waste Numbers are applicable for this product's components.



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14 Transport information

Shipping name: Not regulated.
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.

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: none listed
 SARA302 EHS: none listed
 SARA313 Aluminium, dust or fume (7429-90-5) 1.0% de minimis concentration

State right-to-know Status

The following components appear on one or more of the following state hazardous substances lists:

Component	CA Prop. 65	MA	MN	NJ	PA	RI
Aluminum powder (7429-90-5)	Yes	Yes	Yes	Yes	Yes	yes

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Aluminum Powder (7429-90-5)
 Minimum concentration: 1 % (English Item 47, French Item 197)

European/International regulations

F Flammable

Risk Phrases : R15 Contact with water liberates extremely flammable gases.

S7/8 Keep container tightly closed and dry.
 S60 This material and its container must be disposed of as hazardous waste.

Component Analysis - Inventory

Component/CAS	EC #	EEC	CAN	TSCA	NLP
Polyamide powder / 25038-74-8	-	No	DSL	Yes	No
Aluminum powder / 7429-90-5	231-072-3	EINECS	DSL	Yes	No



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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.

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