



# Safety Data Sheet

According to EU Directive 1907/2006, as amended

**Product name: Real filament Realflex**

Date of issue: 23-7-2018

## **1. Identification of the substance/preparation and of the company**

- 1.1 Trade name:** Real filament Realflex
- 1.2 Use of the product:** 3Dprinter Filament
- 1.3 Supplier:**  
ReprapWorld B.V.  
Wagenmaker 6a  
2631 RL Nootdorp, The Netherlands  
Phone: +31 (0)85 0091531

## **2. Hazards identification**

- 2.1 Classification of the substance or mixture**  
According to Regulation (EC) No 1272/2008 [CLP]  
This mixture is classified as not hazardous.
- 2.2 Label elements**  
Labelling (CLP)  
Hazard statements: not applicable  
Safety precautions: not applicable
- 2.3 Other hazards**
- |   |   |
|---|---|
| Dust:                                     | Can cause skin, eye and respiratory tract irritation.   |
| In case of dust formation<br>(Fine dust): | May form explosible dust-air mixture if dispersed.<br>The melted product can cause severe burns.<br>Special danger of slipping by leaking/spilling product. |
| Results of PBT and vPvB assessment:       | This substance does not meet the PBT/vPvB criteria of REACH, Annex XIII.  |

## **3. Composition/information on ingredients**

### **3.2. Mixtures** **Chemical characterization:**

#### **Base polymer:**

thermoplastic polyester elastomer, enhanced for 3D printing

There are no ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment.

#### **Additional information:**

The components of this product are embedded in an impervious polymer matrix and are therefore not biologically available. Any hazardous constituents are fixed in the polymer matrix and therefore present a negligible exposure risk under normal conditions of processing and handling. Additives contained in this product do not pose a risk to health unless they are liberated during processing (fumes from melting, dusts). Suitable Industrial Hygiene precautions should be implemented to prevent (respirable) dust and fume exposures. Exposure to (melting) fumes should be kept as low as possible, using suitable ventilation equipment. Dusts and fumes created from secondary processing may be irritating to respiratory tract and skin and should be considered as potentially hazardous. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.



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## **4. First aid measures**

### **4.1 Description of first aid measures**

**General information:**

Immediately remove any contaminated clothing, shoes or stockings.

After inhalation:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
In case of skin contact:	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Do not remove clothing adhering to skin.
After eye contact:	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
After swallowing:	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

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

**Potential acute health effects:**

Eye contact:	No known significant effects or critical hazards.
Inhalation:	No known significant effects or critical hazards.
Skin contact:	Heated material can cause thermal burns resulting in pain, redness, blistering.
Ingestion:	No known significant effects or critical hazards.

**Over-exposure signs/symptoms:**

Eye contact:	No specific data.
Inhalation:	No specific data.
Skin contact:	No specific data.
Ingestion:	No specific data.

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

Treat symptomatically.

## **5. Fire fighting measures**

### **5.1 Extinguishing media**

Suitable extinguishing media:	Dry powder, Carbon dioxide (CO <sub>2</sub> ), alcohol resistant foam
Unsuitable extinguishing media :	None Known



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### 5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture: No specific fire or explosion hazard.

In case of fire may be liberated:

In case of fire, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, (dense) black smoke, aldehydes and organic acids.

### 5.3 Advice for fire fighters

Special protective actions for fire-fighters:

Avoid contact with heated material.

Special protective equipment for fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## 6. Accidental release measures

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

#### For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

#### For emergency responders:

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

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

Small spill:

Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

Large spill:

Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## 7. Handling and storage

### 7.1 Handling

#### Advices on safe handling:

Provide adequate ventilation, and local exhaust as needed. Do not breathe dust. Avoid dust formation.

In the case of the formation of dust:

Withdraw by suction.

Molten material:

Avoid contact with the substance.



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### Precautions against fire and explosion:

In case of dust formation (Fine dust):

May form explosible dust-air mixture if dispersed.  
Take precautionary measures against static discharges.  
Keep away from sources of ignition. Use grounding equipment. Use explosion-proof equipment and non-sparking tools/utensils.

### Advice on general occupational hygiene:

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.  
Remove contaminated clothing and protective equipment before entering eating areas

### 7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Store in original container, protected from direct sunlight.

## 8. Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product. Additional measures might be required for bulk handling or other uses that could significantly increase worker or exposure or environmental releases.

### 8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

#### Recommended monitoring procedures:

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

### 8.2 Exposure controls

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

#### Personal protection equipment

Occupational exposure controls

Respiratory protection:

No special protection is required. In case of insufficient ventilation, wear suitable respiratory equipment.

Hand protection:

Wear suitable gloves. When handling hot material, wear heat-resistant protective gloves that are able to withstand the temperature of molten product.



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Eye protection: Safety glasses with side shields.  
Body protection: Wear suitable protective clothing. Boots or safety shoes

### General protection and hygiene measures:

Do not breathe dust. Take off contaminated clothing and wash it before reuse. When using do not eat, drink or smoke. Wash hands before breaks and after work. Wash hands, forearms and face thoroughly after handling chemical products. When handling large quantities, supply emergency spray.

In case of dust formation: Particular danger of slipping on spilled product on the ground.

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Appearance	Solid Filament
Odour	Not available
Colour	depending on product grade
Odour threshold	Not available
pH	Not applicable
Melting/freezing point	155-225°C
Initial boiling point and boiling range	Not applicable
Flash point	>350°C
Evaporation rate	Not applicable
Flammability (solid, gas)	No information available
Upper/lower flammability or explosive limits	UEL: No data available LEL: No data available
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	>1
Solubility(ies)	Insoluble in water
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	>400°C
Decomposition temperature	>300°C
Viscosity	Not applicable
Explosive properties	Not available
Oxidizing properties	Not available

### 9.2 Other information

Minimum ignition temperature:	400 °C
Dust explosion class:	St1 - moderately explosive.

## 10. Stability

### 10.1 Reactivity:

No information available

### 10.2 Chemical stability:

Stable under recommended storage conditions

### 10.3 Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur

### 10.4 Conditions to avoid

No specific data

### 10.5 Incompatible materials:

No specific data



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## 10.6 Hazardous decomposition products

At processing temperatures some degree of thermal degradation may occur

## 11. Toxicological information

### 11.1 Information on toxicological effects

Conclusion/Summary: Not available.

Acute toxicity estimates: Not available.

#### Irritation/Corrosion

Conclusion/Summary

Eyes: Not available.

Skin: Not available.

Respiratory: Not available.

Sensitisation

Conclusion/Summary

Skin: Not available.

Respiratory: Not available.

#### Mutagenicity

Conclusion/Summary: Not available.

Carcinogenicity

Conclusion/Summary: Not available.

Reproductive toxicity

Conclusion/Summary: Not available.

Teratogenicity

Conclusion/Summary: Not available.

Specific target organ toxicity (single exposure): Not available.

Specific target organ toxicity (repeated exposure): Not available.

Aspiration hazard: Not available.

#### Potential acute health effects

Eye contact: No known significant effects or critical hazards.

Inhalation: No known significant effects or critical hazards.

Skin contact: Heated material can cause thermal burns resulting in pain, redness, blistering.

Ingestion: No known significant effects or critical hazards.

#### Symptoms related to the physical, chemical and toxicological characteristics

Eye contact / Inhalation: No specific data.

Skin contact: No specific data.

Ingestion: No specific data.

General: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental effects: No known significant effects or critical hazards.

Fertility effects: No known significant effects or critical hazards.



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### Remarks:

The components of this product are embedded in an impervious polymer matrix and are therefore not biologically available. The likelihood of adverse health effects arising from normal use of the product is considered very low.

## 12. Ecological information

### 12.1 Toxicity

Conclusion/Summary: Not available.

### 12.2 Persistence and degradability

Conclusion/Summary: Not available.

### 12.3 Bioaccumulative potential

### 12.4 Mobility in soil

Soil/water partition coefficient (KOC): Not available.

Mobility: Not available.

### 12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

### 12.6 Other adverse effects

No known significant effects or critical hazards.

### Remarks:

This product is not biodegradable and not toxic to aquatic organisms. The components of this product are embedded in an impervious polymer matrix and are therefore not biologically available.

## 13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 13.1 Waste treatment methods

#### Product

Methods of disposal:

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

#### Hazardous waste:

Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.



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## **Packaging**

Methods of disposal:

The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

## **Special precautions:**

This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

## **14. Transport information**

Product has been classified as being non-dangerous substance according to transport regulations ADR, RID, IMDG, IATA/DGR

### **14.1 UN number**

Not applicable

### **14.2 UN proper shipping name**

Not applicable

### **14.3 Transport hazard class(es)**

Not applicable

### **14.4 Packing Group**

Not applicable

### **14.5 Environmental hazards**

No additional data is available

### **14.6 Special precautions for user**

No data available

### **14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not evaluated

## **15. Regulatory information**

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

#### **Annex XIV - List of substances subject to authorization**

Annex XIV

None of the components is listed.

#### **Substances of very high concern**

None of the components is listed.

#### **Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles**

Not applicable.

#### **International regulations**

##### **Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

##### **Montreal Protocol (Annexes A, B, C, E)**

Not listed.





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## **Stockholm Convention on Persistent Organic Pollutants**

Not listed.

## **Rotterdam Convention on Prior Inform Consent (PIC)**

Not listed.

## **UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

### **Further information:**

Reserved for industrial and professional use.

## **15.2 Chemical Safety Assessment**

No Chemical Safety Assessment has been carried out.

## **16. Other information**

Information is referenced from other manufacturers.

For abbreviations and acronyms, see: ECHA Guidance on information requirements and chemical safety assessment, chapter R.20 (Table of terms and abbreviations).

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006 and Regulation (EC) No. 2015/830. Label element according to Regulation (EC) No 1272/2008.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.