



**MATERIAL SAFETY DATA SHEET**  
**according to Regulation (EU) No. 1907/2006**

**InnoFlex 40**

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY / UNDERTAKING**

**Product information**

Trade name : InnoFlex 40

Chemical name : DSM Arnitel Eco

Chemical family : Biobased High Performance Thermoplastic Copolyester TPC

Use : Monofilament for 3D-printing

Company : Innofil3D BV.  
 Eerste Bokslotweg 17  
 7821 AT Emmen

Telephone : +31 (0)591 69 2117

Telefax : +31 (0)591 69 3456

**2. HAZARDS IDENTIFICATION**

Product definitions : Mixture

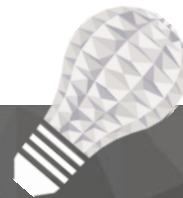
Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]:

This product is not classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Classification according to Directive 1999/45/EC [DPD]:

The product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Remarks : Hazard of slipping on spilt product. Heated material can cause thermal burns. Electrostatic charging can occur during unloading or processing of this material. If necessary take precautionary measures against static discharges. The likelihood of adverse health effects arising from normal use of the product are considered very low. Appropriate precautions should be taken if the product is subjected to secondary processing. If user operations generate dust, fumes or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Dust may cause mechanical irritation.



Label elements:

Signal word : No signal word.  
 Hazard statements : No known significant effects or critical hazards.  
 Supplemental label elements : Not applicable.

Precautionary statements:

Prevention : Not applicable.  
 Response : Not applicable.  
 Storage : Not applicable.  
 Disposal : Not applicable.

Other hazards which do not result in classification:

Heated material can cause thermal burns.

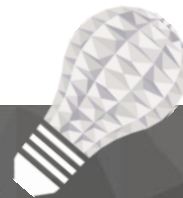
**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Substances/mixtures : Mixture

Chemical description : Base polymer: thermoplastic polyester elastomer.

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, are PBTs or vPvBs or have been assigned a workplace exposure limit and hence require reporting in this section.

Remarks : 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.



#### 4. FIRST AID MEASURES

Effects and symptoms

- 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.
- Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- 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.
- Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
- Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

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.

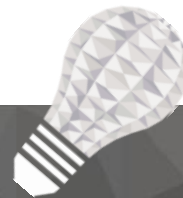
Indication of any immediate medical attention and special treatment needed:

- Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments : No specific treatment.

#### 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

- Small fire : Use dry chemical or CO<sub>2</sub>.
- Large fire : Use dry chemical powder or alcohol-resistant foam.
- Not suitable : None known.



Special hazards arising from the substance or mixture:

- Hazards from the mixture : No specific fire or explosion hazard.
- Hazardous combustion products : In case of fire, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, (dense) black smoke, aldehydes, organic acids.

Advice for firefighters:

- Special protective actions : Avoid contact with heated material.
- Special protective equipment : 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**

Personal precautions, protective equipment and emergency procedures:

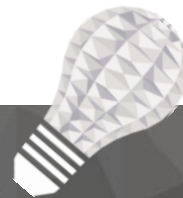
- For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
- For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

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).

Methods and material 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.
- Reference to other sections : See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.



## 7. HANDLING AND STORAGE

### Precautions for safe handling:

- Protective measures : Use with adequate ventilation. Local exhaust ventilation should be provided. Avoid creating dusty conditions and prevent wind dispersal. Take measures against static discharge. Keep away from sources of ignition.
- Advice of 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. See also Section 8 for additional information on hygiene measures.

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

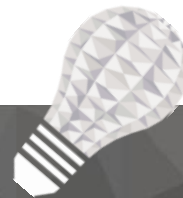
Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled 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.

### Control parameters:

- Occupational exposure limits : No exposure limit value known.
- Recommend 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.



Exposure controls:

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures:

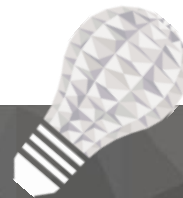
- Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection : Safety glasses with side shields.
- Hand protection : Wear suitable gloves. When handling hot material, wear heat-resistant protective gloves that are able to withstand the temperature of molten product.
- Skin and body : Working clothes.
- Respiratory protection : No special protection is required. In case of insufficient ventilation, wear suitable respiratory equipment.
- Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**Advice on personal protection is applicable for high exposure levels. Select proper personal protection based on a risk assessment of the actual exposure situation.**

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance**

- Physical state : Granules, pellets (solid at room temperature).
- Colour : Naturally opaque, dependent on the added pigment.
- Odour : Not available.
- pH : Not available.
- Melting point : 155 to 225 °C
- Initial boiling point : Not available.
- Softening range : Not available.
- Flash point : >350 °C
- Auto-ignition temperature : >400 °C
- Decomposition temperature : >300 °C
- Flammability (solid, gas) : Not available
- Relative density : >1 (Water = 1)
- Density : >1 g/cm<sup>3</sup>
- Solubility : Insoluble in the following materials: cold water.
- Viscosity : Not available
- Minimum ignition temp. : 400 °C
- Dust explosion class : St1 – moderately explosive



**10. STABILITY AND REACTIVITY**

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	This product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	No specific data.
Incompatible materials	:	No specific data.
Hazardous decomposition products	:	No specific data.
Remarks	:	At processing temperatures some degree of thermal degradation may occur (see Section 5).

**11. TOXICOLOGICAL INFORMATION**

Acute toxicity	:	Not available.
Mutagenicity	:	Not available.
Carcinogenicity	:	Not available.
Reproductive toxicity	:	Not available.
Teratogenicity	:	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:

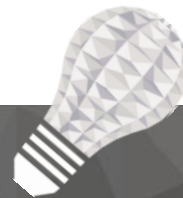
Eye contact	:	No known significant effects or critical hazards.
Inhalation	:	No known significant effects or critical hazards.
Skin contact	:	Heated material can cause thermal burns resulting in pain, redness, blistering.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics:

Eye contact	:	No specific data.
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.
Development effects	:	No known significant effects or critical hazards.
Fertility effects	:	No known significant effects or critical hazards.

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 are considered very low.



## 12. ECOLOGICAL INFORMATION

Toxicity	:	Not available.
Persistence and degradability	:	Not available.
Bioaccumulative potential	:	Not available.
Mobility in soil	:	Not available.
Results of PBT and vPvB assessment	:	Not applicable.
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.

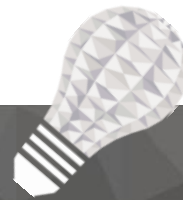
## 13. DISPOSAL CONSIDERATIONS

Methods of disposal	:	The generation of waste should be avoided or minimised 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.

## 14. TRANSPORT INFORMATION

ADR / RID	:	Not regulated
ADN/ADNR	:	Not regulated
IMDG	:	Not regulated
IATA-DGR	:	Not regulated





## 15. REGULATORY INFORMATION

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

### **EU Regulation (EC) No. 1907/2006 (REACH)**

Annex XIV - List of substances subject to authorisation

Annex XIV:

None of the components are listed.

Substances of very high concern:

None of the components are 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.

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

Remarks : Listings of substances in this section are based on the presence of these substances above the applicable concentration limit.

### Chemical Safety Assessment:

No chemical Safety Assessment had been carried out.

## 16. OTHER INFORMATION

-The information in this Material Safety Data Sheet (MSDS) is based on current knowledge and experience. No liability can be assumed for the accuracy and completeness of this information.

-Users should consider this information only as additional to other data gathered. Independent determination of suitability and completeness of information from all available sources is essential to ensure proper and safe use and disposal of these materials.

-The information in this MSDS applies for this specific material only. It therefore does not apply for its usage in combination with other materials or ways of processing.