

## Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH),  
GHS Rev 04 (2011): US, OSHA, CMA, ANSI,  
WHS Regulations Australia  
JIS Z 7253 (2012): Japan

### DuraForm® EX Natural and Black

Revision Date: February 28, 2017

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

##### 1.1 Identification of the substance or preparation: DuraForm EX Natural and Black

**1.2 Use of the substance / preparation:** For use with SLS® (selective laser sintering) systems

##### 1.3 Company/undertaking identification:

3D Systems, Inc.  
333 Three D Systems Circle  
Rock Hill, South Carolina U.S.A.  
Phone: 803.326.3900 or  
Toll-free Phone: 800.793.3669  
Chemical Emergency:  
800.424.9300 - Chemtrec

3D Systems Europe Ltd.  
Mark House, Mark Road  
Hemel Hempstead  
Herts HP2 7 United Kingdom  
Phone: +44 144-2282600  
Chemical Emergency:  
703.527.3887 – Chemtrec  
800-789-767 – Italia Chemtrec

3D Systems / Australia  
5 Lynch Street  
Hawthorn, VIC 3122  
+1 03 9819-4422  
Chemical Emergency:  
703.527.3887 - Chemtrec

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#### 2. HAZARDS IDENTIFICATION

##### 2.1 Classification:

**Not classified according to GHS, Regulation (EC) No. 1272/2008, HazCom 2012, Australian Dangerous Goods Code**

##### 2.2 Label Elements

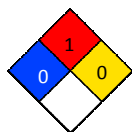
**Regulation (EC) No, 1272/2008:**

**Hazard pictograms and signal word: None**

**Hazard statements: None**

##### Precautionary statements:

P202: Do not handle until all safety precautions have been read and understood.  
P307+313: If exposed: Get medical advice/attention  
P404: Store in a closed container  
P501: Dispose of contents/container in accordance with local regulation.



##### NFPA Ratings

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

##### Hazardous Materials Identification System (HMIS): (Degree of hazard: 0 = low, 4 = extreme);

Health **0**  
Flammability **1**  
Physical Hazards **0**

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#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

##### 3.1 Preparation related information

**Description:** Polymer powder. This mixture is not classified according to European Union Directive 67(548/EEC).

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#### 4. FIRST AID MEASURES

**4.1 In case of inhalation:** In case of symptoms of irritation caused by vapors in thermal processing: provide fresh air, seek medical advice if necessary.

**4.2 In case of skin contact:** Wash immediately, abundantly and thoroughly with soap and water. On contact with hot product, cool skin rapidly with cold water. After contact with molten material, remove product with vegetable oil or paraffin. In case of adhesion, do not try to remove the product. Treat the affected areas as thermal burns. Consult a physician.

**4.3 In case of eye contact:** Dusts: Wash well-open eyes immediately, abundantly and thoroughly with water. Remove particles remaining under the eyelids. If irritation persists, consult an ophthalmologist. On contact with hot product: Cool eyes rapidly with cold water after contact with molten polymer. Consult an ophthalmologist immediately.

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#### 5. FIRE-FIGHTING MEASURES

**5.1 Suitable extinguishing media:** Water mist, dry chemical, carbon dioxide, or appropriate foam.

**5.2 Extinguishing media which must not be used for safety reasons:** High volume water jet.

**5.3 Special hazards arising from the substance or mixture**

Fine dust dispersed in air may ignite, risk of dust explosion. Dust control and good housekeeping are required.

Dust may also carry a static charge. Make sure equipment and personnel are grounded to avoid static discharge.

300 - 350 °C: Possible formation of monomer and oligomer (white fumes)

351 – 500 °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)

**5.4 Advice for firefighters**

Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire will produce dense black smoke containing hazardous combustion products (see heading 10). Wear self-contained breathing apparatus for firefighting if necessary. Cool containers / tanks with water spray.

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#### 6. ACCIDENTAL RELEASE MEASURES

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

Exclude non-essential personnel. Remove all sources of ignition. Ensure adequate ventilation. Do not breathe dust.

**6.2 Environmental precautions**

Local authorities should be advised if significant spillages cannot be contained.

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

Use approved industrial vacuum cleaner for removal. Do not create a powder cloud by using a brush or compressed air.

**6.4 Reference to other sections**

See Section 1 for emergency contact information. See Section 8 for information on appropriate personal protective equipment. See Section 13 for additional waste treatment information.

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#### 7. HANDLING AND STORAGE

##### 7.1 Precautions for safe handling

**Technical measures/Precautions:** Dust may form EXPLOSIVE mixtures with air (In the presence of an ignition source). Ensure ventilation of work areas and extraction of dust or vapours likely to be given off during conversion operations (product handled when hot). Provide showers, eye-baths. Provide water supplies near the point of use. Provide electrical grounding of equipment.

**Safe handling advice:** At all stages of the operation, do not exceed the temperature at which decomposition into toxic and corrosive products will occur. Avoid creating dust. In case of dust formation, wear a dust mask. Prohibit all sources of sparks and ignition - Do not smoke. Take precautionary measures against static discharges. Avoid charging as a dust shower – risk of product flammability. Keep well away from naked flames. In case of insufficient ventilation, wear suitable respiratory equipment.

##### Hygiene measures:

Avoid contact with the skin and the eyes. Avoid breathing dust. Product handled when hot. Avoid inhalation of vapours. When using do not eat, drink or smoke. Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas.

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

Containers which are opened must be carefully resealed and kept upright to prevent leakage. Take notice of the directions of use on the label. Keep in a dry, cool and well-ventilated place. Keep away from direct sunlight.

**Storage temperature:** 10 - 30 C

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

##### 8.1 Exposure limit values:

Occupational exposure limits: The OES for nuisance dust is 10 mg/m<sup>3</sup> (total dust), 3 mg/m<sup>3</sup> (respirable dust). Check local regulations in case different limits apply. During normal use, these concentrations are not expected to be reached.

##### 8.2 Exposure controls

**Technical measures to prevent exposure:** Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, appropriate certified respiratory protection must be provided (e.g. 3M 6000 with organic vapor cartridge A2 or half mask 3M 4251).

**Instructual measures to prevent exposure:** When using, do not eat, drink or smoke. Wash hands after handling and before eating, smoking and using the lavatory and at the end of the day.

##### Personal protection equipment:

**Hand protection:** Use impervious nitrile gloves.

**Eye protection:** Wear safety glasses or chemical goggles.

**Body protection:** Wear as appropriate: Flame retardant antistatic protective clothing. Wear shoes with conductive soles.

##### Environmental exposure controls

The product should not be allowed to enter drains, water courses or the soil.

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#### 9. PHYSICAL AND CHEMICAL PROPERTIES

##### 9.1 Appearance:

**Physical state:** Powder

**Color:** white or black

**Odor:** no distinct odor

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#### 9.2 Important health, safety and environmental information

|   |   |
|---|---|
| <b>pH (20 °C):</b>                        | NA  |
| <b>Melting point/range (°C):</b>          | 196-204   |
| <b>Boiling point/range (°C):</b>          | NA  |
| <b>Flash point (°C):</b>                  | NA  |
| <b>Ignition temperature (°C):</b>         | 450 °C (ASTM 19-29)   |
| <b>Decomposition temperature (°C):</b>    | >350 °C   |
| <b>Lower explosion limit in air (°C):</b> | >30g/m <sup>3</sup>   |
| <b>Explosivity:</b>                       | In the presence of an ignition source: Dust may form explosive mixture in air |
| <b>Density (g/cm<sup>3</sup>):</b>        | 1.09  |
| <b>Bulk density (kg/m<sup>3</sup>):</b>   | 300-600 (20 °C)   |
| <b>Water solubility (20 °C in g/l):</b>   | Insoluble   |
| <b>Viscosity, dynamic (mPa s):</b>        | NA  |
| <b>Gross calorific value (kJ/kg)</b>      | 35'000 kJ/kg (standard NF M 03005)  |

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#### 10. STABILITY AND REACTIVITY

**10.1 Conditions to avoid:** Avoid wet/humid environment and temperatures above 60 °C. Avoid dust formation. Remove all sources of ignition.

**10.2 Materials to avoid:** Oxidizing materials, acids, strong bases, water, high humidity.

**10.3 Hazardous decomposition products:** Carbon dioxide, carbon monoxide, NO<sub>x</sub> can be released at high temperatures or upon burning.

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#### 11. TOXICOLOGICAL INFORMATION

**11.1 Toxicokinetics, metabolism and distribution:** NA

**11.2 General remarks:** Carcinogenicity: None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

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#### 12. Ecological information

**12.1 Ecotoxicity:** The aquatic toxicity of the product is unknown. No data are available for the components of this product.

**12.2 Mobility:** No information available for product.

**12.3 Persistence and degradability:** Inert polymer. Not biodegradable on the basis of its structure.

**12.4 Results of PBT assessment:** No information available for product

**12.5 Other adverse effects:** No information available for product

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#### 13. DISPOSAL CONSIDERATIONS

Do not let product enter drains. Do not contaminate ponds, waterways or ditches with chemical or used container. Where possible recycling is preferred to disposal or incineration. Dispose of as special waste in compliance with local and national regulations.

**European Waste Catalogue** 08 02 01

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#### 14. TRANSPORT INFORMATION

##### 14.1 Land transport (ADR/RID/GGVSE): Not Regulated

Official transport designation:

Class:

Classification Code:

UN-No.:

Packing group:

Hazard label:

Tunnel restriction code:

Special provisions:

##### 14.2 Sea transport (IMDG-Code/GGVSee): Not Regulated

Proper Shipping Name:

Class:

UN-No.:

Packing group:

EmS:

Marine Pollutant:

Special provisions:

##### 14.3 Air transport (ICAO-IATA/DGR): Not Regulated

Proper Shipping Name:

Class:

UN-No.:

Packing group:

Special provisions:

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#### 15. REGULATORY INFORMATION

##### 15.1 EU regulations

EINEC/ELINCS/NLP: All materials are listed

REACH Annex XVII: None listed

##### 15.2. US FEDERAL

TSCA: All materials are listed on the TSCA Inventory or are not subject to TSCA requirements:

California Proposition 65: This product does not contain chemicals which are known to the state of California to cause cancer, birth, or any other reproductive defects.

##### 15.3. Australian regulations

SUSDP, Industrial Chemicals Act 1989:

Australian Inventory of Chemical Substances, AICS: Listed

##### 15.4 Japanese regulations

Chemical Risk Information platform (CHRIP): Listed

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#### 16. OTHER INFORMATION

SDS Creation Date: ..... January 28, 2014

SDS Revision #: ..... -02-A

SDS Revision Date: ..... February 28, 2017

Reason for Revision: ..... Update logo, section 1, 8.



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[www.3dsystems.com](http://www.3dsystems.com)

800.793.3669 (Toll-free in the US GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

803.326.3900 (Outside the U.S. GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

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