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**SECTION 1: Identification of the substance/mixture and of the company/undertaking**

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**1.1 Product identifier**

**Material Name**

ABS 3D Printer Filament/ MakerBot ABS

**Synonyms**

Acrylonitrile-Butadiene-Styrene Copolymer

**Chemical Family**

polymer, copolymer

**Substance Registration Number(s)**

The components in the product are imported into the EU at amounts less than 1 tonnage per annum. Therefore, the components in this product are not subject to REACH registration.

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

**Identified uses**

3D Printing

**Uses advised against**

Do not use in printers where temperatures exceed 250°C.

**1.3 Details of the supplier of the safety data sheet**

MakerBot Industries LLC

One MetroTech Center

Brooklyn, NY 11201

USA

Emergency Phone #: MakerBot (347) 334-6800

E-mail: Edwin.Meek@makerbot.com

MakerBot Europe GmbH & Co. KG

Motorstrasse 45

70499 Stuttgart

Germany

Phone: +49-(0) 711-228 38-0/ +49-(0) 711-228 38-44

E-mail: eu-contact@makerbot.com

**1.4 Emergency telephone number**

+49-(0) 711-228 38-0/ +49-(0) 711-228 38-44

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**SECTION 2: Hazards identification**

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**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008 [CLP]**

None needed according to classification criteria

**2.2 Label elements**

**Labeling according to Regulation (EC) No. 1272/2008 [CLP]**

**Hazard symbols**

None needed according to classification criteria

**Signal word**

None needed according to classification criteria

**Hazard statements**

None needed according to classification criteria

**Precautionary statements**

**Prevention**

None needed according to classification criteria

**Response**

None needed according to classification criteria

**Storage**

None needed according to classification criteria

**Disposal**

**P501** Dispose of contents/container in accordance with local/regional/national/international regulations

**SECTION 3: Composition / information on ingredients**

CAS EC No Registration No	Component Name Synonyms	1272/2008 (CLP)	Percent
9003-56-9 --	ABS resin	--	> 98
100-42-5 202-851-5 --	Styrene	Flam. Liq. 3 - H226 Acute Tox. (Oral) 4 Acute Tox. (Vapour) 4 - H332 Acute Tox. (Gas) 4 - H332 Acute Tox. (Dust/Mist) 4 - H332 Skin Corr. 2 - H315 Eye Dam. 2 - H319 Repr. 2 - H361d STOT RE 1 - H372 Aquatic Chronic 2 Note(s): D	< 0.2

**SECTION 4: First aid measures**

**4.1 Description of first aid measures**

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. In case of inhalation of decomposition products, affected person should be moved into fresh air and kept still. Get medical advice/attention.

# Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

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## **Skin**

IF ON SKIN: Wash with plenty of soap and water. Get medical advice/attention.

## **Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

## **Ingestion**

IF SWALLOWED: Rinse mouth. Get immediate medical advice/attention.

## **4.2 Most Important Symptoms/Effects**

### **Acute**

Molten material may cause thermal burns.

### **Delayed**

No information on significant adverse effects.

## **4.3 Indication of Immediate Medical Attention and Special Treatment**

Treat symptomatically and supportively.

## **Note to Physicians**

Treat symptomatically. Give artificial respiration if not breathing.

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## **SECTION 5: Firefighting measures**

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### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Water, foam, regular dry chemical

#### **Unsuitable Extinguishing Media**

None known

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

Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

### **Combustion**

Oxides of carbon, oxides of nitrogen, HCN, acrylonitrile, styrene monomer

### **Fire Fighting Measures**

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

### **Protective Equipment and Precautions for Firefighters**

Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

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## **SECTION 6: Accidental release measures**

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

No measures required.

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## 6.2 Environmental precautions

Avoid release to the environment. Comply with all applicable regulations on spill and release reporting. Prevent entry into waterways, sewers, basements, or confined areas.

## 6.3 Methods and Materials for Containment and Cleaning Up

Collect spilled material in appropriate container for reuse or disposal. Dispose in accordance with all applicable regulations.

## 6.4 Reference to other sections

Safe handling: see section 7. Personal protection equipment (PPE): see section 8. Disposal: see section 13.

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## SECTION 7: Handling and storage

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### 7.1 Precautions for safe handling

Do not eat, drink or smoke when using this product. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.

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

None needed according to classification criteria

Store in a cool dry place. Store below 50 C. Avoid heat, flames, sparks and other sources of ignition. Keep away from incompatible materials.

### Incompatible Materials

Oxidizing agents

### 7.3 Specific end use(s)

3D Printing

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## SECTION 8: Exposure controls/personal protection

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### 8.1 Control parameters

#### Component Exposure Limits

Styrene	100-42-5
Austria:	20 ppm TWA [TMW]; 85 mg/m <sup>3</sup> TWA [TMW]
	80 ppm STEL [KZW] 4 X 15 min; 340 mg/m <sup>3</sup> STEL [KZW] 4 X 15 min
Belgium:	40 ppm TWA; 173 mg/m <sup>3</sup> TWA
	80 ppm STEL; 346 mg/m <sup>3</sup> STEL
	skin
Denmark:	25 ppm Ceiling; 105 mg/m <sup>3</sup> Ceiling
Finland:	20 ppm TWA; 86 mg/m <sup>3</sup> TWA

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	100 ppm STEL; 430 mg/m3 STEL
France:	50 ppm TWA [VME]; 215 mg/m3 TWA [VME]
Germany (TRGS):	20 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2; 86 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed) exposure factor 2
Germany (DFG):	20 ppm TWA MAK; 86 mg/m3 TWA MAK
	40 ppm Peak; 172 mg/m3 Peak
Greece:	100 ppm TWA; 425 mg/m3 TWA
	250 ppm STEL; 1050 mg/m3 STEL
Ireland:	20 ppm TWA; 85 mg/m3 TWA
	40 ppm STEL; 170 mg/m3 STEL
Portugal:	20 ppm TWA [VLE-MP]
	40 ppm STEL [VLE-CD]
Spain:	20 ppm TWA [VLA-ED] (endocrine disruptor); 86 mg/m3 TWA [VLA-ED] (endocrine disruptor)
	40 ppm STEL [VLA-EC]; 172 mg/m3 STEL [VLA-EC]
Sweden:	10 ppm LLV; 43 mg/m3 LLV
	20 ppm STV; 86 mg/m3 STV
	skin notation
United Kingdom:	100 ppm TWA; 430 mg/m3 TWA
	250 ppm STEL; 1080 mg/m3 STEL

## Biological limit value

There are no biological limit values for any of this product's components.

## Derived No Effect Levels (DNELs)

No DNELs available.

## Predicted No Effect Concentrations (PNECs)

No PNECs available.

## 8.2 Exposure Controls

### Engineering controls

Provide local exhaust ventilation system. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing.

**Eye/face protection**

Safety glasses or goggles are recommended when there is a potential for eye contact. Protect against molten solid.

**Skin Protection**

None during normal use. Protect against molten solid.

**Respiratory Protection**

No respirator is required under normal conditions of use. If respirable dusts are generated, respiratory protection may be needed.

**Glove Recommendations**

Protect against molten solid. In the molten form, Wear protective gloves.

**Environmental exposure controls**

No information available.

**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

<b>Appearance</b>	spool string strand	<b>Physical State</b>	solid
<b>Odor</b>	odorless,sweet,plastic	<b>Color</b>	clear,translucent,opaque
<b>Odor Threshold</b>	varies	<b>pH</b>	Not available
<b>Melting Point</b>	Softening above 100 °C	<b>Boiling Point</b>	Not available
<b>Freezing point</b>	Not available	<b>Evaporation Rate</b>	Not available
<b>Boiling Point Range</b>	Not available	<b>Flammability (solid, gas)</b>	Not available
<b>Autoignition</b>	466 °C	<b>Flash Point</b>	404 °C
<b>Lower Explosive Limit</b>	45 g/m <sup>3</sup>	<b>Decomposition</b>	>250 °C
<b>Upper Explosive Limit</b>	Not available	<b>Vapor Pressure</b>	Not available
<b>Vapor Density (air=1)</b>	Not available	<b>Specific Gravity (water=1)</b>	1.03 - 1.1
<b>Water Solubility</b>	Insoluble	<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Viscosity</b>	Not available	<b>Solubility (Other)</b>	Not available
<b>Density</b>	Not available		

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**SECTION 10: Stability and reactivity**

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**10.1 Reactivity**

The product is chemically stable under recommended conditions of storage, use and temperature.

**10.2 Chemical stability**

Stable under normal conditions of use.

**10.3 Possibility of hazardous reactions**

Will not polymerize.

**10.4 Conditions to avoid**

Avoid contact with temperatures above 250 C.

**10.5 Incompatible materials**

Oxidizing agents

**10.6 Hazardous decomposition products**

Oxides of carbon, oxides of nitrogen, HCN, acrylonitrile, styrene monomer

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**SECTION 11: Toxicological information**

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**11.1 Information on toxicological effects**

**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Styrene (100-42-5)

Oral LD50 Rat 1000 mg/kg

Inhalation LC50 Rat 11.7 mg/L 4 h

**Irritation/Corrosivity Data**

No data available.

**Respiratory Sensitization**

No data available.

**Dermal Sensitization**

No data available.

**Germ Cell Mutagenicity**

No data available.

**Component Carcinogenicity**

2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene	9003-56-9
IARC:	Supplement 7 [1987]; Monograph 19 [1979] (Group 3 (not classifiable))

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Styrene	100-42-5
IARC:	Monograph 82 [2002]; Monograph 60 [1994] (Group 2B (possibly carcinogenic to humans))
DFG:	Category 5 (low carcinogenic potency)

## Reproductive toxicity

No effects are expected due to the low concentration of the component(s).

## Specific Target Organ Toxicity - Single Exposure

No data available.

## Specific Target Organ Toxicity - Repeated Exposure

No data available.

## Aspiration hazard

No data available.

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## SECTION 12: Ecological information

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### 12.1 Toxicity

#### Component Analysis - Aquatic Toxicity

Styrene	100-42-5
Fish:	LC50 96 h Pimephales promelas 3.24 - 4.99 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 19.03 - 33.53 mg/L [static]; LC50 96 h Pimephales promelas 6.75 - 14.5 mg/L [static]; LC50 96 h Poecilia reticulata 58.75 - 95.32 mg/L [static]
Algae:	EC50 72 h Pseudokirchneriella subcapitata 1.4 mg/L IUCLID; EC50 96 h Pseudokirchneriella subcapitata 0.72 mg/L IUCLID; EC50 72 h Pseudokirchneriella subcapitata 0.46 - 4.3 mg/L [static] EPA; EC50 96 h Pseudokirchneriella subcapitata 0.15 - 3.2 mg/L [static] EPA
Invertebrate:	EC50 48 h Daphnia magna 3.3 - 7.4 mg/L EPA

#### 12.2 Persistence and degradability

No information available for the product.

#### 12.3 Bioaccumulative potential

No information available for the product.

#### 12.4 Mobility in soil

No information available for the product.

#### 12.5 Results of PBT and vPvB assessment

#### EU - Interim Strategy for Management of PBT and vPvB Substances

No components of this material are listed.



**SECTION 13: Disposal considerations**

**13.1 Waste treatment methods**

Dispose of contents/container in accordance with local/regional/national/international regulations. Avoid release to the environment. Incineration should be done in accordance with prevailing municipal, state, and federal laws and standards from local environmental agencies.

**SECTION 14: Transport information**

**Component Marine Pollutants (IMDG)**

Not regulated as dangerous goods.

		ADR	RID	ICAO	IATA	ADN	IMDG
14.1	UN Number	Not regulated	Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2	UN Proper Shipping Name	--	--	--	--	--	--
14.3	Transport Hazard Class(es)	--	--	--	--	--	--
14.4	Packing Group	--	--	--	--	--	--
14.5	Environmental Hazards	--	--	--	--	--	--
14.6	Special Precautions For User	--	--	--	--	--	--
14.7	Transport in Bulk According to Annex II or MARPOL 73/78 and the IBC Code	--	--	--	--	--	--
14.8	Additional information	--	--	--	--	--	--

**International Bulk Chemical Code**

This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Styrene	100-42-5
IBC Code:	Category Y

**SECTION 15: Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**EU - REACH (1907/2006) - Annex XIV List of Substances Subject to Authorization**

No components of this material are listed.

**EU - REACH (1907/2006) - Article 59(1) Candidate List of Substances Subject to Authorization**

No components of this material are listed.

**EU - REACH (1907/2006) - Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles**

No components of this material are listed.

**EU - Biocides (1451/2007) - Existing Active Substance**

No components of this material are listed.

**Germany Regulations**

**Germany Water Classification**

Styrene (100-42-5)

ID Number 187 , hazard class 2 - hazard to waters

**Denmark Regulations**

Styrene	100-42-5
	solvents (used in a wide range of products including paints, coatings and cooling lubricants)
	On the EU Priority list of substances for further evaluation of their role in endocrine disruption

**Component Analysis - Inventory**

2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9003-56-9)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes

Styrene (100-42-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes

**SECTION 16: Other information**

**16.1 Indication of changes**

New SDS : 07/22/2015

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## 16.2 Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

## 16.3 Key literature references and sources for data

Available upon request.

## 16.4 Methods Used for Classification of Mixture According to Regulation (EC) No 1272/2008

Available upon request.

## 16.5 Relevant H- and EUH-phrases (Number and full text)

**H411** Toxic to aquatic life with long lasting effects

**H332** Harmful if inhaled

**H302** Harmful if swallowed

**H319** Causes serious eye irritation

**H361** Suspected of damaging fertility or the unborn child

**H372** Causes damage to organs through prolonged or repeated exposure

**H315** Causes skin irritation

**H226** Flammable liquid and vapor

## 16.6 Training advice

Read the Safety Data Sheet before handling product.

## 16.7 Further Information

### Disclaimer:

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.