

Product Data Sheet

Eastman Amphora™ 3D Polymer AM1800

Application/Uses

- Production of 3D Printing filaments

Key Attributes

- Clarity and gloss
- Dimensional stability
- Ease of processing
- Enhanced aesthetics
- Excellent toughness and temperature resistance
- FDA compliance
- Low odor
- Property retention in 3D applications
- Styrene-free
- Workability

Product Description

Eastman Amphora™ 3D polymer is a low-odor, styrene-free choice that is uniquely suited for 3D Printing applications. With Amphora, makers can create items that are more functional, durable, efficient, and attractive. Now you can fulfill your vision with 3D creations that exhibit excellent aesthetics and superior toughness. Amphora also complies with certain U.S. Food and Drug Administration (FDA) regulations for food contact applications. That means, with Amphora, you'll be able to make a lot of things you can't with other materials. Best of all, you'll be able to make certain your final product meets your expectations.

Typical Properties

Property ^a	Test Method ^b	Typical Value, Units ^c
General Properties		
Specific Gravity	D 792	1.27
Mechanical Properties		
Tensile Stress @ Yield	D 638	50 MPa (7300 psi)
Tensile Stress @ Break	D 638	28 MPa (4100 psi)
Elongation @ Yield	D 638	5%
Elongation @ Break	D 638	110%
Tensile Modulus	D 638	1900 MPa (2.7×10^5 psi)
Flexural Modulus	D 790	2100 MPa (3.0×10^5 psi)
Rockwell Hardness, R Scale	D 785	108
Izod Impact Strength, Notched @ 23°C	D 256	95 J/m (1.8 ft·lbf/in.)

(73°F)

Impact Strength, Unnotched @ 23°C (73°F) D 4812 NB

Thermal Properties

Deflection Temperature

@ 0.455 MPa (66 psi)	D 648	70°C (158°F)
@ 1.82 MPa (264 psi)	D 648	62°C (143°F)

Typical Processing Conditions

Nozzel Temperature 245°C (473°F)

Heated Bed Temperature 70°C (158°F)

Cooling

50-90%

Layer Height 0.2 mm

Speed 30-60 mm/s

Infill As needed up to 100%

Perimeter 1.2 mm

Minimal Layer Time 5 seconds

a Unless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.

b Unless noted otherwise, the test method is ASTM.

c Units are in SI or US customary units.

Comments

Properties reported here are typical of average lots. Eastman makes no representation that the material in any particular shipment will conform exactly to the values given.

Eastman and its marketing affiliates shall not be responsible for the use of this information, or of any product, method, or apparatus mentioned, and you must make your own determination of its suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. No warranty is made of the merchantability of fitness of any product, and nothing herein waives any of the Seller's conditions of sale.

SAFETY DATA SHEET

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

1.1 Product identifier

Product name: Eastman Amphora(TM) 3D Polymer AM1800

Product No.: AM1800, 50166297, 50166298

d Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Plastics

Uses advised against: None known.

e Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

National Supplier

Eastman Chemical B.V.
Fascinatio Boulevard 602-614
2909 Capelle aan den IJssel
The Netherlands
Telephone: (31) 10 2402 111
Fax: (31) 10 2402 100

1.4 Emergency telephone number:

For emergency health, safety, and environmental information: telephone 800-EASTMAN or 423 229-4511 in the United States; or +44 (0)1235 239 670 in Europe.

For emergency transportation information, call +44(0)1235 239 670; or 800 964214 in England; 01800559700 in Eire; or 423-229-4511 in the United States. Identify the call as a transportation emergency.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has not been classified as hazardous according to the legislation in force.

Hazard summary

- Physical hazards:** Not classified as hazardous.
- Health hazards**
- Inhalation:** None known.
- Eye contact:** Molten material will produce thermal burns.
- Skin contact:** Molten material will produce thermal burns.
- Ingestion:** None known.
- Other Health Effects:** None known.
- Environmental hazards:** None known.

2.2 Label elements Not applicable

2.3 Other hazards: None known.

SECTION 3: Composition/information on ingredients

3.1 / 3.2 Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
copolyester	100%	proprietary	

Explanation for Notes (if applicable):

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has workplace exposure limit(s).

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

Classification

Chemical name	Classification		Notes
copolyester	DSD:	This substance is not classified according to Directive 67/548/EEC.	
	CLP:	NOT CLASS ,	

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.:

The full text for all R- and H-phrases is displayed in section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- Inhalation:** Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
- Eye contact:** Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if symptoms persist. If molten material contacts the eye, immediately flush with plenty of water for at least 15 minutes. Get medical attention immediately.
- Skin contact:** Wash with soap and water. Get medical attention if symptoms occur. If burned by contact with hot material, cool molten material adhering to skin as quickly as possible with water, and see a physician for removal of adhering material and treatment of burn. Get medical attention.
- Ingestion:** Seek medical advice.

4.2 Most important symptoms and effects, both acute and delayed: Burns should be treated as thermal burns. The material will come off as healing occurs; therefore, immediate removal from the skin is not necessary.

4.3 Indication of any immediate medical attention and special treatment needed

- Hazards:** Contact with molten substance/product may cause severe burns to skin and eyes.
- Treatment:** Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures.

5.1 Extinguishing media

- Suitable extinguishing media:** Water spray. Dry chemical. Carbon Dioxide.
- Unsuitable extinguishing media:** None known.

5.2 Special hazards arising from the substance or mixture: Powdered material may form explosive dust-air mixtures.

5.3 Advice for firefighters

- Special fire fighting procedures:** Minimize dust generation and accumulation.
- Special protective equipment for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

6.2 Environmental precautions: Not regarded as dangerous for the environment.

6.3 Methods and material for containment and cleaning up: Sweep up and place in a clearly labeled container for chemical waste.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling: Avoid contact with molten material. Minimize dust generation and accumulation.

7.2 Conditions for safe storage, including any incompatibilities: Keep container closed.

7.3 Specific end use(s): Plastics.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters
Occupational exposure limits**

Country specific exposure limits have not been established or are not applicable unless listed below.

8.2 Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Washing facilities.

Eye/face protection: It is a good industrial hygiene practice to minimize eye contact. Wear a face shield when working with molten material.

Skin protection

Hand protection: It is a good industrial hygiene practice to minimize skin contact. When material is heated, wear gloves to protect against thermal burns.

Other: No data available.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Hygiene measures: Observe good industrial hygiene practices.

Environmental Controls: No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical State:	Solid
Form:	Pellet
Color:	colorless
Odor:	Slight
Odor Threshold:	No data available.
pH:	No data available.
Softening Point:	> 100 °C
Boiling Point:	No data available.
Flash Point:	not applicable, combustible solid
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)-:	No data available.
Flammability Limit - Lower (%)-:	No data available.
Vapor pressure:	No data available.
Vapor density (air=1):	No data available.
Specific Gravity:	> 1 (estimated)
Solubility(ies)	
Solubility in Water:	Negligible
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Autoignition Temperature:	No data available.
Decomposition Temperature:	Thermal stability not tested. Low stability hazard expected at normal operating temperatures.
Dynamic Viscosity:	No data available.
Kinematic viscosity:	No data available.

Explosive properties: No data available.
Oxidizing properties: No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity: None known.
10.2 Chemical stability: Stable
10.3 Possibility of hazardous reactions: None known.
10.4 Conditions to avoid: None at ambient temperatures.
10.5 Incompatible materials: Strong oxidizing agents.
10.6 Hazardous decomposition products: Carbon Monoxide. Carbon Dioxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: None known.
Ingestion: None known.
Skin contact: Molten material will produce thermal burns.
Eye contact: Molten material will produce thermal burns.

11.1 Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

copolyester Oral LD-50: (Rat): > 3.200 mg/kg

Dermal

Product: No data available.

Specified substance(s)

copolyester Dermal LD-50: (Guinea Pig): > 1.000 mg/kg

Inhalation

Product: No data available.

Specified substance(s)

copolyester No data available.

Repeated dose toxicity

Product: No data available.

Specified substance(s) copolyester	No data available.
Skin corrosion/irritation: Product:	No data available.
Specified substance(s) copolyester	(Guinea Pig, 24 h): Slight
Serious eye damage/eye irritation: Product:	No data available.
Specified substance(s) copolyester	unwashed eyes (Rabbit): Slight washed eyes (Rabbit): Slight
Respiratory or skin sensitization: Product:	No data available.
Specified substance(s) copolyester	Skin Sensitization:, (Guinea Pig) - non-sensitizing
Mutagenicity	
In vitro Product:	No data available.
Specified substance(s) copolyester	No data available.
In vivo Product:	No data available.
Specified substance(s) copolyester	No data available.
Carcinogenicity Product:	No data available.
Specified substance(s) copolyester	No data available.
Reproductive toxicity Product:	No data available.
Specified substance(s) copolyester	No data available.
Specific target organ toxicity - single exposure Product:	No data available.
Specified substance(s) copolyester	No data available.
Specific target organ toxicity - repeated exposure Product:	No data available.

Specified substance(s)

copolyester

No data available.

Aspiration hazard

Product:

No data available.

Specified substance(s)

copolyester

No data available.

Other adverse effects:

No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product:

No data available.

Specified substance(s)

copolyester

LC-50 (Fathead Minnow, 96 h): > 100 mg/l (highest concentration tested)

Aquatic invertebrates

Product:

No data available.

Specified substance(s)

copolyester

LC-50 (daphnid, 96 h): > 100 mg/l (highest concentration tested)
LC-50 (snail, 96 h): > 100 mg/l (highest concentration tested)
LC-50 (flatworm, 96 h): > 100 mg/l (highest concentration tested)

Chronic Toxicity

Fish

Product:

No data available.

Specified substance(s)

copolyester

No data available.

Aquatic invertebrates

Product:

No data available.

Specified substance(s)

copolyester

No data available.

Toxicity to Aquatic Plants

Product:

No data available.

Specified substance(s)

copolyester

No data available.

12.2 Persistence and degradability

Biodegradation

Product:

No data available.

Specified substance(s)

copolyester No data available.

Biological Oxygen Demand:

Product No data available.

Specified substance(s)

copolyester No data available.

Chemical Oxygen Demand:

Product No data available.

Specified substance(s)

copolyester No data available.

BOD/COD ratio

Product No data available.

Specified substance(s)

copolyester No data available.

12.3 Bioaccumulative potential

Product: No data available.

Specified substance(s)

copolyester No data available.

12.4 Mobility in soil:

No data available.

Known or predicted distribution to environmental compartments

copolyester No data available.

12.5 Results of PBT and vPvB assessment:

No data available.

copolyester

No data available.

12.6 Other adverse effects:

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate.

European Waste Codes

Comply with requirements of waste disposal legislation and any local authority requirements.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

ADR/RID

Class not regulated

IMDG - International Maritime Dangerous Goods Code

Class not regulated

IATA

Class not regulated

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

15.2 Chemical safety assessment: None.

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Wording of the R-phrases and H-statements in section 2 and 3: NOT CLASS = Not classified

Training information: No data available.

Regulation (EC) No. 1272/2008

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SDS No.:

Disclaimer: This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

