Material Safety Data Sheet

ABS filament.

1. Chemical Product and Manufacturer Identification

Chemical Name : Acrylonitrile-Butadiene-Styrene Copolymer
Content : >90% (Additives <10%)
Physical state : Solid in transit. Liquid in use
Odour : Sweet
Colour : Variable

Product use : A thermoplastic in rod form of 1.75-3mm width for use in 3D printers, at an extrusion temperature of 200-250°C

2. Hazards Identification

This material is hazardous according to health criteria of Safe Work Australia.
Hazard Category : Irritant
Risk Phrases: Irritating to eyes (when heated)
Vapours may cause drowsiness and dizziness Safety
Phrases : S24-25 Avoid contact with skin and eyes
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection S38 In case of insufficient ventilation, wear suitable respiratory equipment.

The information contained here within was based on the best information to hand at the time of publication. To date ABS Hazard when used in 3D Printing research has been limited.

Environmental effects : None identified
Hazardous to the aquatic environment (Acute) : Not classified
Hazardous to the aquatic environment (Chronic) : Not classified

Adverse Human Health Effects :
Eye contact : Contact may cause eye irritation
Inhalation of gases evolving from melted product : No Effects Identified To Date Target organ effects: There have been no target organ effects identified following ingestion or dermal exposure in animal studies.
Sensitization: Did not cause sensitisation on laboratory animals

Other hazards which are not otherwise covered :
Volatile gases which may irritate eyes, nose and throat may be released. Use adequate local exhaust ventilation during drying and moulding.
Get medical advice if you feel unwell.

Sweep up and dispose of spilled product to eliminate slipping hazard.
Do not pile up spools too high in order to avoid injury caused by falling of the product.

Mutagenic effects: No data is available on the product itself.

Reproductive toxicity: No data is available on the product itself.

Carcinogenic effects: No data is available on the product itself.

3. First-Aid Measures

Inhalation :

Remove the victim from the contamination immediately to fresh air. Evacuate victim that inhaled gas from the molten ABS to fresh air. Seek medical advice, if victim does not recover.

Skin contact :

If a person touches the molten ABS, cool the affected part with fresh water. Do not try to remove the ABS by force and seek medical advice if the person got burnt.

Eye contact :

Gently rinse the affected eyes with clean water for at least 15 minutes. Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

Have the victim remove contact lenses if he is wearing them and continue rinsing. Do not let the victim rub his eyes.

Ingestion :

Rinse mouth with water. Give the person one or two glasses of water, try to get the victim to vomit by putting a finger in the throat.
If you feel unwell after vomit, seek medical advice .

Protective measures for a first aid person :

Wear protection gloves when removing melting ABS or high temperature ABS.

Notes to physician: Treat symptomatically.

5. Fire-Fighting Measures

Auto ignition temperature : 338°C

Extinguishing Media :

Foam. Water. Dry chemical.

For safety reasons unsuitable extinguishing agents

Carbon dioxide, Extinguishing powder.

Lack of cooling capacity may permit re-ignition.

Specific Hazards under fire :

Thermal Decomposition Gases CO, HCN, AN, SM and NO In case of fire and/or explosion do not breathe fumes.

Fires involving this material produce large amounts of sooty smoke; Carbon monoxide (CO) and Carbon dioxide (CO2), Hydrocarbons, Hydrogen cyanide (HCN)
Under certain fire conditions, traces of other toxic gases cannot be excluded

Specific fire-fighting measures :

Apply water from a safe distance to cool and protect surrounding area. Move container from fire areas if it can be done without risk.

Keep personnel removed from and upwind of fire. Evacuate non-essential personnel to safe area. Fire-fighters should wear proper protective equipment and self contained breathing apparatus

Other information:

Fine dust dispersed in air may ignite. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures : Sweep up spilled pellets on road or floor to avoid tripping.

Measures for environmental effects :

Do not wash away into shower or waterway.

If pellets got released in environment, take adequate steps to prevent aquatic animals and birds dying from eating pellets.

Methods and materials for containment and cleaning up :

Sweep up, place in a bag and hold for waste disposal.

Preventive measures for secondary accident :

Shut off all sources of ignition; No flares, smoking or flames in area.

7. Handling and Storage

Handling :

Local ventilation / Total air ventilation :

Good ventilation required when ABS is heated to a molten state.

Safety treatments :

Do not keep this material under high temperature condition for a long time. Do not touch high temperature resin without protector.

ABS can easily generates static electricity, so take countermeasures to eliminate static electricity if necessary.

Safety Measures/Incompatibility :

S29-Do not empty into drains

Do not drop onto, or slide across sharp objects

Avoid rough handling or dropping

Recommendations for Storage :

This material is flammable

Follow fire defence and local regulations for storage and handling

Keep away from heat

Keep away from sources of ignition—No smoking

Keep away from heat source, steam pipe and direct sunlight.

Store in cool (below 50°C), dry conditions in well sealed containers.

Stability and Reactivity

Do not allow to come into contact with solvents, especially acetone Not Bio-degradable
Colours will fade when exposed to sun light
Material integrity degrades when exposed to direct sun light for prolonged periods.

Disposal considerations

This product is currently accepted as recyclable within Australia Spools storing this product are currently non-recyclable within Australia Dispose of unused material via registered waste carriers.

8. Exposure Control and Personal Protection

Engineering measures:

When Processing, good ventilation is required to exclude dust, fumes and gases. Dust emission data not currently available

Personal protective equipment :

Respiratory protection :

S38-In case of insufficient ventilation, wear suitable respiratory equipment. Against powder-dust: protective mask for powder-dust

Against gas from molten polymer: protective mask for organic gas Hand protection :

S37-Wear suitable gloves.

Wear protection gloves of heat-resistance when handling melting polymer. Eye protection :

Wear protective eyeglasses or chemical safety goggles Skin and body protection :

S36-Wear suitable protective clothing.

It is desirable to put on long sleeve clothing so as not to touch skin directly. Wear protection clothing of heat-resistance when handling melting polymer.

Safety and Health measures :

Wash hands before breaks and at the end of work. Do not eat, drink or smoke at work.

9. Physical and Chemical Properties

Physical properties :

Appearance : solid thread/filament
Colour : variable

Odour : None when cold, unpleasant when heated pH : Not Applicable

Phase change temperature : Melting point : above 100°C

Decomposition temperature : 260°C
Flash point : 404°C

Auto-ignition temperature : 460°C
Reactive with water : No

Solubility in Water : Insoluble Solubility in other solvents : Acetone

10. Stability and Reactivity

Stability :

This product is considered a stable material under normal and anticipated storage and handling conditions.

Possibility of hazardous reactions :

This product is considered a stable material under normal and anticipated storage and handling conditions.

Conditions to avoid :

direct sunlight, fire, humidity, impact, friction, heat, sparks, electrostatic charges.

Incompatible materials :None

Decomposition products :

During burning, black smoke, carbon dioxide, carbon monoxide, nitrogen oxide may be produced.

Hazardous Thermal Decomposition Gases Carbon monoxide (CO) and Carbon dioxide (CO2) Hydrogen cyanide (HCN), Hydrocarbons. Possible in traces: Styrene, Acrylonitril, Phenol Acetophenone, Acrylmonomeres, Acrylcompounds

11. Toxicological Information

Inhalation:

Material may be irritant to mucous membranes and respiratory tract. Inhalation of vapour can result in headaches, dizziness and possible nausea. Inhalation of high concentra tions can produce central nervous system depression, which can lead to loss of co-ordination, impaired judgement and if exposure is prolonged, unconsciousness.

Acute toxicity :Not determined.

Skin corrosion/irritation :Not determined.

Serious eye damage/eye irritation :Not determined.

Respiratory or skin sensitization :Not determined Germ cell mutagenicity :Not determined Carcinogenic effects :Not determined

Toxicity for reproduction :Not determined

Specific Target Organ/Systemic Toxicity (Single Exposure) :Not determined Specific Target Organ/Systemic Toxicity (Repeated Exposure): Not determined

Aspiration hazards :Fumes or vapours generated from decomposing and heated product may cause irritation

12. Ecological Information

Please make steps to avoid consumption by ocean species or birds, disposal of the waste to the ocean and water sources is inhibited

13. Disposal Consideration

Dispose to an authorized waste collection point.

Follow the local law and regulations of waste disposal and prevention against public nuisance Do not cast waste (waste fluid, solid waste and washing drainage etc.) that includes this prod-uct directly into a river, or bury it underground.

Check if there is no resin left, if disposing the package after use. (paper package, flexible con-tainer etc.)

Follow the local law and regulations of waste disposal. Do not use the package for other purposes.

Incineration may generate toxic gases such as CO, HCN, AN and SM

14. Transport Information

International guide line : n/a

Specific safety measures and conditions on transport : Covering is necessary for shutting off sunlight and rain. Handle gently to avoid damaging bags.

15. Other Information/References

The information relates to this specific material. It may not be valid for this material, if used in combination with any other materials or in any process. It is the user's responsibility to satisfy him-selves as to the suitability and completeness of this information for his own particular use.

The information herein is given in good faith, but no warranty, express or implied, is made.

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It is advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

NOTICE REGARDING MEDICAL APPLICATION RESTRICTIONS:
The company does not recommend any of its products, including samples, for use:

(A) in any application which is intended for any internal contact with human body fluids or body tissues (B) as a critical component in any medical device that supports or sustains hu-man life; and (C) specifically pregnant women or in any applications designed specifically to promote or interfere with human reproduction.

Date of issue : 1 October 2013