



North Sea Plastics Ltd
Unit 2, 5 Campsie Road
Kirkintilloch
G66 1SL
United Kingdom
T. +44 141 776 7900
F. +44 141 776 6699
E. info@northseaplastics.com
www.northseaplastics.com

Material Safety Data for ABS Sheet

1.0 Product Ingredients

This chemical product is a preparation:

Common Chemical Name	Acrylonitrile butadiene styrene copolymer
Formula	N/A
Generic Name	Engineering plastics
CAS number	9003-56-9
Synonym(s)	ABS
Ingredients contributing to the hazard	The material may contain traces of monomeric substances of acrylonitrile and butadiene. However, air exposure levels during storage conditions are well below presently accepted standards and present no hazard.

2.0 Physical & Chemical Properties

2.1 Polymer Properties

Physical state (at +20oC)	Solid
Physical form	Sheet – Granulate - Powder
Colour	Various; dependent on added pigments/masterbatches
Odour	Characteristic
pH value	6 - 8 (not soluble in water)
Relative density	1040 - 1100 g/m3
Melting point/range	N/A
Softening point/range	Softening begins at 90°C
Viscosity	N/A
Boiling point/range	N/A
Vapour pressure	N/A
Vapour density	N/A
Evaporation rate	N/A
Solubility in water	Insoluble
Solubility in other substances	Soluble or partly soluble (swelling) in aromatic and chlorinated hydrocarbons, esters, ketones
Partition coefficient	N/A (n-octanol/water)
Miscibility	N/A

Volume conductivity Low; danger of static charges

2.2 Safety Properties

Decomposition temperature >275°C
Flash point >330°C
Auto ignition temperature >450°C

2.3 Dust explosive properties: (See section 9)

Lower explosion limit (LEL) Mandatory to remain < 10g/m³ air (fines)
Minimum ignition temperature > 420°C
Dust explosion class St 1 (fines)

3.0 Hazards Identification

The material is not classified as being a dangerous preparation according to EC Directive 88/379 and the subsequent amendments (See also Section 14). The most important hazards are:

HEALTH HAZARD	SPECIFIC HAZARDS	MAIN SYMPTOMS
Carcinogen	During processing at elevated temperature traces of the monomer components of the material may be released (see Section 10). In case of well ventilated workplaces the level of these monomers remains below the Threshold Limit Value (TLV).	
Irritant	Vapour and fume, released at elevated processing temperatures may be irritating for the eyes, the nose, the throat and the respiratory tract and in case of over exposure may cause nausea and headache.	
Lung Toxin	When/if inhaled, fines may cause mechanical irritation of the respiratory tract.	Coughing
Skin Hazard	Direct contact with solid material normally does not give skin irritation, however, the material fines at room temperature should be considered as a nuisance dust with a potential to cause irritation of the skin. If contact with molten material occurs, treat as for a thermal burn.	Thermal burns (See Section 4)
Eye hazard	Fines can cause mechanical irritation.	Red eyes

4.0 First Aid Measures

Inhalation	When fumes of molten material have been inhaled: -move person to fresh air as quickly as possible -rest in half upright position -loosen clothing -keep warm In case of respiratory problems move person to first aid station or hospital for medical treatment.
Skin contact	Any molten material on the skin or any burns should be cooled as quickly as possible by means of cold water. Cover the wound with sterile cloth and move person to first aid station or hospital for medical treatment.
Eye contact with	Any material entering the eye should be flushed out copious volumes of water.
Ingestion inactive.	No danger of toxicity, the material is biologically

5.0 Fire-fighting Measures

Extinguishing media: Water, Water/foam CO₂, ABC fire extinguishing powder.

ON FIRE		EXTINGUISHING MEDIUM	METHOD
Processing	Polymer	Water/foam	Spray cooling
Plant	Equipment	CO ₂	CO ₂ snow extinguisher
		ABC powder extinguisher	ABC powder extinguisher
Storage	Bags	Water or water/foam	Spray cooling
	Bulk silo	Cooling with water	Fire hose jet
Transport	Lorry/pallets	Water or water/foam	Spray cooling
	Bulk car	Water/foam	Cover fire side

Specific hazards:

Solid	Treat the material as a solid that can burn. The material, as well as moulded parts, burn slowly with a high smoke density and flaming drips
Product fines	A spark can ignite an explosive concentration of product fines in air (see also Sections 2 &7).
Vapours	Hot vapours - from heated material - plus air can be inflammable in the case of stoicheiometric mixtures.
Combustion products	Appreciable quantities of monomers and hydrocarbon fragments as well as hydrogen cyanide are released in addition to carbon monoxide, carbon dioxide and water, which are the main constituents.
Protection of fire fighters	Do not approach fire in confined space without positive pressure self contained breathing apparatus and full bunker gear i.e.: bunker coats, helmet with face shield, gloves, rubber boots. Note: cool fire exposed containers with water

6.0 Accidental Release Measures

Personal Precautions

Prevent generation of dust (to be released from the material). This could play a role e.g. in case of blocked filters and during regrinding operations. Depending on the situation, apply respiratory protection. Take great care in preventing the formation of dust clouds in air (see Section 7.1).

Protect skin, eyes and/or hands in case of hot melt release (e.g. when purging a processing machine (see Section 8)).

Environmental precautions For disposal considerations see Section 12.

Cleaning-up methods

Shovel or sweep up released material.
Suck up fines or dust with special industrial vacuum cleaner.
Avoid the generation of dust clouds.
Put into containers for reclaiming or disposal.

7.0 Handling and storage

7.1 Handling Precautions

General precautions

For safe polymer processing the material should be completely dry.

Personal protection

For more information on personal protection when handling the material, see Section 8.

Hygienic precautions

Adequate washing facilities, with supplies of mild soap and hand cleansers should be available at all working

locations. Solvents should never be used as hand cleaners. Smoking, eating and drinking in working and storage areas should be prohibited.

Advice on technical measures

Ventilation: general mechanical A ventilation system should be installed where:
a) Melt processing of the material is carried out,
b) Solid material is being ground or machined,
c) Any high temperature processing is carried out e.g. sealing.

Ventilation: local exhaust It is advisable to install local exhaust ventilation in the vicinity of processing machines.

Prevention of dust generation Suppression: optimise the piping system used for pneumatic transport (surface, corners, length & velocities).

Filtering: take extreme care of dust explosion danger and apply ample local grounding where the presence of fumes plus static electricity in or near the pneumatic transport lines is very likely.

Note: when handling the granulate normally dust will not be a problem with respect to breathing. During regrinding operations the use of a dust mask is advised.

For powder see also under Section 6 'Personal precautions'

Prevention of fire and explosion See information on static discharges in Section 7.2.

7.2 Storage

Technical measures Owing to the electrostatic properties of the material

and its fines a grounding installation for storage silos and pneumatic transport is obligatory.

Other ways of prevention with respect to electrostatic properties are inerting i.e. lowering oxygen concentrations by means of nitrogen supply, control of transport speed, etc.

Storage conditions

Avoid storage in open sunlight, high temperatures and/or high humidity as this could well speed up alteration and, consequently, loss of quality of the material; this could lead to unforeseen dangers.

Store separate from flammable or combustible material in order to prevent the pyrolysis of combustion of the material in case of accidental fires (see Section 5).

Do not store at elevated temperatures or near heating devices, hot pipes etc., because of possible damage to the material.

Do not expose to sunlight, as the pigments, the packaging and the material could be affected by the UV radiation.

Keep polymer completely dry (in the original packaging) for good processing (despite increased static danger).

Stack pallets only two high when storing, in order to prevent collapsing

8.0 Exposure controls/personal protection

Control parameters

Threshold Limit value (TLV): a provisional TLV (Time Weight Average - TWA - 8 hours) is advised in accordance with the TLV of non-toxic nuisance dust: - 10mg/m³ for total dust, - 5 mg/m³ for respirable dust.

8.1 Personal protective equipment

Respiratory protection

When the threshold limit value (TLV) is accidentally exceeded see 'Prevention of dust generation' in Section 7.1.

Hand protection

When handling a hot melt (e.g. during purging or use during processing heat resistant gloves should be worn.

Eye protection

When handling a hot melt (e.g. during purging or use during processing heat resistant face shields should be worn.

Skin and body protection

The use of apron, boots and/or full protective suit is not prescribed here, this being the decision of the processor.

9.0 Stability and reactivity

The material is chemically unreactive, under the recommended processing conditions it is stable although traces of monomer may be liberated.

Conditions to avoid

Material fines

Material fines, accidentally released in air, can result in an explosive concentration (see Sections 6 & 7.1).

Electrostatic loading

For information on safety measures regarding electrostatic loading see: Section 7.1 'Prevention of dust generation' and Section 7.2 'Technical measures'.

Gas/Vapour air mixtures

At high temperatures (local hot spots) inerting should possibly be applied, in order to strongly reduce oxygen concentrations. Stabilisation of the polymer results in inflammable gases being formed only at higher than usual temperatures.

Processing temperatures	Temperatures above 275°C and/or long residence times should be avoided since thermal degradation may occur and the free monomer content may increase. See also Section 1.
Long term exposure	Do not expose for long periods to elevated temperatures and/or UV light since this will cause possible damage to the material (see also Section 7.2).
Materials to avoid	Strong oxidising agents
Hazardous decomposition	Mainly traces of acrylonitrile, butadiene and styrene products
Changes in physical appearance	Dust (and powder) fines can cause dangerous situations compared with base material (see Sections 2,5, 6 & 7). There is no possibility of degradation to unstable products under normal circumstances. Only at extreme temperatures (above the decomposition temperature) will degradation occur.
Stabilisation	The material does contains processing stabilisers and does not contain, nor require, safe storage stabilisers.

10. Toxicological Information

The material may contain traces of monomers (acrylonitrile, butadiene, styrene) which can be liberated at processing temperatures. Acrylonitrile and butadiene are suspected human carcinogens, at concentration above the TLV styrene may cause generally reversible effects on the nervous system. Under the special precautions mentioned in Section 7 these traces do not represent noxious risks for the processor.

Acute toxicity	None (LD ₅₀ oral rat > 5000 mg/kg)
Local effects	None
Chronic short and long term toxicity	None
Sensitisation	None
Specific effects (carcinogenicity, mutagenicity, teratogenicity, narcosis)	None

11. Ecological Information

Mobility	None
Persistence / degradability	Very low UV degradability
Bioaccumulation	None
Ecotoxicity	There is no indication that this material is a risk to the environment.
Aquatic toxicity	This material is a water insoluble non-toxic solid material.

12. Disposal considerations

The disposal of this material, as well as the used packaging thereof, presents no danger regarding toxicological and/or ecological considerations. It can be burnt in a controlled way, disposed of via landfill or recycled.

Note: Additional national or regional provisions may be in force relevant to this matter.

13. Transport Information

General precautions

Keep the material dry during transport.

Special precautions

The material does not meet the classification criteria as given by the United Nations in the 'Recommendations on the Transport of Dangerous Goods' (7th Edition).

14. Regulatory Information

Labelling

No labelling required under EC-Directive 88/379/EEC

This Material Safety Data Sheet complies with:

- ❖ Directive 91/155/EEC of the Commission of the European Communities,
- ❖ Draft International Standard ISO 11014 'Safety data sheet for chemical products'.

Date of Issue: January 1999