



Safety Data Sheet ABS Sheet and Film

This information was provided to Positron Corp by film and substrate suppliers, and is pertinent to the safe handling of ABS (Acrylonitrile-Butadiene-Styrene) plastic sheet, and alerts the user to possible health hazards related to its processing.

This bulletin should be read by management and supervisory people who are responsible for safe and proper working conditions in the workplace and should be made available to those employees who work directly with these materials. Many of the terms used here provide an indication of the degree of hazard involved but may not be understood by the layman. For this reason, your safety programs and job instruction should cover all precautions necessary in handling these materials.

The processing of these plastics should be under the supervision of qualified individuals who are familiar with their properties. These data and comments are not relevant to the suitability of the material for any particular end-use, nor for possible health hazards related to an end-use application. Please call (574) 295-8777 to discuss any concerns you may have on these matters.

1. Product characteristics

Appearance and odor:	Various dependent upon base resin and colorant.
Specific Gravity:	1.02-1.17. Specific gravity will vary within these ranges depending upon the color-pigments added for each specific color.
Non-aqueous volatiles:	Typically less than 1.0% by weight.
Softening point:	(ASTM D1525) 218-262°F (103-128°C) This material has no sharp melting point but softens gradually over a wide temperature range.
Solubility in water:	Negligible
Typical ignition temperature:	(ASTM D1929, Method B) Flash-ignition temperature 660°F (349°C), is that lowest initial temperature of air surrounding a test specimen at which sufficient combustible volatiles are evolved to be ignited by an external pilot flame. Self-ignition temperature, 946°F (508°C), is that lowest initial temperature of air surrounding a test specimen at which ignition occurs, i.e., explosion, flame or glow, without an external source of ignition.



2. Hazard data

- Skin and eye irritation:** Skin contact with the sheet or film as received does not present and known health hazard. Suitable gloves should be worn when handling the hot sheet or film during vacuum forming. Fumes and vapors emitted from the hot melted plastic during converting operations may condense on cool overhead metal surfaces or structures that condensate, usually in the form of a soft, grease-like semi-solid, may contain substances which can be irritating or toxic. Avoid skin contact with that material. If skin contact should occur wash area with soap and water. Wear rubber or other impermeable protective gloves when cleaning contaminated surfaces. Wash hands with soap and water before eating or smoking at the end of each work day. Eye contact with the sheet does not present any extraordinary hazard except for possibility of abrasive injury.
- Inhalation:** The sheet or film does not present an inhalation hazard. Fumes from the molten plastic, during forming, for example, should not be breathed unnecessarily. Ventilation should be provided to control fumes and odors, and to meet regulatory standards in the storage and converting areas. Proper protection equipment should be worn under conditions or excessive concentration of fumes: NIOSH and/or Mine Safety and Health Administration approved respiratory device with OVAG (organic vapor acid gas) rating or with fresh air supply.
- Ingestion:** Unintentional ingestion of the sheet does not present any known acute toxicity health hazard.
- Residual volatiles:** This sheet or film will contain residual amount of Acrylonitrile (AN) monomer, a suspected human carcinogen. Under the AN Permanent Standard (Federal Register, Vol.43, No.192 of October 3, 1978) OSHA has exempted converters and processors of finished polymers of ABS from the regulation since such activity "does not appear to constitute a significant source of AN exposure." Also, some traces of styrene monomer and possibly traces of additive may be volatized under normal storage and processing conditions. With proper ventilation, this sheet can be stored and processed without exposing employees to unacceptable monomer levels.
- Thermal emissions:** Certain types of finishing or assembly operations on ABS parts may involve subjecting the plastic to heat: hot staking, thermal welding, sheet thermoforming, spin-welding, high speed sawing, etc. These



operations should be conducted in well-ventilated areas. Health and pollution regulations pertinent to the proper maintenance of the work place and the environment should be observed.

Thermal decomposition products: ABS sheet or film is stable under recommended conditions processing. The approximate heat-degradation temperature, dependent upon residence time, is 525-550°F (274-288°C). Heating this sheet above 525°F (274°C) should be avoided. Typical decomposition gases from ABS could be styrene and acrylonitrile monomers: increased amounts of such materials as acrolein, acetaldehyde, alpha methyl styrene, acetophenone, ethyl benzene, cumene and phenol/benzaldehyde.

3. Storage, handling, and shipping

Storage:

Avoid storing sheet or film near foodstuffs to avoid the possibility of odor and taste contamination of the food.

Do not store sheet or film near heating devices, hot pipes, etc. to avoid the possibility of ignition and flame hazards.

Store materials in a cool, dry environment away from the weather and from sources of heat.

Shipping:

ABS is not considered as hazardous under any definition of the Federal Hazardous Substances ACT, Title 16 CFR, Section 1500.3; and is not regulated for shipping purposes by the US Department of Transportation.

4. Fire hazard information

ABS sheet and films will burn when exposed to an external source of ignition, releasing intense heat and large amounts of dense, black smoke. They do not present an explosion hazard. In storage situations involving pallets of sheet or roll stock, there is some indication that flame spread will not be rapid or extreme but tends to travel rather slowly from the point of ignition. In fire conditions, however, ABS will contribute fuel to the fire; therefore, these materials should never be considered as a fire-barrier in storage areas. Typical Ignition Temperatures (ASTM D1929, Method B) are 660°F (349°C) flash ignition and 946°F(508°C) self-ignition as stated before. Flash ignition temperature is that lowest initial temperature of air surrounding a test specimen at which sufficient combustible volatiles are evolved to be ignited by an external pilot flame. Self-ignition temperature is that lowest initial temperature of air surrounding a test specimen at which ignition occurs i.e. explosion, flame or glow, without an external source of ignition. The fuel content and high temperatures will require immediate attention and vigorous efforts to bring about control of the fire and suppression of the fire should begin immediately.



The ABS plastic will melt, but it will not be carried to the surface of water, and water can be used freely to control an ABS fire. Use a water spray to cool fire-posed containers and to solidify and flush away molten plastic. Fire-fighters should be equipped for protection against high heat levels, rapid depletion of oxygen, heavy smoke, molten plastic and toxic combustion gases. They should be provided the necessary protective clothing and use a self-contained breathing apparatus approved by NIOSH or US Bureau of Mines for all fires. Personnel not involved in containing a fire, or not properly protected, should leave the area. Contact with the molten resin may produce severe burns. Cool the skin and plastic with water and allow a physician to remove the solid plastic from the skin and treat the burn areas. Use dry chemical, carbon dioxide, foam, water fog or spray as extinguishing media. Most gases, fumes and particulate matter evolved from a burning substance are toxic and the ABS combustion products are no exception. The expected major hazards from burning ABS are intense heat and very high levels of dense, black smoke containing carbon monoxide and hydrogen cyanide. Appreciable amounts of carbon dioxide and Safety Data Sheet hydrocarbon fragments may also be present. Rapid depletion of oxygen can occur in poorly ventilated areas. It is not possible to quantify the amounts of combustion products which might be released in an actual fire since so many variable factors are involved.

5. Ventilation

Because each work area will differ from others in size, configuration, air flow, process equipment, etc. proper ventilation for each should be determined by qualified people. In general, exhaust ventilation should be provided at converting areas and at fabricating workstations which involve heating the plastic.

6. Notification requirements

This product contains chemical substance(s) subject to the supplier notification requirements of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 (SARA), the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) and selected State Right-To-Know Regulations. SARA and WHMIS require this information be included in Material Safety Data Sheets (MSDS) for this product. The chemical substance(s) identified under the California Proposition 65 Column (C) is (are) known to the State of California to cause cancer.

Chemical substance	CAS number	Low Wt%	High Wt%	A	B	C	D	E	F	G
ACRYLONITRILE	107-13-1					*	*			
STYRENE	100-42-5	.10	.15	*	*	*	*	*	*	*