

Technical Data Sheet

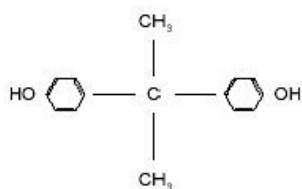
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Bisphenol A-157 (polycarbonate grade)

General description and handling bulletin

Product Description

Bisphenol A (BPA) is a difunctional phenolic compound produced by the condensation of acetone and phenol. The polycarbonate grade (BPA-157) is essentially 2,2-bis (p-hydroxyphenyl) propane (see formula below) with only trace amounts of other isomers.



Polycarbonate Grade Bisphenol A is a white flaked solid of high purity used as a major ingredient in high molecular weight linear polymers such as polycarbonates and polyesters.

Sales Specifications

Property	Units	Value	Test Method/Standard
Color Pt-Co, max. ^a		200	ASTM D-1209
Freezing point, min.	°C	156.5	ASTM D-1493
Iron content, max.	mg/kg	0.5	
Free phenol, max	% weight [mg/kg]	0.05 [500]	

^a Color determined by platinum-cobalt method via absorbance of a solution containing 50 grams of BPA in 70 grams of methanol.

Typical Properties

Property	Units	Value	Test Method/Standard
Weight per Epoxide	g/eq	1,700 - 2,300	ASTM D-1625
Viscosity (solution) @ 25°C	cP	50 - 100	ASTM D-445
Specific gravity, 25/25 °C		1.195	
Bulk density	lb/ft ³	35 – 41	
Solubility in water		slight	
Vapor pressure			
at 25 °C	mm Hg	negligible	

at 170 °C	mm Hg	0.2	
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Health, Safety, Handling, And Storage

The following information is provided to help the users of Hexion Bisphenol A to establish their own specific procedures and to install equipment for proper handling, storage, and use of the material. It is the latest information available to Hexion at the time of publication. Consult the Hexion MSDS for this product for specific details.

Hazards of Exposure/ Possible Health Effects

- **Skin contact.** Bisphenol A can produce irritation to the skin on prolonged contact Bisphenol A may be a mild skin sensitizer.
- **Eye contact.** Bisphenol A may cause eye irritation and corneal damage on short or single exposure and severe irritation and corneal damage on prolonged contact.
- **Ingestion.** Single dose oral toxicity is considered to be low. Amounts that may be ingested accidentally in the work place are considered to have low toxicity.
- **Inhalation.** Bisphenol A may cause irritation of the respiratory tract, resulting in soreness of throat, coughing, and sneezing.

Exposure Limits and Hazard Ratings

In the absence of specific Threshold Limit Values (TLV) ¹ and Permissible Exposure Limits (PEL) ² for BPA, OSHA has an exposure limit for particulates not otherwise regulated (PNDR of 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction). The ACGIH has an exposure guideline for particulates not otherwise Classified (PNDC) of 10 mg/m³ for total dust and 3 mg/m³ for the respirable fraction.

Emergency and First Aid Procedures

- **Skin contact.** Flush with fresh water and wash thoroughly with soap and water. If any irritation or other skin effects are noted, get medical attention.
- **Eye contact.** Flush the eyes with large amounts of low pressure water for 15 minutes while keeping the eyelids open. Get medical attention.
- **Inhalation.** Persons overexposed to Bisphenol A should be moved to a non-contaminated area and made to rest. Coughing, sneezing and sore throat should gradually subside. Get medical attention.
- **Swallowing.** Do not induce vomiting unless directed to do so by medical personnel.

Fire and Explosion Hazards

- **Flash point** COC (ASTM D-92) 207 °C (405 °F)
- **Warning:** Combustible Dust When Finely Divided or Suspended in Air.

Organic powders when finely divided (420 microns or smaller in diameter) and suspended in air may form

explosive dust-air mixtures and result in a fire or dust explosion. Minimize airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks and flame. Establish good housekeeping practices. Do not use air hoses for cleaning. Minimize dry sweeping to avoid generation of dust clouds. Vacuum dust accumulating surfaces and remove to a chemical disposal area. Vacuums with explosion proof motors should be used.

- Bisphenol A or the package itself can accumulate static charges, and static discharge can be a source of ignition. Solids handling systems must be designed in accordance with applicable NFPA standards (including 654 and 77) and other national guidance. Do not empty directly into flammable solvents or in the presence of flammable vapors. The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges
- Bisphenol A dust can form explosive mixtures with air. All equipment that is used in conveying, handling and using Bisphenol A plus all equipment in the vicinity of such operations should be spark and flame proof. Moving parts such as bearings should be properly lubricated to prevent localized overheating. Equipment and operating personnel can become charged with static electricity capable of generating sparks which can ignite explosive mixtures. Both equipment and operators should be properly grounded. For more complete information on dust explosions or fires, please see NFPA (National Fire Protection Association) ³ Fire Codes, and other national guidance.

Fire Fighting Information

- Fires involving Bisphenol A may generate toxic products of combustion. Fire fighters should approach fire from up-windside wearing appropriate protective equipment.
- Acceptable fire extinguishing agents are water, CO₂ and dry chemical. For detailed information on fire extinguishing equipment, consult the NFPA Fire Codes, especially Volumes 1 and 2.

Handling Precautions and Recommendations

All procedures and equipment for worker protection should be approved by a qualified industrial hygienist or other technically qualified person.

- **Personal hygiene.** All persons who work with Bisphenol A should wash hands before eating, drinking, smoking or using toilet facilities.
- **Personnel equipment.** Persons handling or using Bisphenol A should wear protective clothing and equipment such as impervious gloves, chemical goggles, as necessary to avoid or minimize body contact.
- **Engineering controls.** Bisphenol A dust levels should be controlled below recommended limits by local exhaust ventilation or other engineering controls. Equipment used to transport, charge or contain Bisphenol A should be grounded. Grounding equipment should be routinely checked for proper function.
- **Good housekeeping and dust control.** Good housekeeping and controlling of dust is necessary to minimize exposures and dust ignition hazard. Removal of spilled or residual solids and dust must be done using methods which will not generate airborne dust. Solids and dust must not be allowed to accumulate as these may become airborne creating an explosive dust hazard.
- **Administrative controls.** If such engineering controls are not available, effective administrative controls

should be established to ensure that no person is exposed to dust or vapors of Bisphenol A above the recommended limits.

- **Temporary or emergency controls.** If neither engineering nor administrative controls are effective, NIOSH⁴ - approved respiratory equipment should be provided and worn for worker protection. Personal respiratory equipment should not be used as a long-term substitute for engineering controls.
- **Monitoring.** Air monitoring is the best way to determine whether Bisphenol A dust exceeds the recommended limits. Standard sample collection techniques and analytical methods are available. If assistance in method selection is needed, contact your Hexion Sales Representative.

Reactivity Hazards

- Bisphenol A is stable on storage at ambient temperatures. It will react vigorously with strong oxidizing agents such as peroxides and perchlorates.
- Under normal circumstances Bisphenol A is chemically stable. Hazardous polymerization will not occur. At elevated temperatures, molten Bisphenol A will slowly decompose to phenol and isopropenyl phenol.

Handling, Shipping, and Storage

Following are controls for sacks, bulk sacks, hopper trucks and cars, and conveyers that may help to improve plant safety and reduce the risk of dust explosions and fires involving Bisphenol A.*

Handling of Sacks

- Sacks should be stored indoors in a clean, well ventilated area.
- Warehouse area should be kept clean and well ventilated. Spills of Bisphenol A should be cleaned-up immediately with care not to create dust clouds.
- Sacks with tears or punctures should be repaired immediately. Spills should be cleaned-up immediately to prevent potential exposures and remove the possibility of creating dust clouds.
- Static discharge from handling bulk sacks can be reduced by use of static eliminating shoes.
- Equipment and bulk sacks should be properly grounded and bonded during emptying.
- Bulk sacks should be conductive and capable of being grounded.

Hopper Trucks and Hopper Cars

- Both hopper trucks and hopper cars are sealed containers that are loaded through roof hatches and gravity or pneumatically unloaded through bottom outlet nozzles.
- Gravity unloading can be facilitated with the use of a mechanical vibrator.
- Electrical grounding should be used during all unloading and material transport operations.
- Containers should be inerted using inert gas containing less than 9.3% by volume oxygen. **Warning:** Atmospheres containing less than 19.5% oxygen by volume are considered oxygen deficient and present a serious and immediate health hazard. Appropriate measures (awareness training, engineering controls,

administrative controls, personal protective equipment, etc.) must be taken to prevent injury to those working in proximity of containers with these atmospheres and the gases used to inert them.

Conveyors

- Equipment must be properly grounded and bonded (piping flanges should be straddled (bonded) using grounding continuity straps). Conveyors should be enclosed and blanketed or padded with inert gas. Engineering and administrative controls (examples such as but not limited to ventilation systems, the enforcement of good housekeeping, adherence to preventative maintenance procedures, reduction of transport velocities, limiting mechanical agitation, etc.) should be employed to reduce the risk of dust creation and the possibility of dust cloud explosions. Moving parts such as bearings should be properly lubricated and maintained to prevent localized heating. Employees should be trained in the dangers of oxygen deficient environments such as those created when equipment is blanketed or padded with inert gas.

Storage Bins and Silos

- Storage bins and silos should be grounded and bonded to associated equipment. Additionally, they should be blanketed or padded with an inert gas such as nitrogen to reduce the risk of electrical spark, and dust explosion.
- Storage bins should be equipped with properly designed explosion relief devices.

Disposals, Spills and Cleanup

In the event of spills, the product should be recovered to the extent possible by shoveling clean product into clean containers. The residue should then be cleaned up by sweeping or collected by vacuum and placed in a container for disposal. The usual method of disposal is by incineration. Disposal method must comply with federal, state, and local regulations.

References

¹ TLV's Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with intended changes for 1979, American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio 45201.

² Permissible Exposure Limits (PEL) OSHA Safety and Health Standards (29 CFR 1910), p. 505, OSHA Publication 2206, U.S. Printing Office Stock No. 029-015-00051-1 (January 1976).

³ Fire Codes, Volumes 1-11; Recommended Practices, Volumes 12-16. National Fire Protection Association, (1979), 470 Atlantic Avenue, Boston, Mass. 02210

⁴ NIOSH Certified Equipment (1978), National Institute of Occupational Safety and Health, Division of Technical Service, Robert A. Taft Laboratories, 4676 Columbia Parkway, Cincinnati, Ohio, 45226

* Bisphenol A, "A Safety and Handling Guide" The Society of the Plastics Industry, Inc. Association of Plastics Manufacturers in Europe..

24-hour Emergency Assistance

For 24-hour emergency assistance only, call CHEMTREC at 1-800-424-9300.

Safety, Storage & Handling

Please refer to the MSDS for the most current Safety and Handling information.

Please refer to the Hexion web site for Shelf Life and recommended Storage information.

Exposure to these materials should be minimized and avoided, if feasible, through the observance of proper precautions, use of appropriate engineering controls and proper personal protective clothing and equipment, and adherence to proper handling procedures. None of these materials should be used, stored, or transported until the handling precautions and recommendations as stated in the Material Safety Data Sheet (MSDS) for these and all other products being used are understood by all persons who will work with them. Questions and requests for information on Hexion Inc. ("Hexion") products should be directed to your Hexion sales representative, or the nearest Hexion sales office. Information and MSDSs on non-Hexion products should be obtained from the respective manufacturer.

Packaging

Available in bulk and drum quantities.

Contact Information

For product prices, availability, or order placement, please contact customer service:

www.hexion.com/Contacts/

For literature and technical assistance, visit our website at: www.hexion.com

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