BA-59P™

Common plastics are made from organic materials that are derived from petroleum products; as such, they can be highly flammable. LANXESS Solutions US Inc. BA-59P™ is commonly used as a raw material in the manufacture of certain polymers in order to reduce their inherent flammability. The majority of BA-59P is used by our industrial customers in a chemical reaction where it is transformed into a material that is used to make circuit boards for electronic devices. A secondary use for BA-59P is as a flame retardant in plastics. In all use cases, BA-59P is employed because it can prevent plastic from igniting, or, if ignition does occur, will slow the spread of fire and allow for more escape and response time. BA-59P is not a consumer product and is only handled in industrial facilities designed to work with chemical substances.

Identification

The trade name BA-59P used throughout this product safety assessment is sometimes referenced by a number of other names or identifiers including:

- BA-59
- Tetrabromobisphenol A
- CAS number 79-94-7
- Tetrabrom
- TBBPA
- TBBA
- TBA

BA-59P is able to inhibit the flammability of plastics because it contains bromine, a halogen bound to an organic molecule backbone. Halogens are particularly efficient at interrupting the mechanisms that otherwise initiate and propagate fire.

Description

Production:

BA-59P is made in dedicated manufacturing units. During production, the raw materials are combined in production units designed for the manufacture of chemicals. The resulting reaction product is further refined to meet application specifications and then packaged in bulk and smaller packages for distribution to customers that use it as a flame retardant in their end products.

Uses:

The majority of BA-59P sold is used as a raw material for a chemical reaction where it is transformed into a new material that is used to make circuit boards for electronic devices. A less common use for BA-59P is as a plastic additive for plastic resins. The polymers in which BA-59P is used are based upon organic materials or are petroleum based and consequently can be highly flammable, if left untreated. In all cases, BA-59P is employed to prevent a plastic from igniting, or, if ignition does occur, to slow the spread of fire and allow for more escape and response time.

Properties: Appearance: White free flowing powder
Melting Range: 179-182 °C
Water solubility: <0.1 g/100g

Physical/Chemical Properties*:*

BA-59P is a dry white powder and can form a weakly explosive dust in air. It is very water insoluble.

Potential Human Health Effects

Health Effects:

BA-59P is safe to use in industrial settings equipped with suitable engineering controls, when appropriate personal protective equipment is worn and when proper hygiene measures are applied after use. BA-59P is not classified as hazardous by the U.S. Occupational Safety and Health Administration.

Excessive exposure to BA-59P™ is unlikely to occur under normal working conditions. In the unlikely event that high level exposure does occur, it is notable that BA-59P is not acutely hazardous. Workers subjected to high levels of this material for short time periods are not likely to be harmed.

The most likely exposure scenario for BA-59P is from dust that could form while the bags are being emptied in an industrial setting. Dust that is inhaled could irritate the respiratory system, if poor ventilation is employed or personal protective equipment is not worn and the dust is inhaled. Dust in the air could land in the eye as a particulate where it could abrade and irritate the eye.

Just as with aspirin, water, alcohol, bathroom cleaner and other commonly used chemicals and materials, BA-59P does have an inherent level of toxicity that must be understood and safeguarded against through the use of engineering controls, personal protective equipment and appropriate procedures. The safety data sheet is the best resource to consult for understanding the health hazard risks associated with an BA-59P.

No known negative health effects exist for users of products containing BA-59P whether transformed into another material or when employed as an additive flame retardant bound within a plastic substrate matrix.

Industrial Use:

BA-59P is used in well-controlled manufacturing facilities by people trained in the hazards of polymer additives and chemicals using best practice techniques developed to minimize dusting and exposure. Typically, processing sites utilize engineered systems to minimize the potential for exposure to all the chemicals used in the process. An unplanned release or spill of BA-59P is not likely to represent an acute life-threatening situation, due to its relatively benign chemical and toxicological characteristics. In any spill or release incident, all non-essential personnel are immediately evacuated upwind of the spilled material. All personnel involved with correcting a spill situation are trained and properly equipped with the required personal protective equipment.

Consumer Use:

It is very unlikely that consumers would be exposed to BA-59P in its concentrated powder form, because it is only sold for industrial use to make plastics and is not a consumer product. BA-59P that has been reacted to form a new material has been transformed though the process of making the resin and, consequently, no consumer exposure is possible. Risk assessments by various global governments indicate that BA-59P embedded within a polymer matrix does not represent a significant risk to consumers.

Environmental Release:

When used in an industrial setting, BA-59P is typically handled using engineered systems designed to minimize any release to the environment.

Powdered BA-59P that has been spilled can be collected in plastic or metal drums. Soils contaminated with BA-59P should be collected and properly disposed of.

Physical Hazards

BA-59P is a dry white powder and can form a weakly explosive dust in air. It is very water insoluble.

Potential Environmental Impact

Environmental Fate Information:

BA-59P powder that is released into the environment is not expected to readily biodegrade. Proactively taking steps to minimize release of BA-59P powder into the environment follows industry best practice. BA-59P powder that has been embedded into a polymer matrix is not readily released into the environment. BA-59P that has been reacted and transformed into a resin for circuit board manufacture cannot be released into the environment as BA-59P, because it no longer exists as the same substance and has combined with other materials to make a new plastic.

Aquatic and/or Terrestrial Toxicity:

Releases of BA-59P into the aquatic or terrestrial environment should be avoided. BA-59P is classified as being toxic towards aquatic organisms. Soils containing BA-59P should be remediated to remove all traces of the chemical.

Product Stewardship:

Manufacturing locations:

Facility management procedures, safety data sheets (SDS), technical guidance documents, and training are available to communicate safe handling, risk mitigation measures and emergency response information

requirements to employees at manufacturing locations. Appropriate local exhaust ventilation and personal protective equipment should be used in the industrial locations where BA-59P is handled.

Environment:

Managing emissions during manufacture and processing of polymer additives is the focus of the Voluntary Emissions Control Action Program (VECAP), a product stewardship initiative introduced and managed by major manufacturers of treatments to reduce the flammability of plastic products. VECAP is used by our industry to partner with the supply chain to understand, control and reduce releases into the environment through application of best practices.

LANXESS Solutions US Inc. further recommends that solid waste and packaging waste be either incinerated with an adequate gas cleaning system or sent to a controlled landfill.

Consumers:

Consumers are not exposed to BA-59P distributed by LANXESS Solutions US Inc., because we do not sell it directly to consumers.

LANXESS Solutions US Inc. conducts an ongoing analysis of its products to evaluate potential risk areas throughout the product's life cycle. Chemical risks are identified at the very early stage of new products. They are evaluated by stage-gated reviews using environmental, health and safety (EHS) criteria. The analysis of existing products will evaluate raw materials, manufacturing, transportation, customer end-use and disposal. Additionally, before changes in existing product formulations are made, a detailed evaluation is made of the proposed change. A critical component of all of these processes is the Safety Data Sheet, which lists detailed product hazard information.

In the context of a continually improving risk-reduction program, periodic reviews of current controls occur in order to identify opportunities for improvements or enhancements. This includes adaption of existing procedures to changes in regulations (e.g., covering workplace and transportation).

Conclusion

BA-59P™ is a substance with a unique ability to reduce flammability of certain plastics and other organic materials in a manner that maintains the needed performance characteristics. Though there are potential

hazards associated with these materials, they are only handled by highly trained people in manufacturing environments utilizing specialty equipment, safety controls, and personal protective equipment.

Contact Information

LANXESS Solutions US Inc.

www.LANXESS.com

Notices

Use and Application Information

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.