LANXESS
Energizing Chemistry

Diphenylamine

Identification

- Product name: Diphenylamine
- DPA;
- N,N-Diphenylamine;
- N-Penylbenzeneamine;
- DFA;
- Anilinobenzene
- CAS # 122-39-4

Description

Diphenylamine (DPA) is a chemical widely used as an antioxidant for lubricants, propellants and explosives. It is also an important intermediate in the dye, agrochemical, pharmaceutical, and rubber and plastic additive industries. Derivatives of DPA are used as antioxidants and antiozonants to retard the degradation of the products into which they are incorporated: rubber, urethanes and plastics. DPA is available in bulk (molten) or chip form. DPA Chip meets USA Military Specification D-98A.

DPA has numerous Food and Drug Administration (FDA) clearances. For instance, it is used for surface treatment of apples, both pre- and post-harvest, for the prevention of scald disorder. It protects the apple skin on the tree and during storage. Derivatives of DPA are used to make pharmaceuticals and many other products that benefit our health and our daily lives. Compounds made from DPA are used in laboratories to detect DNA.

Physical/Chemical Properties:

Diphenylamine is a solid crystalline organic compound with a floral odor. It can be off-white, tan or possibly brown/amber. The material's color is dependent on the amount and length of exposure to air and light. It is insoluble in water. DPA is reactive with oxidizing agents.

DPA is a stable material under normal storage and use conditions. It may be combustible at high temperature. DPA is considered slightly flammable to flammable in the presence of open flames and sparks and slightly explosive in the presence of open flames and sparks. The product is not flammable or explosive in the presence of shocks.

Health Effects:

DPA is hazardous in case of skin contact, as both a potential irritant and through skin absorption. The material can also be an eye irritant and hazardous, if inhaled or ingested. Inhalation may cause respiratory tract irritation with coughing and sneezing. It is absorbed through the respiratory tract and may cause effects similar to those of acute ingestion. If ingested, it may cause digestive tract irritation. DPA is readily absorbed orally. It may affect behavioral/central nervous system functions, respiration and blood. Excessive overexposure may cause irritation of the mucous membranes, methemoglobinemia, and liver and renal effects. DPA may cause red blood cell damage. Severe overexposure can result in death.

The substance may be toxic to blood, kidney, liver, and bladder. Repeated or prolonged exposure to DPA can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. DPA may cause birth defects (teratogenic) based on animal test data.

Potential Environmental Impact

Avoid the material's entry into waterways and sewer systems. Diphenylamine is classified as a marine pollutant. The products of degradation are less toxic than the product itself.

Product Stewardship:

It is important to refer to the Safety Data Sheet and information contained on the container label. As DPA is air and light sensitive, protect from air and light by keeping in light-proof containers with all containers tightly closed and stored in a dry, well-ventilated location.

Personal protective equipment, including appropriate chemical resistant gloves, goggles, dust respirator, and protective clothing, should be worn when handling DPA. Other situations of use, including the handling of large spills, may require full face mask, full suit, boots and self-contained breathing apparatus. Consult a specialist before handling DPA. Use appropriate engineering controls to keep airborne levels below the recommended exposure limits. If user operations generate dust, fume, or mist, use ventilation to keep

exposure to airborne contaminants below the exposure limit.

Do not touch spilled material. Vapors are reduced by the use of water spray on the spill. Dike if needed. Eliminate all ignition sources. Prevent entry into sewers, waterways and confined areas.

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.

Potential product risks are reviewed according to current controls. 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).

Exposure Potential:

Worker routes of entry are skin, inhalation and ingestion. Prolonged or repeated exposure may increase the potential health effects and the potential for some effects to become chronic.

Personnel must be mindful of the exposure limits established by OSHA, ACGIH, NIOSH, and other national and local authorities. The latest limits need to be consulted and adhered to for inhalation exposure.

Contact Information

For more information, please contact us by our web site: http://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.