LANXESS
Energizing Chemistry

N-Isopropyl-N'-phenyl-p-phenylenediamine

This document provides a brief description of N-Isopropyl-N'-phenyl-p-phenylenediamine, its uses, and the potential hazards associated with short and long term exposure. Environmental impact information for accidental releases is included. This information is general in nature and is not intended as a replacement for the safety data sheet (SDS), product label and other safe handling literature. For additional information consult the LANXESS safety data sheet.

Identification

Product Name:	Vulkanox 4010 NA/LG
Chemical Name:	N-Isopropyl-N'-phenyl-p-phenylenediamine
Synonym(s):	4-Anilino-N-isopropylaniline 4-(Isopropylamino)diphenylamine IPPD
CAS Number:	101-72-4

Description

Overview: N-Isopropyl-N'-phenyl-p-phenylenediamine is dark (brown to violet) in color and solid at ambient temperatures. The chemical compound has a characteristic, pungent odor and is sold in flake or granule form.

Uses: N-Isopropyl-N'-phenyl-p-phenylenediamine is manufactured by LANXESS primarily for use as an antioxidant or antiozonant in the production of tires, belts, hoses and other rubber products. It is also used as a fuel additive and as an intermediate in the production of plastics.

Properties:

Melting Point:	> 167°F (75°C)
Boiling Point:	Approx. 428°F (220°C)
Flash Point:	> 392°F (202°C)
Solubility in Water:	Slight

Potential Human Health Effects

Occupational Exposure

Potential for occupational exposure exists during manufacture, at transloading facilities, during transfers to storage and staging areas and during the charging of mixers at operations using the product in the manufacture of rubber goods. A much lower potential for exposure exists in facilities using the chemical in closed manufacturing processes by trained personnel.

Employee Training

Workers handling N-Isopropyl-N'-phenyl-p-phenylenediamine are trained to implement proper handling procedures and to understand the potential health and physical hazards of this product. A NIOSH approved respirator is recommended for transloading, unloading and other operations not contained within a closed system. In addition, LANXESS recommends that goggles, permeation resistant clothing, gloves and foot protection be worn when handling N-Isopropyl-N'-phenyl-p-phenylenediamine.

Consumer Exposure

LANXESS does not sell this product to the general public. Rubber goods manufactured using N-Isopropyl-N'-phenyl-p-phenylenediamine as an antidegradant retain the substance in encapsulated form in the final product. Persons susceptible to allergic skin reactions may experience contact dermatitis as a result of direct contact with such products.

Short-Term Health Effects

Short-term skin contact is not expected to be irritating, although susceptible individuals may experience an allergic skin reaction. Symptoms include redness, itching, swelling and rash. N-Isopropyl-N'-phenyl-p-phenylenediamine dust may be irritating to the eyes, with symptoms of redness, tearing and stinging. Inhalation of N-Isopropyl-N'-phenyl-p-phenylenediamine dust may cause respiratory tract irritation with symptoms of coughing, sore throat and runny nose. Symptoms of ingestion may include abdominal pain, nausea, vomiting and diarrhea.

Exposure to sufficient quantities of N-Isopropyl-N'-phenyl-p-phenylenediamine may result in recurrent vomiting, followed by swelling in the face, neck and throat. Extreme cases may result in methemogobinemia, a temporary condition that reduces the ability of blood to carry oxygen, breathing difficulty, airway obstruction, tremors, seizures or respiratory failure.

Long-Term Health Effects

Long-term or repeated skin contact may result in sensitization. Symptoms include dermatitis, a burning sensation or pain in the affected area. In severe cases these symptoms may progress to include an elevated heart rate and/or swelling in the face, neck and throat with accompanying risk for respiratory failure. Repeated or long-term eye contact may cause sensitivity to light and/or conjunctivitis. Cornea damage and permanent vision loss may occur.

Chronic inhalation or ingestion may result in liver damage.

Physical Hazards

N-Isopropyl-N'-phenyl-p-phenylenediamine is stable under normal conditions of use. Avoid contact with strong oxidizing agents. High concentrations of N-Isopropyl-N'-phenyl-p-phenylenediamine dust particles may form explosive mixtures with air. Heating to decomposition may release carbon monoxide, carbon dioxide, nitrogen oxides and other potentially harmful compounds. Exposure to heat, open flames and other potential sources of ignition should be avoided.

Potential Environmental Impact

N-Isopropyl-N'-phenyl-p-phenylenediamine degrades rapidly with exposure to light and air. An accidental release to water will degrade through hydrolysis, but the byproducts of degradation may persist in suspended soils and sediments, with moderate potential for bioaccumulation in aquatic organisms. N-Isopropyl-N'-phenyl-p-phenylenediamine may pose a danger to fish (high toxicity), invertebrates (high toxicity) and plants (high toxicity) prior to degrading.

Conclusion

Under normal conditions of anticipated use as described in this Product Safety Assessment, and if the recommended safe use and handling procedures are followed, N-Isopropyl-N'-phenyl-p-phenylenediamine is not expected to pose a significant risk to human health or the environment.

References

N-Isopropyl-N'-phenyl-p-phenylenediamine Screening Information Data Set (SIDS), Organization for Economic Cooperation and Development

International Chemical Safety Card, International Programme on Chemical Safety (IPCS)

Safety Data Sheet (SDS), Vulkanox 4010 NA/LG (I), LANXESS Corporation

MedlinePlus Medical Encyclopedia, U.S. National Library of Medicine and the National Institutes of Health

Substituted p-Phenylenediamines Category Justification and Testing Rationale, Rubber and Plastics Additives Panel, American Chemistry Council (ACC)

ToxNet Hazardous Substances Data Bank, U.S. National Library of Medicine, National Institutes of Health and the U.S. Department of Health and Human Services

Contact Information

LANXESS Corporation, Product Safety & Regulatory Affairs, 111 RIDC Park West Drive, Pittsburgh, PA 15275-1112, USA, Phone 1-800-526-9377 [1-800-LANXESS]

Notices

Use and Application Information