



Kemai Chemical Co., Ltd. 科迈化工股份有限公司

No.72 Hai Xin Road, Gu Lin Industrial Zone, Da Gang Dist., Bin Hai New Area, Tianjin, P.R. China.

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Material Safety Data Sheet

Revision Date: 12/13/2014

Date of Printing: 12/13/2014

IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Chemical Name: N- (1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine

Common Name: 6PPD

Supplier KEMAI CHEMICAL CO., LTD.

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Intended use Antioxidant

PRODUCT IDENTIFICATION

Chemical Name: N- (1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine

Common Name: 6PPD

CAS No.: 793-24-8

DOT Proper Shipping Name: Not Applicable

DOT Hazard Class/ I. D. No.: Not Applicable

DOT Label: Not Applicable

U. S. Surface Freight Classification: Rubber Preservative, N. O. I. B. N. reportable Quantity (RQ) (40 CFR Part 117)

Under Clean Water Act Regulation: Not Applicable

This substance is identified as a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910. 1200)

WARNING STATEMENTS

May cause allergic skin reaction.

Hot material causes thermal burns to eyes and skin



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PRECAUTIONARY MEASURES

Avoid prolonged or repeated contact with skin.

Avoid contact with hot liquid.

Avoid breathing vapor

Wash yourself thoroughly after handling.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is or destroyed. Do not reuse this container.

EMERGENCY AND FIRST AID PROCEDURES

FIRST AID: If on skin, immediately wash with soap and plenty of water. If in eyes, immediately flush with plenty of water. Remove contaminated clothing. Wash clothing before reuse.

If splashed by molten material, cool skin quickly with water, use first aid for burns and call physician.

Incase of spill or leak: If pastilles, vacuum or sweep up and place into dry, clean, covered containers. If liquid, absorb on sand, earth or sawdust and shovel into containers. Keep this material out of sewers, watersheds and waterways. (See “spill, leak & disposal information” section)

Eye Protection: Antioxidant 6PPD causes only slight eye irritation. No special protection is required. Avoid eye contact as good industrial practice.

Skin Protection: Wear appropriate protective gloves that provide a barrier and protective clothing to prevent skin contact. Consult glove manufacturer to determine appropriate type glove for given application. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash yourself thoroughly after handling.

Attention! Repeated or prolonged contact may cause allergic skin reaction in some people.

Respiratory protection: Avoid breathing mist or dust of this material. Use NIOSH/MSHA approved equipment when airborne exposure is excessive (see information under Airborne Exposure Limits, Below). Consult respirator manufacturer to determine appropriate type equipment for given application. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed. High airborne concentrations may require use of self-contained breathing apparatus or supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

Ventilation: Provide sufficient ventilation to minimize exposure (see information under Airborne Exposure Limits, below). Use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Airborne Exposure Limits:

Product: N- (1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine



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Although OSHA and ACGIH have not established specific exposure limits for this material, they have established the following limits for nuisance dusts:

OSHA PEL/8-hour Time-weighted average: total 15 mg/m³ Respirable 5mg/m³

ACGIH TLV/8-hour Time-weighted average: total 10 mg/m³ Respirable 5mg/m³.

These limits are stated only to indicate the least stringent airborne dust exposure levels applicable to nuisance dusts. Note: Antioxidant 6PPD may cause allergic skin reaction at exposure concentrations below these limits.

FIRE PROTECTION INFORMATION

Flash point: 400⁰ F

Method: Cleveland open Cup

Extinguishing Media: Water spray, foam, dry chemical, carbon dioxide or and Class B extinguishing agent. Use water spray to keep exposed containers cool.

Special firefighting Procedures: Firefighters and others exposed to products of combustion (see "hazardous Decomposition Products" below) should wear full protective clothing including self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

Unusual Fire and Explosion Hazards: Hazardous products of decomposition include carbon monoxide and nitrogen oxides.

REACTIVITY DATA

Thermally stable to 300°C

Materials to Avoid: Strong-oxidizing materials such as hydrogen peroxide and chlorine.

Conditions to Avoid: If strongly heated, may catch fire and give off toxic fumes.

Hazardous Decomposition products: If strongly heated, this material may catch fire and release toxic fumes of nitrogen oxides and carbon monoxide.

HEALTH EFFECTS SUMMARY

The following information presents both human experience and results of science experiments, used by qualified experts to assess the effects of Antioxidant 6PPD on the health of industrially exposed individuals and to support the Precautionary Measures and Occupation Control Procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

Human Experience

Dermal contact and inhalation expected to be the primary routes of occupational exposure to Antioxidant 6PPD. Repeated contact with this material may cause allergic skin reaction in susceptible individuals. On the basis of available information, Antioxidant 6PPD is not



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expected to produce significant adverse human health effects when safety precautions recommended to minimize exposure are followed.

Toxicological Data

Data from Monsanto studies indicate the following:

Oral LD50 (Rabbit): >7,940 mg/kg, Practically Nontoxic

Eye irritation (Rabbit): (FHSA) 1.2 on a scale of 110.0, Slightly Irritating

Skin Irritation (Rabbit): (FHSA) 0.0 on a scale of 8.0. Nonirritating

In a patch test involving 50 human volunteers Antioxidant 6PPD, in a 50% weight/volume mixture in dimethylphthalate, produced no reactions following initial application. However, 5 of the volunteers demonstrated reactions during the 15 subsequent serial applications; 5 of 50 individuals reacted to rechallenge with the material 2 weeks after the serial applications. Antioxidant 6PPD is not considered a primary skin irritant but may be a cumulative irritant and skin sensitizer.

Patch testing of 94 human volunteers with a 1% concentration of Antioxidant 6PPD in petrolatum produced no positive reactions following a series of 10 alternate day applications or upon subsequent rechallenge with the material 2 weeks later.

The potential for Antioxidant 6PPD to produce allergic skin reactions was tested in a series of repeat patch tests in which human volunteers were exposed to compounded rubber stock containing varying concentrations (0.7-2.7 phr) of Antioxidant 6PPD. The results from these studies ranged from and absence of irritation or allergic response to the presence of sensitization reactions: these differences in responses may be due to the presence of other chemicals in the rubber stores tested.

Antioxidant 6PPD was fed to rats at dietary concentrations of 100, 300, and 1,000 ppm for 24 months. Depressed body weights were observed in all high-dose animals during the initial weeks of the study and in high-dose females throughout the remainder of the study. Some hematology values (hemoglobin, hematocrit, RBC) were significantly different for high-dose males and/or females during the study. No increase in neoplastic or non-neoplastic lesions occurred in treated animals. The no-effect level is considered to be 300 ppm.

No teratogenic or maternally toxic effects were observed in rabbits administered Antioxidant 6PPD at 10 and 30 mg/kg/day on days 5 through 18 of gestation. A fetotoxic effect was evidenced by an increased number of resorptions in the high-dose group.

Administration of Antioxidant 6PPD at dietary concentration of 100, 300 and 1,000 ppm to male and female rats for 3 successive generations produced no adverse effects on fetal, pup or adult survival or on mating or fertility indices.

Antioxidant 6PPD was evaluated in the 15178Y TK mouse lymphoma mutation assay and in microbial mutagenicity assays. The microbial assays used five Salmonella strains and one Saccharomyces yeast strain. No mutagenic effects were observed.



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PHYSICAL DATA

Appearance: Dark purple pastille

Odor: Aromatic

Melting point: $\geq 44^{\circ}\text{C}$

Viscosity @ 60°C , SUS: 135-170

Specific Gravity @ 60°C : Approximately 1.0

Partition Coefficient (Octanol/Water): $59,000 \pm 34,000$

Solubility in Water: Insoluble

In Acetone: Soluble

Note: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications from the product.

SPILL, LEAK & DISPOSAL INFORMATION

Waste Disposal: When discarded, Antioxidant 6PPD is not a "hazardous waste" as that term is defined in 40 CFR 261. "Identification and Listing of Hazardous Waste." Burn in an approved incinerator or in an approved chemical landfill in accordance with all applicable local, state and federal laws and regulations. Consult your attorney or appropriate regulatory official for information on such disposal.

Spill or Leakage Procedures: If pastilles, vacuum or sweep up material and place into dry, clean, covered containers. If liquid, absorb on sand, earth or sawdust and shovel into containers. Contaminated area should be washed. Keep this material out of sewers, watersheds and waterways.

Containers: Burn in an approved incinerator or dispose of in an approved chemical landfill in accordance with all applicable local, state and federal laws and regulations.

ADDITIONAL COMMENTS

Do not store Antioxidant 6PPD in bulk above $50^{\circ}\text{C}/122^{\circ}\text{F}$ for prolonged period of time, to avoid oxidation and loss of activity. Use a nitrogen blanket when bulk storage time at maximum temperature will be greater than one month. In sealed drums Antioxidant 6PPD has excellent storage stability at storage temperatures below $35^{\circ}\text{C}/95^{\circ}\text{F}$. Storage area should be dry and protected from excessive heat and excessive exposure to air, to prevent degradation. Keep partially used containers closed. Shelf life is dependant on the temperature of storage and extent of exposure to air.

Environmental Toxicity Information:

96-hr LC50 Trout: 0.14 mg/l, Highly Toxic



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96-hr LC50 Bluegill: 0.4 mg/l, Highly Toxic

96-hr LC50 Fathead Minnow: 0.45 mg/l, Highly Toxic

48-hr LC50 Daphnia: 0.82 mg/l, Highly Toxic

96-hr EC50 Algae, Cell Count: 0.6 mg/l, Highly Toxic

*** END OF MSDS ***

