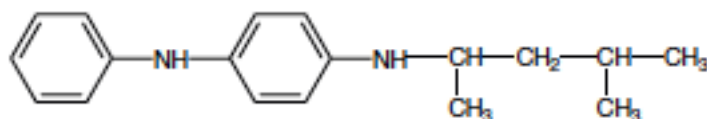


Castle Chemicals

PRODUCT SPECIFICATION



Product Name	6PPD
Chemical Name	N-(1,3-Dimethylbutyl)-N'-phenyl-pphenylenediamine
CAS Reg. No.	793-24-8
Molecular weight	268

FUNCTION

6PPD functions as a powerful antioxidant and antiozonant for natural and synthetic elastomer compounds and as a synthetic polymer stabilizer. 6PPD provides protection against fatigue degradation in both static and dynamic operating conditions.

MAJOR APPLICATIONS AND PROPERTIES

6PPD applications include the use in pneumatic tire components, solid tires, belts, hoses, cables, automotive mounts, bushings and general mechanical products that are exposed to continuous and intermittent dynamic operating conditions and require protection from ozonation.

6PPD provides powerful antiozonant and antioxidant properties with excellent high temperature, fatigue and flex resistance to rubber compounds.

It gives efficient stabilization for a wide range of solution and emulsion polymers.

6PPD is a more active antioxidant than quinoline or diphenylamine based antioxidants.

6PPD gives better long term fatigue resistance and ozone protection than IPPD. Due to its specific molecular structure and higher rubber solubility, it is less affected by environmental variables, such as heat or leaching, leading to greater durability.

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6PPD gives rubber protection against catalytic degradation by copper and other heavy metals.

The product has no negative effects on compound adhesion to textiles or steel cord up to levels of 2 phr. Above this concentration it may bloom and interfere with ply to ply and ply to cord adhesion.

It will discolor compounds and cause severe contact and migration staining.

Santoflex 6PPD is regulated for use in articles in contact with food as specified under BgVV XXI, Categories 3-4. 6PPD is not regulated for use in FDA food contact applications.

COMPOUNDING INFORMATION

Add 1-3 phr of 6PPD to rubber compounds for resistance to ozone and flex fatigue. Increasing the concentration, increases the level of protection. To provide maximum performance in static applications include a blended wax in the compound formulation, appropriately chosen for the application's temperature range. 6PPD can also be used for oxidation resistance alone. Its antioxidant performance is maximized at 0.5 phr. Higher levels actually reduce antioxidant protection even though ozone and flex fatigue resistance increase with higher levels.

Adding Flectol TMQ will maintain a compound's resistance to oxidation as well as protect 6PPD from oxidizing, thus further enhancing long term performance. To protect NBR compounds from ozone attack use 4 phr of 6PPD. It will also help protect polychloroprene but can reduce bin storage stability. To stabilize solution or emulsion polymerized elastomers add 0.3 to 0.6% (dry basis) of 6PPD.

Typical use information (phr):

	Tire sidewall	Brassed steel cord skim	NR/SBR conveyor belt cover	NR/SBR V-belt	NR engine mount
6PPD	2 – 4	2	1 – 2	2	1 - 2
Flectol TMQ	1 – 2	-	1	-	0 - 1
Antiozonant wax	1 – 3	-	-	-	-

Note: No PPD should be used at levels less than 1 phr in surface applications, as the ozone cracking pattern produced can lead to catastrophic failure.

HANDLING PRECAUTIONS

For detailed information on toxicological properties and handling precautions please refer to the current Safety Data Sheet.

STORAGE RECOMMENDATIONS

Store 6PPD pastilles in single stacked pallets in a cool, dry, well ventilated area, avoiding exposure of the packaged product to direct sunlight. Double stacking of palletized material and/or exceeding 35°C can result in unusual compaction of product.

Store 6PPD liquid in a covered vessel between 50°C and 60°C. If material is to be stored for greater than 30 days or at temperature higher than 60°C the vessel should contain a nitrogen blanket to prevent the product from oxidizing, which will reduce its usefulness as an antiozonant. Do not store material above 75°C for more than 90 days. In bulk storage, continuous circulation will help minimize temperature gradients in the tank and reduce

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heating element fouling, thus maximizing the product's consistency.

PRODUCT INFORMATION

6PPD	liq	pst
Product form	liquid	pastilles

Product Specifications

Test Method

Appearance	purple brown liquid	off white to dark purple brown pastilles	FF97.5
Purity (GC) (%) min.	95.0	95.0	FGC97.10
Heat loss (%) max.	0.5	0.5	FGr97.7
Ash (%) max.	0.1	0.1	Fgr90.9

Typical Properties

Melting point, final (°C)	46 – 51	46 - 51
Viscosity at 60°C (cSt)	27 – 38	27 - 38
Specific gravity at 60/15°C	0.986 – 1.000	0.986 – 1.000

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