



Designation: D6440 – 05

Standard Terminology Relating to Hydrocarbon Resins¹

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1. Scope

1.1 The hydrocarbon resin industry continues to evolve from a source of replacement products for naturally-derived materials to industrial materials that have no naturally-derived counterparts. Along with this changing character of the industry, various manufacturing participants have introduced terms that have led to confusion among both manufacturers and consumers. This terminology standard is intended to alleviate that confusion and promote standard usage of terms in the hydrocarbon resin industry.

1.2 Resins derived principally from natural terpene fractions are under the jurisdiction of D01.34.

2. Terminology

2.1 Definitions:

C₅ aliphatic resin, *n*—a resin produced by the cationic polymerization of a low-boiling aliphatic steam-cracker fraction.

DISCUSSION—The principal monomers are typically *cis*- and *trans*-piperylene (1,3-pentadiene).

C₉ aromatic resin, *n*—a resin produced by the cationic polymerization of heavy aromatic steam-cracker or coal-tar fractions.

DISCUSSION—The C₉ designation is broad and may include styrene, indene, methylstyrenes, and methylindenes. Depending on the source of the C₉ fraction, it may also include coumarone and dicyclopentadiene.

cloud point, *n*—the temperature at which a defined liquid mixture, under controlled cooling, produces perceptible haze or cloudiness due to the formation of fine particles of an incompatible material.

dicyclopentadiene resin, *n*—a resin produced by the thermal polymerization of a concentrated dicyclopentadiene stream.

¹ This terminology is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.16 on Terminology.

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hydrocarbon resin, *n*—*in the context of such applications as adhesives, inks, coatings, flooring and roofing formulations, and rubber processing aids*, a thermoplastic, low-molecular-weight, amorphous polymer that is either mined, or made primarily from one or more of the following: certain steam-cracked petroleum fractions, coal-tar fractions, terpene fractions, and streams rich in unsaturated monomers that typically have five or more carbon atoms.

DISCUSSION—Typical hydrocarbon resins are brittle solids at room temperature, chemically similar semi-solid and liquid materials are included by association. This term also covers derivatives of hydrocarbon resins.

hydrogenated resin, *n*—a resin that has been subjected to some degree of reaction with hydrogen to decrease the level of residual unsaturation.

natural resin, *n*—a resin of vegetable or animal origin.

DISCUSSION—This term includes rosins, wood extracts or paper manufacturing by-products, fossil resins, mined resin, secretion products from insects, and their main derivatives. In the context of hydrocarbon resins, this refers to mined bituminous resins.

polyterpene resin, *n*—a resin produced by the polymerization of terpene fractions or mixtures of terpenes obtained from naval stores, or paper pulp production, or citrus juice production, or combinations thereof.

DISCUSSION—Terpene fractions (turpentine oils) can be derived from gum turpentine, wood turpentine, or sulfate turpentine; citrus juice production yields a *d*-limonene fraction as an extract of the peel.

pure monomer resin, *n*—a resin produced by the polymerization of essentially pure compounds such as styrene, one of the methylstyrenes, or controlled mixtures of pure monomers.

re-mass, *v*—to form, during storage, massive blocks from particulate forms, such as flakes, pastilles, or powder.

DISCUSSION—Re-massing can occur with all resins but is influenced by storage temperature, and pressure, due to stacking; the lower softening point resins re-mass at lower temperatures. Particle size distribution can also have a significant effect.

reinforcing resin, *n*—a resin that associates with the aromatic blocks of block co-polymers and raises the upper service temperature of an adhesive blend.