



Terminology Relating to Naval Stores, Including Tall Oil and Related Products¹

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1. Scope

1.1 Although the naval stores industry has been a continuing producer of chemical products for many centuries, the nature of the industry, its products, and its terminology have changed. In particular, the original practice of recovering naval stores through the processing of the exudate from pine trees (gum naval stores) has been supplemented by their extraction by solvent (wood naval stores) and by wood pulping chemicals (sulfate naval stores). Thus, this terminology contains some old terms now mostly of historic value, together with the terms of the modern naval stores industry.²

2. Terminology

abietic acid, commercial grade, *n*—a product consisting chiefly of rosin acids in substantially pure form, separated either from rosin or tall oil commercially for specific purposes and in which abietic acid and its isomers are the principal components.

colophony, *n*—a term denoting medium and high grades of rosin.

crude stripper oil, *n*—a by-product of the manufacture of citrus juice, composed largely of d-limonene and containing up to 1.5 % of aldehydes. (See also **d-limonene**.)

dipentene, *n*—chemically defined as the optically inactive form of the monocyclic terpene hydrocarbon limonene.

DISCUSSION—Commercial dipentenenes contain substantial portions of other monocyclic and bicyclic, as well as some oxygenated, terpenes having closely related boiling ranges. They are generally obtained by fractional distillation from crude oils recovered in the several commercial methods of utilizing pine wood, also by isomerization during the chemical processing of terpenes. There is no legal requirement under the Naval Stores Act that the source, origin, or kind of dipentene be shown in the commercial designation. Consequently, coined trade names are sometimes used in selling this product. The four kinds of commercial dipentene are:

chemically processed dipentene, *n*—recovered as a product

or a by-product in connection with the chemical treatment and conversion of other terpenes.

destructively distilled dipentene, *n*—from the lighter portions of the oil recovered during the destructive distillation of pine wood.

steam-distilled dipentene, *n*—fractionated from the crude oleoresinous extract during the processing of related steam-distilled wood naval stores.

sulfate dipentene, *n*—from the crude condensate of the vapors generated in the digestion of wood in the sulfate paper pulp process.

ester gum, *n*—a resin made from rosin and a polyhydric alcohol, generally glycerol or pentaerythritol.

gloss oil, *n*—a solution of limed rosin or limed rosin acids in a volatile solvent, used chiefly in surface coatings. (When made from tall oil, the source is usually indicated.)

d-limonene, *n*—a purified optically active terpene hydrocarbon recovered from by-products of the citrus industry.

DISCUSSION—It is used as a chemical intermediate and as a monomer in terpene resins.

metallic resinates, *n*—rosin in which part or all of the rosin acids have been chemically reacted with those metals that give soaps or salts which are water insoluble.

DISCUSSION—Limed rosin, zinc-treated rosin, and the resinates of lead, cobalt, copper, and manganese, are of the greatest industrial importance.

modified rosin, *n*—rosin that has been treated with heat or catalysts, or both with or without added chemical substances, so as to cause substantial change in the structure of the rosin acids, as isomerization, hydrogenation, dehydrogenation, or polymerization, without substantial effect on the carboxyl group.

DISCUSSION—The following are types of modified rosin:

disproportionated (dehydrogenated) rosin, *n*—rosin that has been subjected to chemical or physical treatment, or both, so as to cause substantial simultaneous hydrogenation and dehydrogenation of the rosin acids to form their hydrogenated and dehydrogenated counterparts.

heat-treated rosin, *n*—rosin in which a reduction of acid number and a positive shift in optical rotation has been brought about by controlled heat treatment only, in order to improve its suitability for specific uses.

hydrogenated rosin, *n*—rosin that has been treated with hydrogen under conditions that cause a partial or complete saturation of the resin acids

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 D01.34 on Naval Stores.

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² Zinkel, D. F., and Russell, J., eds., *Naval Stores: Production, Chemistry and Utilization*, Pulp Chemicals Association, NY, 1989.