

# LIST OF REFERENCES TO THE LITERATURE ON TALL OIL

(Tallol, Liquid Rosin, Pine oil, or  
Black Liqueur Soap)

(Report)



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LIST OF REFERENCES TO THE LITERATURE ON TALL OIL  
(TALLIOL, LIQUID ROSIN, PINE OIL OR BLACK LIQUOR SOAP)

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## LIQUID ROSIN (TALL-OIL)

### Manufacture

Liquid rosin is a byproduct obtained in the manufacture of sulphate pulp from pine (pine = "tall" in Swedish), hence the name "Tall-Oil" that is often used in as a commercial term. A soap is separated from the waste liquor and the liquid rosin is obtained from the soap through precipitation with sulphuric acid or sodium bi-sulphate solution.

### Constituents

The composition of liquid rosin is not constant due to variations in the contents of resinous and fatty acids in the wood. Ordinary liquid rosin usually tests as follows:

	Percent
Water.....	0.5 - 2.0
Unsaponifiable matters.....	8.0 -11.0
Resinous acids.....	35.0 -45.0
Fatty acids.....	45.0 -55.0

Usually it is sold as about 90 percent saponifiable.

Liquid rosin is a dark-brown and thickish oil, at times somewhat cloudy and at times with a sediment of small crystals of resin. Due to certain sulphurous matters it has a characteristic smell.

### Purification

The smell can be improved to a high degree through treatment with oxidating agents or through partial hydration.

Usually the rosin is, however, purified through distillation in vacuum with or without steam. It is then divided into the following fractions:

	Abt. Percent
Fuel-oil.....	5
Fatty acids (refined tall-oil)..<	45
Solid rosin.....	20
Pitch.....	30

The quantities of these distillation products, as well as the quality, vary according to the composition of the crude rosin and the manner in which the distillation has been carried out.

## Uses

The products obtained by distilling crude rosin have all found their uses.

The refined tall-oil (fatty acids) is the most valuable part. This product still contains some resinous acids but it consists mainly of fatty acids such as palmitic, oleic and linoleic acid. The refined tall-oil is light-yellow in color and is free from disagreeable smell. It is used in the manufacture of hard and soft soap. It can be transferred into solid fatty acids by hydration and can be used to substitute more expensive vegetable and animal fats. An oil of linseed oil type can be produced through esterification with glycerine. After a sickative is added it will dry easily and can be used as a substitute for linseed oil in the manufacture of varnish. Such esterified tall-oil is for sale in Germany.

The rosin obtained through distillation comes in crystalline form but can be transferred into an amorphous state by smelting. It is very similar to ordinary colophonium, but the melting point is somewhat higher. It can be used to advantage in the manufacture of rosin-size, especially according to the Delthirna method.

The pitch obtained by distillation varies in composition depending upon the point to which the distillation has been carried out. It has found many uses such as for lac-varnish and in the manufacture of printers' ink. It is also used as a substitute for asphalt in road building and for similar purposes.

Liquid rosin is used without purification for several purposes, such as asphalt emulsions for road building. Other uses for liquid rosin, as well as for the distillation products, are as oil for moulding cores, bore-oil and disinfectants, also for impregnation and in the manufacture of washing soap for sheep and cattle.

A very valuable ingredient of liquid rosin (2-3 percent) is phytosterine, an alcoholic compound of high molecular weight, which generally is found in animal and vegetable fats. Phytosterine can be obtained in crystalline form and is an extremely good agent for emulgation of vaseline, grease etc., so it ought to find a considerable use for medicinal and cosmetic purposes as well as in the manufacture of marina oil. The possibility of using phytosterine, in a purified state, in the manufacture of vitamins and hormone preparations is not precluded.

—Swedish Wood Pulp Journal,  
December 31, 1937.