

60250 Benzoin

(from "Pitman's Common Commodities and Industries, GUMS & RESINS – by Ernest J. Parry, London; Printed by Sir Isaac Pitman & Sons, Ltd, Bath, England, v-(1465E))

Benzoin or "gum benjamin", as it is frequently called, is the balsamic resinous matter obtained from various species of *Styrax*, of which *Styrax benzoin* is the principal. The trees yielding this substance are indigenous to Siam, Sumatra and Java. It appears that the trees, when allowed to live normally do not secrete any benzoin, but the infliction of a wound on the tree, sufficiently deep to injure the cambium layers of cells results in the formation of numerous oleoresin ducts, in which the secretion at once commences to make its appearance. Gum benzoin may, therefore, be described as a pathological secretion. The trunks of the *styrax* trees are usually hacked to the proper depth by means of an axe, and the secretion soon commences to accumulate beneath the bark, or to exude from the incisions. When the secretion has sufficiently hardened it is collected and packed in boxes for export. The following varieties of gum benzoin are commercial articles.

Siam benzoin is one of the most esteemed varieties, if not the most esteemed, of benzoin, It is chiefly collected in the province of Luang Pratang, but the exact species which yields it is still a matter un uncertainty. It is found either in lumps or in comparatively large tears, the latter being practically free from extraneous matter, and therefore of a higher degree of purity. Siam benzoin is characterized by its pronounced odour of vanillas, and by its freedom from cinnamic acid.

Sumatra benzoin is undoubtedly the product of *Styrax benzoin*, and is produced on the Island of Sumatra. It always occurs in block form, which consists of white tears agglutinated by a semi-vitreous resin of dull red or greenish color. The odour of this variety recalls that of storax rather than vanilla, and it contains cinnamic acid, which distinguishes it from the Siam variety. This may be detected by boiling the specimen with dilute sulphuric acid and potassium permanganate when a marked odour of almonds, due to the formation of benzaldehyde, results, which is not the case with Siam benzoin.

Palembang benzoin is another Sumatra type of benzoin, derived from trees, whose botanical origin is not known. It consists of lumps in which only a few tears are to be found, and has only a slight odour, which resembles, to a weak degree, that of ordinary Sumatra benzoin. It is the cheapest of all benzoin, and is chiefly used for the manufacture of benzoic acid.

Gum benzoin is used to a fair extent in medicine. It is a constituent of the well-known substance, "Friar's Balsam", and is also used largely for the manufacture of benzoic acid, although the cheapness of the synthetic product in normal times has militated against any large employment of the natural acid. It is also used in perfumery, and in the manufacture of incense, fumigating pastilles and similar preparations.

The principal constituent of Siam benzoin is the aromatic acid, benzoic acid, partly free and partly combined with resin alcohols, which have been named benzoeresinol and siarresinotannol. Vanillin is present in traces, and, in Sumatra benzoin, about half the free acids consist of cinnamic acid. Small quantities of vanillin, styrol, styracine, phenyl-propyl cinnamate and benzaldehyde, are also present in Sumatra benzoin.

Benzoin is liable to be adulterated with a considerable amount of vegetable debris and earthy matter. In good, natural, specimens, the total amount of matter insoluble in 90 per cent. alcohol should not exceed 10 per cent., and the ash should not be more than 2 per cent. or at most 2.5 per cent. the author has examined a number of samples which were all of excellent quality and which gave the following results –

Siam Benzoin

Mineral matter	0.24 - 1.98 %
Soluble in 90% alcohol	88 - 96.4 %
Acid value	130 - 158
Ester value	42 - 69

Sumatra Benzoin

Mineral matter	0.4 - 1.9 %
Soluble in 90% alcohol	90 - 93.5 %
Acid value	98 - 139
Ester value	51 - 98

Other varieties

Mineral matter	0.24 - 2.85 %
Soluble in 90% alcohol	86 - 95 %
Acid value	106 - 142
Ester value	51 - 91

Good qualities of benzoin contain from 12 to 20 per cent. of benzoic acid, which may be determined approximately by powdering the sample, mixing it with twice its weight of sand and heating it in a beaker covered with a perforated filter paper. The benzoic acid sublimes and is condensed in a porcelain cone kept cold by a current of cold water.

Benzoic acid and its sodium salt, sodium benzoate are both largely used as preservatives, being generally preferred to salicylic acid as there is a prejudice against the latter (probably unjustified) on account of the belief that there may be undesirable after effects following its use.