

AMBER – FOSSIL RESIN

The Baltic amber, succinct, formed of amber pine tress – pinus succinifera – which in the Eocene period (55-40 million years ago) grew in south slopes and plains of Scandinavia. In the old Baltic amber tertiary forests conifers, palms, oaks, beeches, elms, chestnuts, willows, cinnamons, magnolias and olives, also mushrooms, mosses and lichens were growing. The climate was mainly warm, turning to subtropical. Possible reasons for pathological overproduction of resin in amber trees were consequences of natural disasters and climate changes: lightning, early frosts, cloudbursts, increased concentration of soil salts and air humidity. Because of intensive resin exertion in the beginning of the Oligocene period amber forests were growing sickly very slowly.

The process of amber formation of resin includes many lasting changes and stages: polymerization, oxidation, isomerization, fermentation and the so-called ripeness process in alkaline soil of the Sambian peninsula, outputs of the Eocene period. Here resin had once and for all turned into amber. Very few inclusions of plants are found – about 300 pieces that make approximately 0.4%. In the Palanga amber Museum only those remnants of plants remained whole that had been totally covered by resin and had no contact with air.

Every piece of amber is of its early form, which reveals the process of its formation. If weathering had not damaged amber, water and ice, it could have retained its early form unchanged. Amber pieces are divided into those that had formed inside the trunk. The former are in the form of a drop (79%) amber stalactites, drops, icicles, pieces of amber in amber. The latter are in the form of the inside trunk (12%): pieces of resin in the bark or between the trunk and the bark. These are bark lamellae, pieces with bits of the bark.



http://www.pgm.lt/Gintaras/amber_fossil.en.htm

ORIGIN AND DEPOSITS OF THE BALTIC AMBER

The main deposits of the Baltic amber are not in the former amber forests where resins had formed and got in the soil. At present it is supposed that amber forests had existed here 15-20 million years in Fen Scandia and maybe in the middle and the north part of the Baltic Sea.

In the Eocene period amber forests were overflowed, by the tertiary period mowing from the West. The main part of amber was washed out from the soil of those forests and brought together into Eocene and Oligocene sediments - settlements of the south coast of the sea, from the Sambian peninsula to Chlopov near Dancing (Gdansk). In these deposits the so-called "blue soil" (clayey sand with glaucomatous admixtures) was so much filled with amber that it that been mind here for more than 100 years. These are famous amber mines near Palmnicken (today Yantarny) in Russia. The thickness of the stratum of the blue soil is about 7-8 meters, and there are approximately 2,5 kg of amber in one cubic meter. Primary



deposits were totally and secondary partly destroyed. At present the Baltic amber can be found from England in the West to Ukraine in the East, south Sweden and south Finland in the North

http://www.pgm.lt/Gintaras/Origin_deposits.en.htm

CHARACTERISTICS OF THE BALTIC AMBER

Today more than 250 kinds of the Baltic amber are known. They are determined by color is yellow. Limpidity degree and color intensity depend on the number, size and arrangement of the smallest opaque admixtures in amber.

Flomin (muddy) stones are limpid; it is easy to polish them.

Bastard stones are turlid, having lots of air bubbles.

They may be blotted with clods of pearl color (white, light yellow), yellow or brownish. Bone amber is white or ivory, opaque, sometimes with bluish tint.

Physical and chemical characteristics of the Baltic amber are extremely various. Its hardness according to Mohs' scale is 2-3, but sometimes it reaches 10.

The Baltic amber is easily processed, cut, drilled or polished. Amber density is from 1,05 to 1,096 g/cm³.

Water of the Baltic Sea is not very salty. Amber density is little, so it floats in the water and waves coast it ashore. Because of its amorphous structure amber easily cracks. It also easily takes fire and burns in a smoking flame spreading a smell similar to that of incense. It is difficult to determine the exact fusion temperature of the Baltic amber.

When the temperature reaches 170°C, it becomes soft and sticky. This characteristic is used producing pressed amber. Amber fuses and disintegrates when the temperature is above 300°C. Only conofolium is left.

Under the effect of oxidation amber weathers and becomes darker. Because of oxidation amber covers itself with patina. Its thickness sometimes reaches some millimeters.

Amber is resistant to non-oxidizing chemicals and organic solvents. It melts being soaked in methyl alcohol (of 11,3%), turpentine (of 16,9%), ether (of 18.8%), acetone (of 23.3%).

Chemical composition of the Baltic amber (succinct) is: 78.55% of coal C, 9.64% of hydrogen H, 11,81% of oxygen O. There is 3-8% of amber acid (C₄H₆O₄) in succinct.

The most effective method of investigating fossil resin is infrared spectroscopy. It helps to identify succinct quite precisely and to distinguish it from other fossil resins.

<http://www.pgm.lt/Gintaras/characteristics.en.htm>

BALTIC AMBER AND OTHER FOSSIL AND RECENT RESIN

The Baltic amber, succinct, is the most unwell-known, but not the only sort of resin that has endured from former times. Today more that 150 sorts of fossil; resin are known: different vegetable chemical characteristics, curves of infrared rays, mass spectrum, etc.

Besides the Baltic amber, more than 50 sorts of other fossil resin are found in Europe. Some of them - in small quantities, together with succinct. They are of great value for investigating amber forests from Paleontologist and ecologic aspects. For the first time glesite was found together with succinct in the Sambian peninsula. It also accurse quite usually in Saxon-Lausitz deposits of col.

Rumenite was found in the Oligocene strata of the east Carpathians and Roumania. As a raw material for decorations rumenite has less amber acid and oxygen, it is more hard and solvent - resistant.

Simetite is a fossil resin from red to yellow chide found in Sicily. This tertiary resin is, most probably, formed of deciduous trees.

Aykaite is a yellow on reddish fossil resin in the late cretaceous period strata (80-90 m years) near Ayka - 120 km to south-west from Budapest.



There are many important resin outputs in Siberia, in the Near East Asia, Lebanon, Geologically they are the oldest outputs in the early cretaceous period (130-135 m years) and in the middle of the Jurassic period (approximately 160 m years).

Retinite is found in the Taimyr peninsula and the Yakut. Its geological age is that of the creataceous period (80-100 m years).

Burmite is found in the upper Burma, in soft allay of the Tertiary (Eocene) period. For hundreds of years it bad been used in adorn mint production. There are no inclusions of flora in burmite - Oligocene - amber of the late Miocene period, the so called Dominica amber - is found in Amerika, the Dominican republic. By its quality and quantity, particular colorfulness, lots of inclusions bur mite is similar to the Baltic amber. This is resin of leat - bearing trees - hymeneal courbaril and hymeneal protera.

East and West Africa and East Asia are known for large quantities of copals. Copal is a retention sub fossil natural resin of vegetable origin. Its age varies from some decades to some millenniums. Copal is limpid, colorless or light yellow. The most valuable are the hardest copal (the African Zanzibar copal, the Mosambique copal). They are used for the production of various varnish and dragon oil.



<http://www.pgm.lt/Gintaras/baltic.en.htm>

