

Amber and its treatments: A New Baltic Amber Classification Chart

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Keywords: Baltic amber, treatments, enhancement

This paper aims to present the history of the modification of Baltic amber (succinite), and particularly the modern methods of its enhancement, along with a discussion of their objectives and characteristics. A new Baltic amber classification chart has been developed (Fig.1) and illustrates the variety of amber species found in nature as well as the vast array of enhanced varieties. In addition to aiding in the comprehension of amber modification, the classification aims to organize the body of knowledge on amber essential to gemmologists and to those working with amber as there has been in the past several incorrect attempts of describing and defining Baltic amber. This is the first time this type of classification is made for Baltic amber which is developed following the global standards of CIBJO and LMHC (CIBJO, 2022, LMHC, 2011) and also drawn by years of experience in identifying amber. This new classification does now include information on each treatment including treatment outcomes in terms of colours and durability as well as other information such as the type of inclusions produced, fluorescence, depth of treatment and indications on how to recognise it.

Amber is a fossilised resin from ancient trees (coniferous and deciduous), which underwent the process of fossilisation in various epochs and depositional environments. Baltic amber is derived from coniferous trees of Eocene age from several secondary deposits in Central and Eastern Europe (e.g. Baltic and North Sea coast, Poland, Russia - Kaliningrad region, Western Ukraine, Germany - Saxony). In addition to Baltic amber, we find fossilised resins on the jewellery market from other parent trees, other locations and other epochs such as Myanmar amber, Dominican amber, Mexican amber, Fushun amber (China). All of the above would have different characteristics from Baltic amber but most importantly mainly natural material from these areas is

available in the market. Treatments to improve colour (e.g., dyeing), transparency (e.g., clarification), durability (e.g., durability enhancement) and done also to respond to market demand (e.g., ageing) are only recorded in Baltic amber. The treatments can be applied individually, combined, or sequentially to achieve the desired effect (e.g. clarification, decrepitation and heating in the presence of oxygen will result in an orange amber piece with sun spangles which is always in high demand in the Western countries and synonym of Amber in this part of the world. Depending on the selected treatment only the surface or the whole body of the stone might be affected. For example, hydrothermal treatment can fully change the stone throughout. Ageing instead is a natural process that can be reproduced in a laboratory environment and consists of superficial oxidation at low temperature of natural amber due to light and oxygen exposure. The various treatments aim to change the appearance and enhance the durability of natural Baltic amber while preserving its natural origin.

The composition and colour of amber (full body colour or superficial colouration only) and its transparency are determined by many factors, such as the origin of amber, the sediments in which the amber has been deposited, the local climate and the ground temperature. Baltic amber, also known as “Baltic gold”, is available in colours from white, through various shades of yellow, orange, red up to darker shades of brown, and almost black. Yellow and orange amber (honey amber - Chinese trade name; cognac amber - Western trade name) is commonly seen and sold on the market and comes in a variety of hues. Sporadically, amber with a “cherry” colour can be also found, however its appearance is the effect of the oxidized top layer which can disappear after the amber is preformed and polished.

The practice of enhancing gemstones has its origins in ancient Egypt. The oldest record of improving colour and transparency of gemstones is dated back over 3,300 years (Nassau, 1984). Amber was also treated in ancient Rome not only to modify its colour to a darker tone and consequently to improve its clarity, but also to resemble the rare Smetite, a 25-million-year-old Miocene resin amber from Sicily. For this purpose, slow cooking in fat of young goats was used and sometimes dye was added to reproduce different colours and emulate different gemstones (e.g. purple amethyst) (Ball, 1950). The techniques developed at that time, mainly involving heating under controlled conditions combined with dyeing, have been improved to the present day even if not drastically changed. Currently, heating is still used to modify, not only amber but also precious gemstones including rubies and sapphires. It is believed that the majority of all the “cognac”, “green” and “cherry” nuggets of Baltic amber found today on the market were heated to improve their appearance and to reach a more pleasing colour.

The modern market of gemstones is governed by international regulations and classifications and to safeguard the authenticity of the products, after thoroughly description and testing the amber cannot be called natural if it has been heated. The term used in these cases is treated amber which describe a stone that has been modified by one of more processes to change its appearance and/or durability (CIBJO, 2022). It is also essential to differentiate natural amber from artificial material: the latter consists only of imitations as no synthetic amber is available on the market. Pressed amber obtained from pressing together amber pieces can also be found. At the right temperature (120-180°C) they become soft and sticky and can be compacted together by mechanical pressing into larger chunks without any additional components (e.g. adhesives) and using several techniques. Pressed amber may also be additionally treated to improve appearance. However, the value of pressed amber put it, in most cases, a lower price category than treated. Many specialists even refer to pressed amber pieces as amber imitations (CIBJO, 2022).

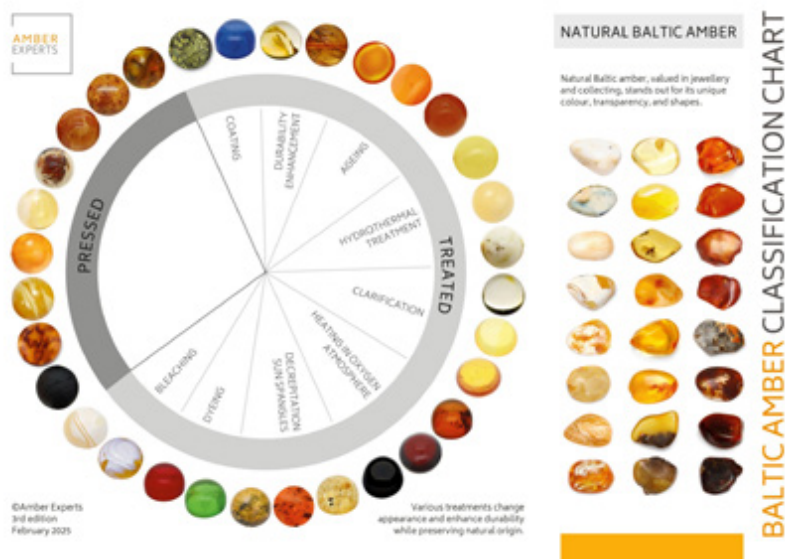


Figure 1: New Baltic amber classification chart showing the range of colours from natural (right chart) to the ones obtained with the various treatments (left wheel) and from the most common to the rarest colours available in the market.

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