



GEMMOLOGICAL REPORT

Report Number
22070204

Colour
green

Date
17 August 2022

Species
Natural beryl

Item
One faceted gemstone

Variety
Emerald

Weight
1.08 ct

Origin
Zambia (Kafubu)

Shape
octagonal

Condition
No indications of clarity enhancement. This emerald is virtually free of fissures and fractures and is thus not susceptible to clarity enhancement. Such emeralds are very rare.

Cut
step cut

Measurements
7.29 x 5.75 x 3.24 mm

Comments
See Information Sheet(s).

Transparency
transparent

Important notes and limitations on the reverse.

Pierre Hardy

Lidia Bellomo



INFORMATION SHEET

to Report No. 22070204

Untreated, fissure-free emeralds

The formation of emeralds in nature is related to tectonic events affecting the rock in which the emerald is forming. The developing emerald experiences significant mechanical strain, resulting in fissures and fractures throughout the stone. In most cases, this process lowers the transparency of the stone, depending on the number and extent of the fractures.

Only a very small number of emeralds are not affected by this natural process. Thus, emeralds with only very minute fissures or no fissures at all are very rare. The absence of fissures makes them immune to any enhancement of the clarity by filling the fissures with a foreign substance such as oil, resin or wax.

Information Sheets are intended to provide information supplementary to the contents of the Report and comment on, for instance, the type of gemstone, the geographic origin and the presence or absence of treatments. By definition, Information Sheets are purely informative in nature: they consist of a standard text and are issued for all types of stones of that particular category. Information Sheets, therefore, do not imply a certain quality or rarity of the stone described in the Gübelin Gem Lab Report which it is attached to.

INFORMATION SHEET

to Report No. 22070204

Emeralds from Zambia (Kafubu)

The landlocked Republic of Zambia is located in the south-east of the African continent, a region known for its wealth of gemstones.

Emerald, a green variety of the beryl group, has been explored in Zambia as early as the late 1920s. It was only in the mid-1970s, that the promising Kafubu emerald fields were discovered in north central Zambia (the Ndola-Rural-Restricted-Area), 45km south-west of the town of Kitwe. At an altitude of 1,200 m above sea level, the entire area is mostly flat and the nearby Kafubu River - after which the mines were named - drains the area characterised by clay-rich soils with extensive crusts of laterite and dense vegetation.

For emeralds to form, specific geological conditions are necessary. In the Kafubu mines, the chromium-bearing talc-chlorite-actinolite schists were intruded by pegmatites and hydrothermal veins. This event occurred about 450 million years ago, during late stages of the Pan-African orogeny. Temperature and pressure conditions, as well as the availability of the necessary chemical elements, allowed emerald growth in phlogopite reaction zones between quartz-tourmaline veins and metabasite.

The most prominent colours of Zambian emeralds range from light to dark green and slightly bluish to bluish-green. They show a distinct pattern of trace elements, including chromium and iron as the main colourants, as well as appreciable concentrations of alkali elements.

Emeralds naturally tend to have numerous inclusions providing a valuable insight into their growth history as well as imparting individuality. Typical inclusions seen in Zambian emeralds are so-called fingerprints, consisting mostly of two-, occasionally also three- or multi-phase fluid inclusions, often displaying a square or elongated shape. The range of crystal inclusions comprises iron oxides and sulfides, amphibole, tourmaline, and other silicate minerals.

Since the liberalisation of mining in the early 1990s, Zambia has risen to become one of the most valuable emerald sources in the world. The Kafubu mining area is worked by artisanal and small-scale mining operations archetypical of the coloured gemstone industry, as well as one of the world's largest open-pit mines for coloured gemstones.

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