



## GEMMOLOGICAL REPORT

**Report Number**  
18041041

**Colour**  
blue

**Date**  
17 April 2018

**Species**  
Natural tourmaline

**Item**  
One faceted gemstone

**Variety**  
Paraiba

**Weight**  
12.11 ct

**Origin**  
Brazil

**Shape**  
oval

**Comments**  
See Information Sheet(s).

**Cut**  
modified brilliant cut

Important notes and limitations on the reverse.

**Measurements**  
15.03 x 12.46 x 8.14 mm

**Transparency**  
transparent

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INFORMATION SHEET  
to Report No. 18041041

Paraíba tourmaline

The so-called 'Paraíba tourmalines' entered the international gem market towards the end of the 1980s. They immediately became prized and coveted for their vivid coloration which ranges from violetish-blue to greenish-blue to green (including blue-green, turquoise-blue, and emerald-green) with medium-light to high saturation and tone. The colours of these tourmalines (sometimes also referred to as 'electric blue' or 'neon green' in the trade) are caused by varying amounts of the elements copper and manganese. The bright vivid blue and green 'Paraíba colours' have not been seen in any other gemstone variety.

The first 'Paraíba tourmalines' originated from a deposit near the village of São José de Batalha in the north of Paraíba state, Brazil.

Later, by the mid-nineties, other occurrences were discovered in the northernmost part of Paraíba state and in the adjacent, southernmost corner of Rio Grande do Norte state, near the town of Parelhas. In 2000, another source of this colour variety of tourmalines was discovered in Nigeria. More recently, the Alto Ligonha region in Mozambique joined the small and exclusive group of mining areas where 'Paraíba tourmalines' are found.

In all these areas, particular geochemical surroundings cause the formation of exceptional tourmalines in pegmatite host rocks. These surroundings are also responsible for the unique colours of the 'Paraíba tourmaline'.



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## INFORMATION SHEET

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### Paraíba tourmaline, treatment not determinable

The formation of gemstones and their uplift to the earth's surface is a long and often tumultuous process. The growth of a beautifully coloured crystal is a matter of rare and highly specific geological conditions, such as the availability of certain trace elements. Fissures and fractures induced by tectonic activities and/or the mining process might affect the transparency of the stone. Consequently, only a fraction of the discovered gems show the colour and transparency considered desirable and therefore marketable. The resulting undersupply of high-quality gemstones is in contrast with a large share of the mining yield having sub-optimal colour and/or transparency.

For centuries, mankind has found a way to overcome this challenge, by applying treatments to coloured gemstones such as various types of heating, irradiation or filling of fissures, fractures and cavities with transparent substances. These treatments intend to add or intensify a specific colour, to remove an undesirable hue, or to hide the presence of fissures and cavities.

Treatments are important as they help satisfy the demand for high-quality gemstones. Most treatment methods are a standard practice and are accepted by the trade and the final customers.

However, a treated gemstone is not as rare as an untreated specimen

of the same quality, and therefore the treated gem trades for lower prices than the pristine, natural beauty. Consequently, it is vital to disclose the presence or absence of a treatment in order to determine a correct price. For many years, gem labs are stating a treatment comment for certain coloured gemstones, namely rubies, sapphires and emeralds by default. However, treatments are also known on other types of coloured gemstones. The identification of such treatments in some types of gemstones is not always straightforward, sometimes even undeterminable, despite the use of sophisticated analytical methods and scientific research.

Paraíba, a Cu- and Mn-bearing vivid violet-blue to blue to bluish green and green variety of the tourmaline group with medium to strong saturation, is one such type of gemstones. While the colour does occur naturally in a small number of crystals, it can be induced by heating transparent differently coloured Cu- and Mn-bearing tourmaline (mostly purple) at low temperatures. It is generally known that a large share of paraíbaes have been exposed to heat treatment in order to improve the colour. The colour produced by this treatment is known to be stable. However, in most cases the detection of this treatment is not possible. In spite of ongoing research to distinguish heated from unheated samples the colour authenticity of the majority of blue to green paraíbaes remains undeterminable.

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.