COLOURED GEMSTONES – LMHC reports significant progress in harmonising report nomenclature for gem colour stability, tanzanite, cobalt spinel and jade

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Blue to purple spinel, including some coloured predominantly by cobalt (left), iron (right) and a combination of both elements (centre). Photo copyright LMHC

The **Laboratory Manual Harmonisation Committee (LMHC)** has reported significant progress towards its goal of achieving the harmonisation of language used on gemmological reports, following its latest meeting, which was hosted by the Swiss Gemmological Institute – SSEF, in Basel, Switzerland, in May, 2025.

Following the meeting, LMHC members unanimously approved three new information sheets that standardise terminology and testing procedures, and they also updated the information sheet covering Fei Cui and jade terminology. All the new and updated information sheets can now be accessed on the LMHC website (https://www.lmhc-gemmology.org/).

The LMHC is currently comprised of representatives from the Central Gem Laboratory (CGL), CISGEM Laboratory, DSEF German Gem Lab, GIA Gem Laboratory, The Gem and Jewelry Institute of Thailand (GIT), Gübelin Gem Lab Ltd., and the Swiss Gemmological Institute – SSEF. The committee plays a central role in advising the trade on the accepted terminology based on commonly developed scientific approaches.

The newly released harmonised information sheets are as follows:

1. **IS No. 16:** Colour Stability Testing of Gemstones (version 1; August 2025)

The new information sheet standardises the method used to test the colour stability of gemstones. It addresses issues where certain colour centres are unstable, potentially resulting in the fading or shifting of a gemstone's colour following prolonged exposure to daylight. This phenomenon is specifically observed in certain padparadscha sapphires, fancy sapphires, spodumene, sodalite, or zircon.

The harmonised testing method involves three main steps: (1) careful initial colour grading, (2) exposure to a strong light source for a minimum of three hours to examine for "deactivation", and (3) subsequent colour grading. An activation test using UV light is also suggested to check if the colour instability is reversible (reversible photochromism or tenebrescence). Reports mentioning colour stability test results should specify whether the colour is considered stable or not.

2. IS No. 14: Cobalt Spinel (version 1; May 2025)

The information sheet standardises the nomenclature for blue spinel containing traces of cobalt.

Cobalt spinel is defined as a Mg-Al spinel of blue colour containing traces of cobalt, where the blue colour is mainly due to absorption bands related to cobalt. Importantly, spinels coloured by cobalt induced by a treatment process (such as Co-diffusion or filling of fissures with Co-glass) do not qualify to be called cobalt spinel.

The sheet also distinguishes cobalt spinel from blue spinel mainly coloured by iron, noting that if iron bands dominate the absorption spectrum, the stone does not qualify as cobalt spinel.

3. IS No. 15: Tanzanite (version 1; May 2025)

The information sheet standardises the terminology used in reports about tanzanite.

Tanzanite is defined as the vanadium-bearing blue to purple colour variety of the mineral zoisite. The document notes that tanzanite is strongly pleochroic, and the yellowish-brown pleochroic component can be easily removed by heat treatment, shifting the colour to a distinctly more attractive hue. Consequently, tanzanite is commonly heated, although currently in some cases the treatment is not determinable.

The committee also finalized significant updates to ***LMHC Information Sheet No. 11 (Jade and related Materials)*** *(version 5; May 2025).*

Notably, the scope of what constitutes "jade" as a trade name has been clarified to encompass aggregates primarily composed of jadeite, omphacite, kosmochlor, or nephrite. The complexities surrounding jade, which is an aggregate (rock) that may contain multiple mineral phases, necessitate clear and standardized report language.

The new information sheet includes a definition and standardised report wording for Fei Cui (翡翠), which is described as a historic Chinese name for a structurally tough ornamental aggregate composed solely or principally of any combination of jadeite, omphacite, and kosmochlor. The information sheet now specifies that for reports about jadeite jade, omphacite jade, or kosmochlor jade a comment may be added, noting that the material may be called Fei Cui in the Asian trade.

By standardizing definitions for terms like *Fei Cui* and outlining required testing, the LMHC hopes to ensures consistency and clarity in laboratory reports for this important material.

“We are very pleased to see that all laboratories represented at LMHC are constructively working together for a harmonisation on issues that are important towards ensuring consistency and clarity in gemmological lab reports,” said Dr. Michael S. Krzemnicki, director of the Swiss Gemmological Institute SSEF, host of the LMHC meeting in Basel. “The release of these new and updated information sheets addresses critical issues impacting disclosure.”