

Corundum – lattice diffusion of foreign elements other than hydrogen

Members of the Laboratory Manual Harmonisation Committee (LMHC) have standardized the nomenclature that they use to describe any corundum that shows indications of heating accompanied by the introduction/diffusion of a chemical element from an external source, both for cases with clear supporting evidence and for those where indicators point to a possibility that this treatment has taken place but there is insufficient corroboration. See also Information Sheet 1

Any corundum that shows indications of heating accompanied by the introduction/diffusion of a chemical element(s) (facilitating the modification or creation of colour) from an external source, shall be described as;

- Species: **Natural corundum**
- Variety: **Sapphire¹ / Ruby**
- Comments: **Indications of heating, (shallow²) colour modified / altered by plus**

either

- **(lattice) diffusion of (a) chemical element(s)³ from an external source**
- or
- **the introduction of (a) chemical element(s)³ from an external source.**

This clause encompasses the treatment previously described by gemmological laboratories as "surface diffusion". Those persons buying or selling stones to which the above clause applies sometimes use descriptions such as 'surface diffusion treated' or 'heated with the addition of e.g., beryllium, titanium etc.' These descriptions and others are commonly used trading terms but are not used by LMHC members.

Any corundum that shows indications of heating and indicators that point towards a possibility of externally sourced lattice diffusion, but there is insufficient corroboration, shall be described as;

- Species: **Natural corundum**
- Variety: **Sapphire¹ / Ruby**
- Comments: **Indications of heating plus**

either

- **Further analyses are necessary to determine whether or not beryllium and/or other chemical element(s) from an external source is (are) present.'**
- or
- **Heating may involve the diffusion of beryllium and/or other chemical element(s) from an external source'.**

¹ 'Sapphire' alone is used for the blue variety of corundum. For other colours, 'Sapphire' preceded by its colour (e.g. yellow sapphire, pink sapphire, etc.) is used

² The word "shallow" shall be used when the created colour is shallow. A note cautioning against re-cutting shall be included in the report.

³ As an option, when the diffused element has been identified replace 'chemical element(s)' with the actual element(s) detected
