# LMHC Information Sheet # 3

# Corundum

- **With glass filled fissures & cavities**
- **With/and glass (manufactured product)**

Members of the Laboratory Manual Harmonisation Committee (LMHC) have standardised the nomenclature that they use to describe glass filled fissures and/or cavities in corundum and corundum-composite material. This nomenclature is used for all situations that (i) involve the filling of fissures and/or cavities with glass, where there are indications that the clarity of the corundum has been enhanced/modified by this process with the exception of those covered in Information Sheet #1 and (ii) form a corundum-glass composite material.

## Corundum with glass filled fissures & cavities:

(see Information Sheet #1 for 'healed fissures' and subsequent 'residues in fissures')

Any corundum that shows indications of having undergone clarity enhancement/modification through the filling of fissures and cavities with glass (assisted by heating) shall be described as,

Identification:

Species: **(natural) corundum**

Variety: (**treated)[1] ruby** or **sapphire[2]**

Further information: **Indications of heating,**
**(indications of)[1] clarity enhancement/modification by a glass filler in fissures (healed fissures)[3] and cavities[4]**
or **glass filled fissures** or **glass in fissures and cavities[4],**
and the appropriate filler quantification terminology: alpha numeric and/or text description (table 1)
(the identification of the glass material: e.g., lead glass, silica glass, etc.)[1]
(this treatment usually applies to low quality stones)[1]
(glass filled corundum is unstable to elevated temperatures and to certain chemical agents)[1]

**Table 1: Quantification table for colourless to near-colourless glass in fissure(s) in corundum**

| **Status:** | **No indications of clarity modification** | **Clarity enhancement/modification / glass in fissures and cavities[1]** | | |
|---|---|---|---|---|
| **Report Alpha numeric:** | | F1 | F2 | F3 |
| **Report Text:** | 'No declaration' | Minor clarity enhancement/modification by a glass[5] filler in fissures (and cavities)[4]<br><br>or<br>Glass[5] filled fissures (and cavities)[4],<br>Extent: minor | Moderate clarity enhancement/modification by a glass[5] filler in fissures (and cavities)[4]<br><br>or<br>Glass[5] filled fissures (and cavities)[4],<br>Extent: moderate | Significant clarity enhancement/modification by a glass[5] filler in fissures (and cavities)[4],<br><br>or<br>Glass[5] filled fissures (and cavities)[4],<br>Extent: significant |
| **Further optional report comments:** | | a lead glass / a silica glass, etc., has been identified as the filler | | |

**Special Notes**

1. Whether using the alpha numeric or text description, the report may also illustrate the equivalent by appending the above chart.
2. The process producing 'glass filled fissures' might also induce locally healing of fissures and/or fractures (see Information Sheet #1).

[1] Wording and text in parenthesis is optional.
[2] 'Sapphire' for the blue variety of corundum. For other colours, 'sapphire' preceded by its colour (e.g., yellow sapphire, pink sapphire, etc.).
[3] In case a stone contains both, fissures filled with glass (e.g. Pb glass) and healed fissures, possibly the result of multiple heat treatments.
[4] In case glass filled cavities are present.
[5] In case of coloured glass, the report text shall mention the presence of a coloured glass, e.g. ...by a yellow glass in fissures.

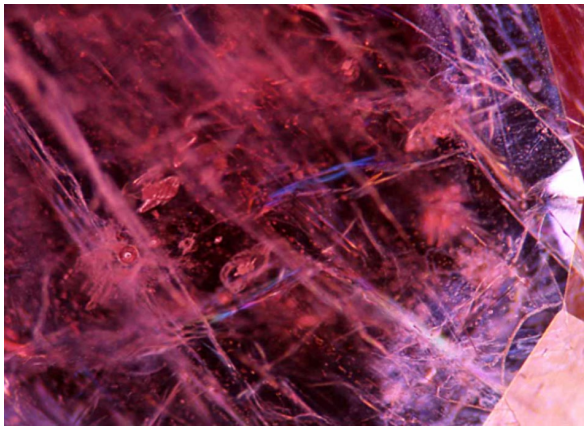

**Figure 1a:** Colour flashes seen due to lead glass filled fissures in ruby.

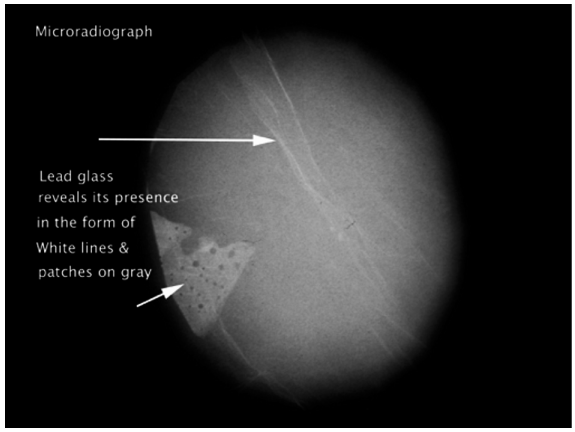


**Figure 1b:** A micro-radiograph that reveals the presence of lead glass in fissures and a large cavity at the girdle.

Members of the LMHC determine which quantification terminology to use (see table 1) taking into account the size and position of each glass filled fissure and/or cavity (see examples in figures 2a, b and c). In most cases, the LMHC members have observed corundum with significant amount of glass in fissures and cavities.

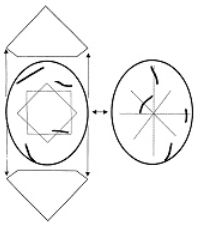

**Figure 2a:**
Glass filled fissures;
Extent: minor (F1)
and significant glass filled cavities (C3)

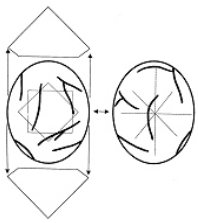

**Figure 2b:**
Glass filled fissures;
Extent: moderate (F2)

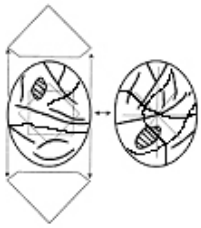

**Figure 2c:**
Glass filled fissures;
Extent: significant (F3),

**Special note:**
**Durability/stability:** Glass filler may be unstable to elevated temperatures and to chemical agents. Special care shall be taken when repairing jewellery items set with glass filled corundum. During jewellery repair the unmounting of such stones is recommended.

## Corundum with/and glass (manufactured product):

It is possible to take a heavily fractured, friable, single piece of rough corundum, infuse the fractures with glass (involving a heating process) and then facet a stone from the manufactured product. It is also possible to assemble and/or to bind a multitude of unrelated tiny pieces of ruby/sapphire into one cutting material with glass (involving a heating process). If the glass is altered the stone may fall into pieces.

| | |
|---|---|
| Identification: | |
| Species: | **Manufactured product** or **Corundum with/and glass** |
| Variety: | **Ruby with/and glass** or **Sapphire with/and glass** or **Corundum with/and glass** or **Manufactured product** |
| Further information: | **This item is a combination of glass and ruby/sapphire** or **corundum** **(if the glass is altered the stone may fall into pieces)** (Fracture filling materials and binding materials such as glass may be unstable to elevated temperature and to chemical agents) [1] (the identification of the glass material: e.g., lead glass, silica glass, etc.)[1] |

[1] Wording in parentheses is optional.

**Figure 3: Illustration of the effect of Hydrofluoric (HF) acid on corundum with/and glass:**

**Figure 3a:** A faceted stone of 'Corundum with Glass'.

**Figure 3b:** Remaining ruby pieces of the faceted 'Corundum with Glass'shown left after acid disintegration.

**Figure 3c:** A faceted stone of 'Corundum with Glass'.

**Figure 3d:** Remaining ruby pieces of the faceted 'Corundum with Glass' shown left after acid disintegration.