

LMHC Information Sheet # 3

Corundum

- With glass filled fissures
- With glass filled 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:

(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 with glass (usually assisted by heating) shall be described as,

Identification:

Species: **(natural) corundum**

Variety: **ruby or sapphire²**

Further information:

(indications of) clarity enhancement/modification by a glass filler in fissures or glass filled fissures or glass in fissures,

plus the appropriate filler quantification terminology: alpha numeric and/or text description (see table 1),

(the identification of the glass material: e.g., lead glass, silica glass, etc.)¹

and/or the statements (introduction of glass into fissures involves heating)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		
		F1	F2	F3
Report Alpha numeric:				
Report Text:	'No declaration'	Minor clarity enhancement/modification by a glass ³ filler in fissures / Glass ³ filled fissures, Extent: minor	Moderate clarity enhancement/modification by a glass ³ filler in fissures / Glass ³ filled fissures, Extent: moderate	Significant clarity enhancement/modification by a glass ³ filler in fissures / Glass ³ filled fissures, Extent: significant
Further optional report comments:		a lead glass / a silica glass, etc., has been identified as the filler and/or the introduction of glass into fissures involves heating.		

Special Notes

1. Whether using the alpha numeric or text description, the report shall also illustrate the equivalent by appending the above chart.
2. The process producing 'glass filled fissures' might also induce 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.). see Information Sheet #4 for 'padparadscha sapphire'.

³ in case of coloured glass, the report text shall mention the presence of a coloured glass

Corundum with glass filled cavities

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

It is possible that during the glass filling process in addition to fissures, cavities may be filled with glass. When such glass filled cavities are found in addition to the applicable report text and/or alpha numeric (as above) these shall be described as,

Further information: **(Indications of) glass filled cavity(ies),**
 plus the appropriate filler quantification terminology: alpha numeric and/or text description (see table 2)
 (the identification of the glass material: e.g., lead glass, silica glass, etc.)¹
 and/or the statement (introduction of glass into cavities involves heating)¹
 (this treatment usually applies on low quality stones)¹
 (glass filled corundum is unstable to elevated temperatures and to chemical agents)¹

Table 2: Quantification table for colourless to near-colourless glass in cavities in corundum

Status:	Glass in cavities		
Report Alpha numeric:	C1	C2	C3
Report text:	Minor Glass ³ filled cavity(ies)	Moderate glass ³ filled cavity(ies)	Significant glass ³ filled cavity(ies)
Further optional report comments:	a lead glass / a silica glass, etc., has been identified as the filler and/or the introduction of glass into fissures involves heating.		

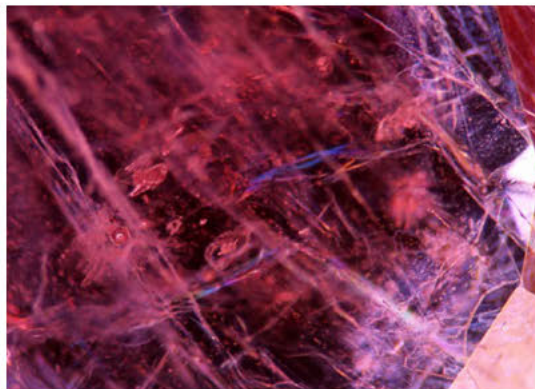


Figure 1a: Colour flashes seen in the area of lead glass filled fractures in ruby.

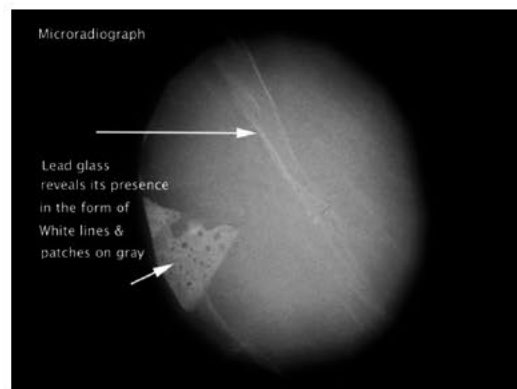


Figure 1b: A microradiograph that reveals the presence of lead glass in fractures.

Members of the LMHC determine which quantification terminology to use (see tables 1 and 2) taking into account the size and position of each glass filled fissure and/or cavity. This filling may be of various extents (see examples in figures 2a, b and c).

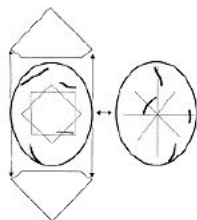


Figure 2a:
Glass filled fissures;
Extent: minor (F1)

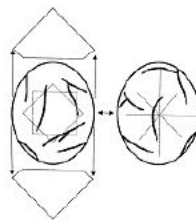


Figure 2b:
Glass filled fissures;
Extent: moderate (F2)

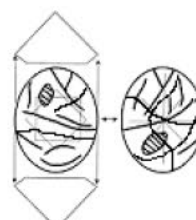


Figure 2c:
Glass filled fissures;
Extent: significant (F3),
and significant glass filled cavities (C3)

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 and then facet a stone from the treated material. 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. If the glass is altered the stone may fall into pieces.

Identification:

Species: **Manufactured product or (natural)¹ 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. (Special care should be taken when cleaning or repairing jewellery items set with fracture filled stones.)

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

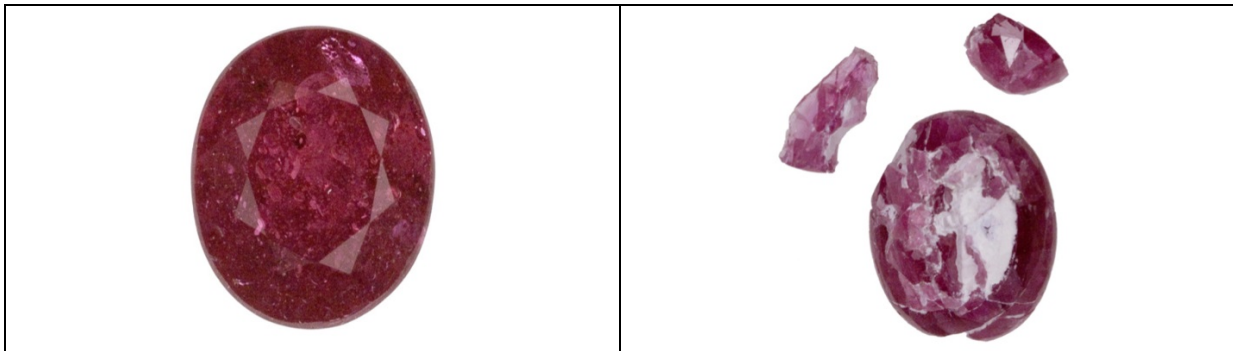


Figure 3a: A faceted corundum-glass material

Figure 3b: Remaining ruby pieces of the faceted corundum-glass material shown in figure 3a after acid disintegration



Figure 3c: A faceted corundum-glass

Figure 3d: Remaining ruby pieces of the faceted corundum-glass material shown in figure 3c after acid disintegration (107 hours in HF acid).

¹ Text in parentheses is optional.

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