



GREENLAND RUBY

## RUBIES FROM GREENLAND Inclusions

Rubies and pink sapphires from Greenland are unique, having formed nearly 3 billion years ago. They are believed to be the oldest rubies on earth.

Unlike traditional sources of rubies found in marble (like Burma), rubies from Greenland are commonly associated with amphibole, mica and feldspar and also sometimes with cordierite and sapphirine. These minerals when they are found using a microscope as inclusions inside a ruby provide some useful information to gemologists studying the origin of a rubies. Besides these minerals, the classic inclusions in Greenlandic rubies and pink sapphires are twinning planes, rose channels, minute particles and partially healed fractures. If rubies from Greenland are very singular, the inclusions they host (except for sapphirine and cordierite) are found also sometimes in rubies from other geographic origins as the association of rubies with mica, feldspar and amphibole exist in other younger deposits, particularly in Africa. Thus, the identification of the origin of rubies from Greenland based only on inclusions is very difficult. This is even more difficult after heat treatment as inclusions are melted.

As rubies are formed during the alteration of rocks at high pressure and temperature in association with fluids, the chemical composition of rubies from similar deposits can be different at the trace element level (meaning looking at composition of few atoms per millions using technique like LA-ICP-MS for "Laser Ablation Inductively coupled Mass Spectroscopy").

Gemmologists found that studying the iron and vanadium content, is probably the most useful way to identify the origin of a ruby from Greenland as rubies from Greenland are basically richer in iron than any "marble type" ruby but also richer in Vanadium than any other amphibole related rubies such as those from Tanzania, Mozambique or Madagascar. Only labs able to study the chemical composition of rubies at the trace element level have potentially the necessary instrumentation to identify rubies from Greenland.

### References:

Thirangoon, K., (2009), Ruby and Pink Sapphire from Aappaluttoq, Greenland, Status of on-going research, GIA Laboratory, see at <https://www.gia.edu/gia-news-research-nr32309>)

"Ruby Deposits: A Review and Geological Classification" published in 2020 in Minerals MPDI by Gaston Giuliani, Lee A. Groat, Anthony E. Fallick, Isabella Pignatelli and Vincent Pardieu" (See at <https://www.mdpi.com/2075-163X/10/7/597>)

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