

Gemmological Properties of Hyalophane from Busovača in Bosnia and Hercegovina

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Hyalophane from Busovača in Bosnia and Hercegovina is a new gem material. It is a member of the K-Ba feldspar series where orthoclase and celsian are the respective potassium and barium end members. The formula of hyalophane may be given as $(K,Ba)[Al(Al,Si)Si_2O_8]$. The stones are colourless, fully transparent with refractive indices of $n_x = 1.541 - 1.543$, $n_y = 1.546 - 1.549$, $n_z = 1.549 - 1.551$, a birefringence of $0.007 - 0.008$ and a specific gravity of 2.89 gcm^{-3} . A routine gemmological identification using standard reference tables or appropriate identification software is not possible since hyalophane has up to now been unknown as a gem material.

Inclusions in hyalophane were investigated and identified by microscopy and micro-Raman spectroscopy. They comprise immiscible fluid inclusions with or without a vapour phase, multiphase inclusions containing two different crystalline phases, discrete solid and secondary inclusions. The microscopic pattern of the inclusions is characteristic of the formation conditions of this particular hyalophane and can probably be used as a gemmological diagnostic feature for the Busovača locality.

The investigated hyalophane is found in the vicinity of Busovača in central Bosnia, around 50 km northwest of Sarajevo (Bosnia and Hercegovina). It occurs, associated with quartz, in alpine-type veins in a geological setting consisting of a suite of palaeozoic schists, phyllites and chlorite- and amphibole schists.