

ILVAÍTA DEL DEPÓSITO DE AU EN SKARN FORTITUDE, NEVADA, USA

Marta Franchini * y Lawrence Meinert* *

*CONICET-CIMAR, Facultad de Ingeniería, Universidad Nacional del Comahue,
Neuquén.
franchini@infovia.com.ar

**Department of Geology, Washington State University, Pullman, Washington.
meinert@wsu.edu

Abstract

This is the first reported occurrence of ilvaite in a gold skarn deposit. Ilvaite is a mixed valence from silicate known previously as a retrograde mineral in some zinc-lead, from skarns and of relatively limited occurrence in tin skarns. At Fortitude, ilvaite occurs as resinous, black grains with quartz, ferroactinolite and sulfides (pyrrhotite-arsenopyrite-bismuthinite) as late phases replacing prograde pyroxene ($\text{Hd}_{92}\text{-}\% \text{Jo}_{34}$) magnetite-rich exoskarn near the skarn-marble contact and replacing calcite grains at the marble front. Microscopically, ilvaite is present in anhedral grains, prismatic crystals, basal pinacoids with a distinctive diamond shape, and as a spongy mass intergrown with ferroactinolite and pyroxene; some grains contain abundant magnetite inclusions. These textures suggest that ilvaite formed during the break down of iron-rich pyroxene and magnetite, similar to the ferroactinolite. It is opaque but in thinner edges is yellow brown to green brown. In reflected light it displays distinctive reflectance and a very strong anisotropy. Electron microprobe analyses show that the ilvaite from the Fortitude Au-skarn is similar in composition to ilvaites from Fe skarns, both have high iron but low manganese relative to zinc skarns. The high iron content in ilvaites from Fe and Au skarns is consistent the high Fe content and low $f\text{O}_2$ that characterized both skarn types. Whereas the ilvaites from Zn (Pb) skarns reflect the Mn-rich mineralogy of these deposits. Ilvaites from one Sn skarn occurrence have lower MnO than ilvaites from Fe and Au skarns and FeO_{wral} content between ilvaites from Zn (Pb) and Fe-Au skarns. Interestingly, these ilvaites are enriched in Al_2O_3 and Ti_2O relative to ilvaites from Zn (Pb), Fe and Au skarns.