

Meaning of Piroxenic Hornfels as Host Rock of the Velasco Granite, La Rioja Province, Argentina

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The study area lies between the parallels $29^{\circ} 30'$ and $29^{\circ} 19'$ S, and $67^{\circ} 16'$ and $67^{\circ} 11'$ W. The predominant rocks correspond to porphyric granites of monzogranitic composition with fenocrystals of microcline of up to 10 cm. length and a thick grained matrix, constituted by quartz, microcline, plagioclase and biotite as main accessory.

Of special importance is the presence of hornfels, occurring as large blocks and sometimes as small enclaves, whose emplacement is controlled by various mylonitic bands of general N 320° direction. Its cinematic indicators suggest transpressive movements of the blocks.

The hornfels tend to be massive, thin grained, and dark and they sometimes have porphyroblasts of cordierite. Microscopic studies show its typical granoblastic texture, with orientation of biotites due to the original cleavage of the metasedimentites. The characteristic mineral associations are: cordierite-microcline, cordierite-microcline-sillimanite, cordierite-microcline-sillimanite-quartz, all indicators of piroxenic hornfels facies.

The mineral associations of the hornfels plus the scarce development of muscovite indicate that the emplacement of the granites took place at very shallow supracrustal levels, where the metamorphic grade was of low pressure and high temperature. Moreover, the shape and size of the hornfel bodies suggest that they are roof pendants of the host rock, indicating that the granites in the area correspond to the border zone of the pluton.