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Microboudinage Structure of Piemontite in Metachart from Western Alps: Comparison of Stress-Strain Relationship Between UHP and uHp Metamorphic History

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This stady presents stress-strain analysis of piemontite microboudinage structures in UHP and HP metacherts collected from NW Italy and W France, Western Alps. Mineral lineation was determined with the statistical method for long axes of piemontite grains. The determined concentration parameter k is about 1.0 for all the samples. Strain analysis was performed for piemontite grains arranged parallel to the lineation with the strain reversal method. The fracture pattern for the UHP metachert suggests a stress relaxation stage at the end of plastic deformation of matrix quartz, while Other HP metacherts indicate no such stress relaxation stage. Thus stress history for the UHP metachert differs from the HP ones. Microboudin analysis was also performed for the piemontite grains arranged parallel to the lineation. The stress magnitude of the UHP metachart is resulted to be 15 MPa, while other HP metacharts show 50-100 MPa. Thus, the stress magnitude recorded in the UHP metachert is obviously lower than that of surrounding HP ones. The results of strain and stress analyses indicate that stress-strain conditions during exhumation differ between the UHP unit and the surrounding HP unit.