HYDROTHERMAL DOLOMITE IN SOUTHERN BRAZIL: IMPLICATION FOR POROSITY DEVELOPMENT

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Three different types of dolomite association were identified in the breccia rocks from Água Clara Formation (Neoproterozoic), located near to Curitiba-Brazil: i) matrix dolomite (**Dol1**); ii) replacement dolomite (**Dol2**) and iii) replacement of saddle dolomite (**Dol3**), related to the fractures and vugs. The geochemical data (SEM-EDS) of Dol3 reveals a positive correlation between Fe and Mg and inversely correlations between Mg and Ca. Dol3 comprised lower MgO levels and higher Fe_2O_3. The MnO concentrations are higher in dolomitic marbles associated to the dolomitic breccia. In the dolomitic breccia, Dol2 and Dol3 exhibit very low levels of Sr. In CL the dolomitic marble fragment of the breccia displays weak, dull red luminescence; Dol2 exhibits intense CL, ranging from yellow to orange, with weak zoning. Dol3 exhibits slightly luminescent edges, dull red, with outer and inner cores that display intense luminescence between orange and reddish orange, disposed in a crudely arranged way. The spectra of Dol3 reveals central value of luminescence at 624 nm, corresponding to Fe3+. The C&O isotope showed depleted values of $\delta^{18}O$ (-16.89 to -7.48 ‰ VPDB), possibly reflecting precipitation from variable modified hydrothermal waters, special when compared to the original carbonate rock (-7.62 to - 6.31 ‰ VPDB). In conclusion, considering that the highest percentages of porosity are associated with the phases Dol2, Dol3 and calcite, the hydraulic fracturing caused an increase in porosity of carbonate rocks from Água Clara Formation, regardless of fluids that were precipitated or dissolved in later processes.