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SINTERING OF MANGANESE ORE IN NATURA WITH DIFFERENT ADDITIONS ON ACTIVATED CARBON

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The shortage of high grade manganese ore and the importance of economically viable processes suggest a necessity of the recovery of ore residues. So, this work presents a route to obtain by-products of economic interest from manganese ore residues in bench scale. The objective was the sintering of manganese ore in natura using a particle size below $0,037\mu\text{m}$ with different additions of activated carbon. For this, the fine residues were calcined at 800°C during 60 minutes, homogenized in an agate mortar with 12% humidity and additions of 9 and 12% of activated carbon. After homogenization, the sintering process was carried out at 1145°C and 1155°C during 5, 15 and 30 minutes at natural air. The products sintered were characterized by bulk density, BET surface area, OM, SEM / EDS and diffraction X-rays. During the calcination of the ore, the mass loss was $(15.16 \pm 0.02)\%$ due to the elimination of volatiles and water. The surface area of the ore was reduced due to the diffusion process that occurred during sintering. While, the bulk density values had little variation, around $(3.51 \pm 0.06)\text{g}/\text{cm}^3$. The analyses of micro-regions EDS showed that the matrix is a silicate with a high Mn content. It was identified yet, other silicates with different proportions of Si, Al, Ti, Na, Mn, Mg and Ca.