Effects of Chemical Additives on Hematite Agglomeration Properties

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Abstract

Various chemicals are added to the hematite concentration process yet their direct effect on agglomeration is not known. The chemical additives may have a negative impact on balling properties, or they may have a positive effect including supplementing or replacing bentonite as a binder. To further study these effects, a laboratory balling procedure was developed to measure both times and compressive strengths of unfired hematite pellets. Tests were conducted to measure the effects of modified corn starch, sodium hydroxide, and an anionic surfactant dewatering aid on balling properties. The results were compared to a standard pellet made with 6.6 kg/ton bentonite. It has been observed that sodium hydroxide increases both strength and balling times, the dewatering aid has little measureable impact when in the presence of bentonite, and starch also has little effect on balling properties. These observations are a subset of results from an ongoing study using chemicals that are used throughout the iron processing industry.