

Stable Oxygen Isotopes for Tracing the Origin of Clogging in Continuous Casting Submerged Entry Nozzles

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An approach for tracing the origin of submerged entry nozzle (SEN) clogging that occurs during continuous casting of Al-killed steel is presented. This approach consists of using stable oxygen isotope ratios. IR laser fluorination in combination with gas mass spectroscopy is performed to determine the oxygen isotope composition of alumina-rich precipitates (clogging) and possible oxygen sources like refractory materials, slags, process and atmospheric oxygen. Three oxygen sources for clogging are identified. A quantitative model is presented.

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