

## Viscosity measurements in semi-solid metal processing: Current status and recent developments

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### ABSTRACT

Semi-solid metal processing (SSMP) is an ideal method of producing high-quality products with fewer defects in casting technology. Viscosity is the most important physical and chemical property for the flow behaviour of the SSMP. Currently, there are several approaches, both theoretical and experimental, to evaluate the viscosity of semi-solid metals. This paper comprehensively reviews the single point and multi-point viscometry for SSMP. Features, similarities, and limitations of different viscometers for SSMP applications are then compared. The effect of influencing factors on the viscosity behaviour of SSMP is also highlighted. The importance of the non-dendritic globular microstructure and the instantaneous drop in viscosity caused by the scattering of solid particles during SSMP are explained. It is expected that the study will assist the researcher in identifying the best method of viscosity measurement during SSMP.

### KEYWORDS

Semi-solid metal processing; Viscosity; Properties; Behaviour; Viscometer

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