An overview of thixoforming process
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IOP Conference Series: Materials Science and Engineering
2017, 257 (1), 012053

Thixoforming is a forming process which exploits metal rheological behaviour during solidus and liquidus range temperature. Many research works in thixoforming are currently focusing on the raw material used to produce superior mechanical properties and excellent formability components, especially in automotive industries. Furthermore, the thixoforming process also produced less casting defect component such as macrosegregation, shrinkage and porosity. These advantages are sufficient to attract more exploration works of thixoforming operation. However, the weakness of this process such as high production cost due to leftover billet which cannot be recycled, encourage researcher works to overcome thixoforming limitations by using various methods. The thixoforming methods that widely used are thixocasting, thixoforging, thixorolling, thixoextrusion and thixomoulding. Each method provides varieties of final product characteristics; hence offer the extensive possibility of component invention. On the other hand, new thixoforming method leads to exploration research such as microstructure evolution, heating and pouring temperature, die temperature, mechanical properties, viscosity and final product quality. This review paper presents findings in the rheological material behaviour of thixoforming, advantages and disadvantages of thixoforming, parameters affecting the thixoforming operation, morphology of thixoforming and various methods which have been used in this research area.