High-temperature deformation and creep behaviour of $Al_{0.2}CoCrFeNiMo_{0.5}$ multi-component alloy

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One way of increasing the efficency of any thermally opreted system is to increase the operating temperature which can be only possible with the development of new structural materials with enhanced high temperature strength, creep resistance and oxidation resistance. Several studies in recent years show that with multi-component alloy design concept it is possible to produce alloys with very good resistanc to thermal softening at high temperatuare, even at temperatures above 700^{o}C [1], along with good corrosion as well as oxidation resistance [2] which make these alloys a suitable candidate as high temperature material. The $Al_xCoCrFeNiMo_x$ multi-component alloy showing good potential for high temperature applications [3]. Detailed investigation was carried out to understand the deformation behaviour of $Al_{0.2}CoCrFeNiMo_{0.5}$ multi component wrought alloy with the help of both high temperature tensile as well as creep experiments. It also discussed the high temperature structural stability as well as oxidation resistance with proper evidence. Finally, the probable operative deformation mechanisms were discussed in correlation with the experimental observations and post deformation microstructural analysis.

Keywords: Multi-component alloys, High temperature deformation, Creep, Superplasticity.

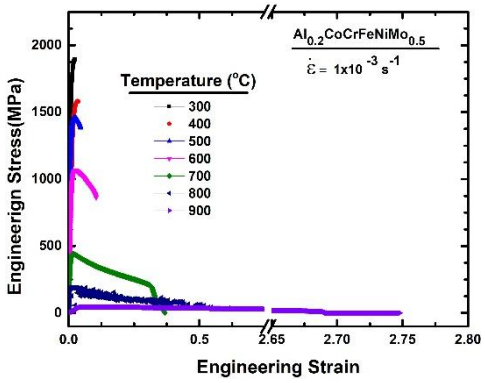

Fig.1 Influence of temperature on the flow behavior of $Al_{0.2}CoCrFeNiMo_{0.5}$

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