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## Observations on the effect of forging temperature on the microstructure of super-duplex stainless steel UNS S32760

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The hot deformability of super-duplex stainless steels is closely related to the deformation temperature, which induces structural transformations that sometimes result in fragile phases. UNS S 32760 is a corrosion resistant austenitic-ferritic super-duplex steel, used for applications where conventional duplex grades do not meet the corrosion requirements. The material is characterized by very good resistance in chloride containing media and by high mechanical strength and good ductility. However, hot formability may be adversely affected due to the formation of intermetallic phases, promoted by Cr and Mo in which ferrite is enriched, and due to the fall of element solubility in the ferrite with decreasing temperature, which increases the probability of precipitation during hot forming. Thus, to avoid cracking, it is essential to carefully control the temperature during plastic deformation. In the present paper, microstructural modifications occurring by varying the forging temperature of a super-duplex stainless steel UNS S 32760 are analyzed by SEM-EBSD technique. It is studied the appearance and evolution of different phases in the temperature range 800 - 1200°C, for a constant degree of deformation. Particular attention is given to the sigma and chi fragile phases. The observations resulted from the microstructural analysis allowed conclusions to be drawn on the optimal deformation temperature range for the super-duplex steel studied.

### Biography

Mariana Lucia Angelescu is Associate Professor at the Faculty of Materials Science and Engineering of the University Politehnica of Bucharest, within the Department of Processing of Metallic Materials and Ecometalurgy, in the Deformable Medium Engineering team. She was born on 4 June 1963 and graduated in 1985 from the Faculty of Metallurgy at the Polytechnic Institute of Bucharest, the Metallurgical Department. She started his teaching career in higher education in 1990 and in 1998 she completed her doctoral studies at the University Politehnica of Bucharest, with the theme "Possibilities for induction of superplastic behavior in industrial alloys". She has published over 40 articles in specialized journals and has presented over 30 papers at various conferences. She is the author of many didactic works in the field of plastic deformation of metallic materials and has a rich experience both in fundamental and applied research and in the management of research projects.

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