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New results on the continuous cooling behavior of an ASTM A335 P92 steel

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This work introduces new results on the transformation behavior and microstructural evolution of ASTM A335 P92 steel under continuous cooling conditions (CCT). The first results were already reported and stored in the INIS database under the report number INIS-AR-C-1704.

The material was austenitized at 1050 °C and afterwards cooled down at controlled rates (300, 200, 140, 120, 100, 90, 70, 50, 25 and 15 °C/h). The transformation behavior of the steel samples was followed by dilatometry.

The determination of the phases present in the samples after the thermal cycles was performed by optical and field emission scanning electron microscopy for the eleven tested values of cooling rate. Additionally, a full characterization was performed for selected samples by Mössbauer spectroscopy and X-ray diffraction.

The phase domains identified according to the cooling rate were completely martensitic, completely ferritic and mixed martensitic-ferritic. Second-phase precipitation has been observed in all of the samples, and indications of the presence of retained austenite after some of the cooling cycles were also detected. The experimental results were collected in the form of a continuous cooling transformation diagram.

Country/Int. Organization

Argentina/ Argentina Atomic Energy Commission

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