

Title (en)

HIGH-ENTROPY AUSTENITIC STAINLESS STEEL, AND PREPARATION METHOD THEREFOR

Title (de)

HOCHENTROPISCHER AUSTENITISCHER EDELSTAHL UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)

ACIER INOXYDABLE AUSTÉNITIQUE HAUTE ENTROPIE ET SON PROCÉDÉ DE PRÉPARATION

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Abstract (en)

The invention discloses high-entropy austenitic stainless steels and their preparation methods in the technical field of stainless steel materials. The elemental composition of the stainless steels developed by the invention is as follows: Cr: 5 - 30%; Ni: 5 - 50%; Ti: 1 - 15%; Al: 1 - 15%; the rest are Fe and inevitable impurities; preferably, the composition is Cr: 5 - 19%; Ni: 5 - 29%; Ti: 6 - 15%; Al: 5 - 15%; the rest element is Fe. By adjusting the atomic ratio of each element, the nano-sized precipitates are generated as much as possible, and the strength is maximized while maintaining a high plasticity. The stainless steels provided by this invention have only five alloying components, a low manufacturing cost, and high-strength and high-plasticity. They can be widely used in many industrial fields such as aviation, aerospace, marine, and nuclear power with broad market prospects.

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