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Determination of previous austenite grain size 9%Ni low carbon steel and its effect on impact toughness at $-196\text{ }^{\circ}\text{C}$

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Abstract: Low carbon steel with 9%Ni is used in cryogenic services, in which high toughness and strength are required. One of the main concepts of physical metallurgy is that the toughness and strength may be increased by grain refinement. In martensitic steels, the grain size that can be measured is the previous austenite grain size (PAGS). The goal of this work is to reveal and measure the PAGS's of different specimens of 9%Ni low carbon steel and correlate these results with hardness and low temperature toughness. The decrease of PAGS's improve the toughness of specimens quenched and quenched and tempered.