

Abstract Submitted
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Microstructural and mechanical characterization of 0.2mass% Carbon content steel SAJJAD TOLLABIMAZRAEHNO, Johannes Kepler University, Altenberger Str. 69, 4040 Linz, Austria, CHRISTIAN COMMENDA, None, GUENTER HESSER, Johannes Kepler University, Altenberger Str. 69, 4040 Linz, Austria, ANDREAS PICHLER, None, KURT HINGERL, Johannes Kepler University, Altenberger Str. 69, 4040 Linz, Austria — The microstructures of low carbon content steel are comprised of bainite, martensite, tempered martensite and retained austenite. These structures are obtained by different heat treatments. The effect of heat treatment on microstructure and mechanical properties were investigated using X-ray diffraction, focused ion beam - scanning electron microscope (FIB-SEM), electron backscatter diffraction (EBSD), and nanoindentation. The experimental misorientation distribution revealed most grain boundaries had misorientation range between 50° and 60°. The lattice relation between bainite and parent austenite is Kurdjumov-Sachs ($\langle 111 \rangle \parallel \langle 110 \rangle$). FIB-SEM images and nanoindentation were revealed the grain size can influence the hardness.

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