

**WEAR RESISTANCE AND MECHANICAL PROPERTIES OF 35CRSIMN5-5-4 STEEL AFTER
QUENCHING & PARTITIONING PROCESS**

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Abstract

The carbide-free microstructures in steel which contains retained austenite have good wear resistance and tensile strength while maintaining high ductility. Ensuring desired ductility is the role of the retained austenite in the form of nanometric layers of a chemical composition required for a martensitic transformation induced by plasticity (TRIP effect). This phenomenon improves mechanical and tribological properties. The heat treatment that allows obtaining microstructure consisting of carbon-depleted martensitic matrix and carbon-enriched retained austenite is called quenching and partitioning (Q&P). These Q&P processes are suitable for steels containing alloying additions of silicon and aluminum, that suppress formation of iron carbides.

The paper presents results of microstructure characteristic, mechanical and tribological tests of 35CrSiMn5-5-4 steel after Q&P processes. The parameters of the Q&P processes were chosen on the basis of computer simulations and dilatometric measurements.

Keywords: Quenching & partitioning, heat treatment, retained austenite

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