

ABSTRACT

EFFECT OF TEMPERING VARIATION TO MICROSTRUCTURE AND TOUGHNESS OF STEEL K-460

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The research has been carried out about “Effect of Tempering Variation To Microstructure and Toughness Steel Of K-460”. Micro testing used optic microscopy and toughness testing used charpy impact testing with variation of tempering were 450 and 550 °C. The results of micro testing for sample without heating treatment including ferrite and cementite phase. The sample result occurred by heating treatment of quenching revealed martensite phase which has needle shaped, this phase occurred because of rapid cooling process that makes the atoms move and no diffuse. Whereas the result of sample occurred by heating treatment of tempering shown the structure of spheroidite carbide, when it is located at a high temperature or warming up around the critical temperature A_1 is 723 °C, and for a long time so cementite that had plate shaped will crumble into small balls (sphere). The impact testing results showed the best result obtained at 550 °C tempering with toughness value of 0.08 J/mm² and the lowest value of toughness obtained at steel is quenched with toughness value of 0.04 j/mm².

Keywords: high carbon steel, tempered martensite, quenching.