ABSTRAK

Seiring dengan perkembangan industri manufaktur yang semakin berkembang, logam mempunyai peran penting dalam industi manufaktur. Dalam hal ini baja merupakan logam paduan yang paling banyak digunakan dalam dunia industri manufaktur. Salah satu jenis baja yang sering digunakan adalah Baja ST-42.penelitian ini tujuannya untuk mengetahui pengaruh suhu Hardening dan media pendingin terhadap sifat mekanik Baja ST-42 dengan variasi suhu hardening dan media pendingin, suhu yang digunakan 825^0.875°,925^0 menggunakan media pendingin Air pada pengujian pada temperatur 925^0 C Holding time 20 menit media pendingin air mempunyai nilai kekerasan dengan rata – rata 70,7 HRC, Holding time 25 menit media pendigin air mempunyai nilai rata – rata 65,26 HRC dan Holding time 30 menit media pendingin air mempunyai nilai rata – rata 64,33 HRC. Dari data hasil penelitian nilai kekerasan uji Rockwell di atas, dapat dilihat spesimen tanpa perlakuan panas dengan spesimen yang dihardening 925^0 C memiliki perbedaan nilai kekerasan yang sangat cukup signifikan,sedangkan perbedaan antara hardening temperatur 825^0 C dengan 875^0 C perbedaan nilai kekerasan rata-ratanya tidak begitu signifikan. .

spesimen yang telah dihardening 875^0 C Holding time 20 Menit media pendigin air mempunyai energy impact dan harga impact sebesar E = 26,15 J, HI = 0,326 J/mm^2,Holding time 25 Menit media pendingin air mempunyai energy impact dan harga impact sebesar E =26,15 J, H = 0,326 J/mm^2 dan Holding time 30 Menit media pendingin air mempunyai energy impact dan harga impact sebesar E = 26,13J, HI = 0.326 J/mm^2. dan specimen yang telah dihardening 925^0 C Holding time 20 Menit media pendigin air mempunyai energy impact dan harga impact sebesar E = 26,17 J, HI = 0,327 J/mm^2, Holding time 25 Menit media pendingin air mempunyai energy impact dan harga impact sebesar E = 26,17 J, H = 0,327 J/mm^2 dan Holding time 30 Menit media pendingin air mempunyai energy impact dan harga impact sebesar E = 26,17 J, HI = 0.327 J/mm^2.

Pada spesimen yang dengan Martensit lebih merata yaitu dengan tanpa perlakuan holding time 30 menit memiliki nilai kekerasan rata-rata yaitu 64,33 HRC dan yang kedua adalah spesimen dengan warna gelap kedua adalah yaitu holding time 22 menit memiliki nilai kekerasan rata-rata 65,26 HRC dan yang yang ketiga adalah spesimen dengan warna paling terang holding time 20 menit yaitu dengan memiliki nilai kekerasan rata-rata 70,7 HRC dan terakhir spesimen dengan tanpa perlakuan panas butiran-butiran masih terlihat kasar memiliki kekerasan 66,76 HRC.

Kata kunci: Hardening, Baja ST-42,uji kekerasan, uji impact (charpy),uji mikro

ABSTRACT

Along with the development of the growing manufacturing industry, metals have an important role in the manufacturing industry. In this case, steel is the most widely used alloy in the manufacturing industry. One type of steel that is often used is Steel ST-42. This study aims to determine the effect of hardening temperature and cooling media on the mechanical properties of ST-42 steel with variations in hardening temperature and cooling media, the temperature used is 8250.875 °, 9250 using water cooling media. On testing at a temperature of 9250 C Holding time 20 minutes water cooling media has a hardness value with an average of 70.7 HRC, Holding time 25 minutes water cooling media has an average value of 65.26 HRC and holding time 30 minutes water cooling media has average value of 64.33 HRC. From the research data on the hardening value of the Rockwell test above, it can be seen that specimens without heat treatment with specimens hardened at 9250 C have a very significant difference in hardness values, while the difference between the hardening temperature of 8250 C and 8750 C is not so. significant. .

Hardened specimens 8750 C Holding time 20 minutes water cooling media has an energy impact and an impact price of E = 26.15 J, HI = 0.326 J / mm2, Holding time 25 minutes water cooling media has an energy impact and an impact price of E = 26.15 J, H = 0.326 J / mm2 and Holding time 30 minutes water cooling media has an impact energy and an impact value of E = 26.13J, HI = 0.326 J / mm2. and specimens that have been hardened 9250 C Holding time 20 minutes, water cooling media has an energy impact and an impact price of E = 26.17 J, HI = 0.327 J / mm2, Holding time 25 minutes water cooling media has an energy impact and an impact price of E = 26.17 J, H = 0.327 J / mm2 and Holding time 30 minutes water cooling media has an impact energy and an impact value of E = 26.17 J, HI = 0.327 J / mm2.

The specimens with Martensite were more evenly distributed, i.e. without treatment, the holding time of 30 minutes had an average hardness value of 64.33 HRC and the second was a specimen with a dark color.The second was a holding time of 22 minutes having an average hardness value of 65.26 HRC and the third is the specimen with the brightest color holding time of 20 minutes, with an average hardness value of 70.7 HRC and finally the specimen without heat treatment, the grains still look coarse and have a hardness of 66.76 HRC.

Keywords: Hardening, Steel ST-42, hardness test, impact test (charpy), micro test