

SUMMARY

Steel hardenability was studied in this work.

- It was found that ground flats have an impact on the hardenability characteristics of the specimens in the Jominy test. Therefore, Jominy hardenability test results obtained during students' practical course lessons cannot be regarded as valid hardenability results and are not comparable with the result obtained according to EN ISO 642:2003 standard.
- From the final chemical composition analysis, specimens have different chemical compositions compared to the first spectrum analyzes.
- The process of the Jominy hardenability test was done at too high austenitizing temperature for the C40E and C35E specimens due to the wrong getting chemical composition at the beginning: first spectrum analyzes were done from the decarburized surface layer, as it was defined during the observations. But the last analyzes showed real data. These were done in the center of the cross-sections at 22 mm from the quenched end of the tested specimens. The last chemical analyses showed that both steel specimens were from C80U steel. However, a smaller determined carbon percentage means higher austenitizing temperatures, therefore, the specimens there certainly hardened.
- The chemical composition of the 34Cr4 steel specimen was taken from the referred book, so the austenitizing temperature was chosen properly for this test bar.
- According to the tables given in the main body, values of hardness along the specimen with and without ground flats differ almost twice. Measurements of hardness along the specimen with ground flats are bigger because the amount of carbon on the flats is bigger than due to decarburization on the surface.
- I can conclude that the flats are ground due to several reasons. First of them is to avoid a round surface, therefore make the surface flat, to make penetration of indenter more precise. Secondly, to avoid layers, where reactions between the surface of the specimen and environmental were done, such as the decarburization.