

Explosion effect on the mechanical properties of the investigated stainless steel

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The austenitic stainless steel is a very useful and common material in the engineering. The mechanical properties are the good plasticity and ductility, but low hardness and strength. The austenitic stainless steel has great corrosion resistance. The explosion load effect is well understood in the case of different materials. This high-speed effect causes hardening and increase of the strength of the metals [1, 2]. The traditional cold working (cold rolling) increases the hardness and strength of the metals. The explosion causes a very high-speed plastic deformation which one is different than the static low-rate plastic deformation. The deformation can cause phase transformation in the case of the austenitic stainless steel and the austenite transfer to martensite. The deformation effected martensite mechanical properties are different from the austenitic steel properties. The author wanted to investigate the explosion effected properties modification as like mechanical and corrosion properties [3]. It was tested the explosion treated austenitic steel properties by hardness test, macro test and corrosion test. The results show that the high-rate plastic deformation effected phase transformation cause different properties of the investigated steel.

Keywords: austenitic, stainless steel, explosion, martensite, hardness

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