

Localization of martensite near the spall under shock wave loading of stainless steel

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Stainless steel 12X18H10T is widely used in RFNC-VNIITF. The combination of mechanical characteristics of steel, such as strength, plasticity and impact strength, its manufacturability (weldability, corrosion resistance, etc.) make it very attractive for the manufacture of ampoules for storage and testing of toxic and fissile materials [1]. This steel was actively used in explosive experiments. The work was carried out with the aim of revealing at the microlevel changes in steel 12Kh18N10T occurring under shock-wave loading (SWL) [2].

The results of an X-ray study of the distribution of deformation martensite in 12Kh18N10T stainless steel specimens that have undergone spalling under shock-wave loading are presented [3]. To study the distribution of the martensite content over the depth of the selected sample, a layer-by-layer X-ray diffraction analysis was carried out from the side of the spall [4]. Localization of deformation martensite near the spall surface is found. Estimates of the thickness of the layer in which the localization takes place have been made.

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