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Structural – Phase Transformation in Two-Phase Titanium Alloys at Shock Loading MARGARITA SKOTNIKOVA, MIKAIL MARTYNOV, NIKOLAI KRYLOV, VLADIMIR VINOGRADOV, ALEKSEY GALYSHEV, ST. PETERSBURG MACHINE BUILDING STATE INSTITUTE TEAM — Plane targets from ($\alpha + \beta$) Titanium alloy VT6 loaded under uniaxial strain conditions at the impact velocities from 400-600 m/s. The investigations were carried out on thickness of sample along the shock wave propagation, both in the central zone, and on distance 4, 7 and 11 mm from the centre. As it have shown results of microhardness, X-ray analysis, REM and TEM investigation, on an input in material of sample the shock loading wave resulting in decomposition of β-phase and enrichment by vanadium of α-phase up to formation soft orthorhombic martensite - phase, braking shock wave was formed. The shock wave was reflected from opposite side on output and the wave of unloading was formed. Here there was a change of the mechanism of plastic deformation from shift to rotational. Thus there was an intensive heat-generating and return phase transformation, at which soft β-phase enriched with vanadium, inclined to decomposition down to formation of a brittle ω-phase was formed. Than the more the quantity of soft β-phase, the microhardness of opposite side material was less. From the moment when β-phase turned in brittle ω-phase, the hardness of sample material was raised. In this place the crack was formed.

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