

CONCLUSIONS

1. For example $\text{Al}_{94}\text{Fe}_3\text{Cr}_3$ alloy experimentally proved the effectiveness of the technique HHN to preserve the metastable quasicrystalline particles dispersed and phase. Without changing its shape and size Quasicrystall particles remain in the structure of plastically deformed powder coating particles, forming a dense cover in the absence of defects such as cracks and bundles.

2. Established that unlike the consolidation powder alloy extrusion which implements at elevated temperatures (653 K) in terms CS consolidation that takes place at low temperature (473 K), helps preserve the full content of metastable quasicrystalline phase and in an aluminum matrix .

3. It is established that microhardness HV output exceeding twice powders, coatings microhardness alloy $\text{Al}_{94}\text{Fe}_3\text{Cr}_3$, consolidated technology CS reaches 1.95 GPa. In addition, due to higher content of quasicrystalline phase and very high strain rate ($\sim 10^{-5}$ - 10^7 c^{-1}) strength characteristics (Young's modulus E, microhardness HV, conditional border fluidity $\sigma_{0,2}$) coating is at 23-28% higher than the corresponding characteristics of the alloy, hot extrusion consolidated.

4. Despite the considerable strengthening of the alloy coating material $\text{Al}_{94}\text{Fe}_3\text{Cr}_3$, consolidated technology CS, which is characterized by high Young's modulus $E = 90,0 \pm 2,5 \text{ GPa}$ microhardness $HV = 1,95 \pm 0,02 \text{ GPa}$ and limit turnover $\sigma_{0,2} = 470 \text{ MPa}$, plasticity characteristics $\delta_H/\delta_A = 0,85 / 0,84$ revealed by 8-9% lower than this parameter $\delta_H = 0,92$ for the original powder, remaining still, close to the critical value ($\delta_H = 0.90$), which shows the behavior of the plastic material in stretching and bending and sufficient effective functioning of the surface layers without breaking under load.

5. It is shown that in contrast to other thermal-sprayed coating methods (methods of detonation and plasma spraying) method CS is effective method while strengthening coating material and the substrate at low temperatures, allowing the flexibility to manage their mechanical properties not only by changing the phase composition but also hardening under the influence of severe plastic deformation.

6. The estimated cost of the planned scientific research work expenditures in view of all resources. Actuality and economic feasibility of this research.

7. The paper analyzed the harmful and dangerous production factors in the performance of research.