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Bases of texture design in sheet semifinished items

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The modern industrial technologies show a rather high complex of the requirements, both to the geometrical characteristics of products, and to their physics and mechanical properties. Anisotropy of physics and mechanical properties is one of the fundamental characteristics of properties of a material and is determined by a type of a crystal lattice and primary distribution of grains on orientations. In this connection recently special importance is got by methods of texture design ensuring creation of a required complex of properties by manufacture of the consumer goods and industrial semifinished items^[1]. In these methods crystallographic texture can be described in factors of function of distribution of grains on orientations (FDO) or by the orientation factors of texture, determined on the data return of polar figures (RPF)^[2].

The put task can be solved with application of mathematical model of interrelation of crystallographic texture parameters with parameters plastic anisotropy and characteristics of properties of a monocrystal.

At the first stage of texture design on the given anisotropy parameters the texture parameters, ensuring required properties and being the integrated characteristics are determined.

At the second stage the integrated characteristics as texture parameters should be submitted as one of set of various variants of multicomponent texture. It is carried out by means of the decision of system of the linear equations for definition of weight shares of a texture component of considered variants. The offered measures allow to receive some alternative variants of texture design of a product giving an opportunity of a choice optimal for practical realization.

References

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