



NATIONAL METALLURGICAL ACADEMY OF UKRAINE

REINFORCING ROLLED STEEL IN BUNDLES WITH STRENGTH GRADE 600 MPa FOR REINFORCED MASONRY STRUCTURES

Purposes and implication

Rolled steel with strength grade 600 MPa is used for reinforcing stressed and non-stressed reinforced concrete constructions. Such rolled steel can be used as reinforcing element in monolith and assembly reinforced concrete constructions for building industrial and resident constructions as well as construction elements of buildings in the form of bars, for reinforcing highways and airfield coverage.

Key characteristics of the developed technology

Reinforcing rolled steel with strength grade 600 MPa is supplied as a die-rolled section bar with the diameter range from 4.0 to 18.0 mm, which is bundled by cold plastic deformation of round rod made of ordinary low-carbon low-alloy grades of steel, possess tentative yield limit ($\sigma_{0,2}$) not less than 600 MPa, temporary resistance (σ_B) not less than 670 MPa, relation $\sigma_{0,2}/\sigma_B$ not less than 1.08 and total relative lengthening at maximum load (δ_{max}) not less than 3%. The production principle is based on strength accumulation at the processing stage and includes: 1 – thermal hardening of contirod; 2 – hardening by cold strain at the process of manufacturing die-rolled section bar; 3 – hardening of final product by tempering under conditions of electro thermal tension. It allows to receive products with high level of plasticity.

Comparison with the world analogues, major advantages

Mechanical properties of reinforcing rolled steel with strength grade 600 MPa correspond with DIN 488. Its application allows to save up to 20% of steel and up to 5% of metal in construction industry by reducing cutting cost.

Intellectual property rights protection

Three patents for the utility model registered in Ukraine.

Market demand

The demand for reinforcing rolled steel with strength grade 600 MPa is over 300 thousand tons per year.

Availability of the technology

Technology parameters have been designed. There has been produced industrial batch of reinforcing rolled steel in bundles with the diameter 10 mm and strength grade 600 MPa in metalware industry.



Photo of the product – bundles of reinforcing rolled steel with strength grade 600 MPa

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