

Approval & Reception Procedure

DMC – Departamento de Materiais de Construção	
Steel Reinforcement Bars	Document no. ARP/DMC/015-D
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1 Reference standard

“Norma de Aços para Armaduras Ordinárias de Macau (NA)” (Macau Standard for Steel Reinforcement Bars)

BS 4449:2005+A3:2016 Steel for the reinforcement of concrete. Weldable reinforcing steel. Bar, coil and decoiled product. Specification

GB/T 1499.2-2018 Steel for the reinforcement of concrete - Part 2: Hot rolled ribbed bars

2 Approval procedures

Manufacturer's information, such as production catalogue, accredited quality system certificates, and mill certificates of each type and size of steel reinforcement bars, shall be submitted for compliance verification before any delivery.

Compliance verification includes the followings:

- Geometrical properties : size, mass/meter run
- Chemical properties : C, S, P, Mn, Si, V, N, Cr, Mo, Ni, and Cu
- Mechanical properties: Yield strength, Tensile strength, Elongation, Bend and Rebend
- Evidence of production control implementation

3 Reception procedure

3.1 Stocking on the site

Each lot of steel bars shall be stocked separately by diameter, grade, and manufacturer, in an adequate manner, not in contact with soil and in a way to facilitate identification and sampling.

Note: Lot - Any quantity of bars of same grade, heat no, size, and condition, delivered to site and presented for reception at any one time.

3.2 Information to be submitted

Manufacturer's Mill Certificates and Quantity of each delivery shall be submitted for reception sampling.

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3.3 Sampling for test

Sampling frequency for tensile test shall be the followings:

Lot of less than 10 tons	: 3 specimens
Lot of 10 to 30 tons	: 6 specimens
Lot of more than 30 tons	: 9 specimens

Sampling frequency for bending test shall be the followings:

Lot of less than 60 tons	: 3 specimens
The quantity exceed 60 tones, 1 more sampling for each 60 tones	: 3 specimens

Determination of chemical composition

1 test / heat no	: 1 specimen
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Note: Specimen length shall be app. 1 m long.

3.4 Testing

The geometrical properties (mass per meter run) and tensile properties (yield strength, tensile strength and elongation after broken) shall be tested and verified the compliance of each test specimen with the requirements in reference standard.

Chemical composition, fatigue resistance and bonding performance will be tested only under request.

4 Acceptance criteria

If there are more than one unfavourable test result among all test specimens in a lot, this lot shall be rejected.

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However, if there is only one unfavourable test result amongst all test specimens in a lot, an double number of test specimens may be taken from the same lot. If any of the second set is unsatisfactory, this lot shall be rejected.