

CERTIFICATE

It is hereby certified that:

SN SEIXAL - Siderurgia Nacional SA

PT - 2840-996 Aldeia de Paio Pires

Portugal

has established and implemented a factory production control system
in compliance with:

*NS-EN 10080:2005 - Steel for the reinforcement of concrete and
Kontrollrådets "Guidelines for the Company's FPC - March 2009"*

The Certificate applies to the manufacture of the following products:

*Ribbed bars and coils B500NB and B500NC
according to NS 3576 part 2 and 3.
For alternative rib geometry, see Annex 1 to this certificate.*

The Certificate expires at the latest

2020.08.31

Certificate number: **PROD-086**

Initially issued: **24.08.2014**

Renewed: **15.06.2020**



Certification Manager

 **KONTROLLRÅDET**

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ANNEX 1 to Certificate no. PROD-086
2018.11.30

Bond properties of the certified material is ensured through f_R -values as defined in the Norwegian product standard "Steel for the reinforcement of concrete Dimensions and properties" Part 2: Ribbed steel B500NB and Part 3: Ribbed steel B500NC.

It might also be ensured complying with the geometrical values as defined in the table below. The values in this table will ensure the compliance of bond stress defined in NS-EN 1992-1-1:2004+A1:2014+NA:2018/Eurocode 2 "Design of concrete structures - Part 1-1: General rules and rules for buildings" and is based on the results from bond testing according to the product standard NS-EN 10080:2005, "Steel for the reinforcement of concrete Weldable reinforcing steel General", Annex C.

The bond testing is reported in the certificate from Instituto Técnico de Materiales y Construcciones, INTEMAC, 22 November 2018.

Series	Diameter (\emptyset), mm	Minimum rib height a, mm ⁽¹⁾	Rib spacing c, mm ⁽²⁾	Perimeter without ribs, mm ⁽³⁾
Small	6	0,30	4,80	3,98
	8	0,35	5,70	4,96
	10	0,44	6,70	7,43
Medium	12	0,53	7,20	8,85
	14	0,62	8,40	10,32
	16	0,70	9,60	11,79
	20	0,88	12,00	14,74
Large	25	1,11	14,86	13,08
	32	1,42	19,02	16,74

(1) Mean value

(2) Tolerance: from -15% to +7%

(3) Tolerance: +10%

Note: In case of coils, the height of the ribs must be increased +0.05 mm ($\emptyset \leq 20$ mm) or +0.1 mm ($\emptyset > 20$ mm) in relation to that indicated in the table.

OSLO, 30. November 2018

Kontrollrådet

Jan Karlsen
Certification Manager