


## CERTIFICATE OF CONSTANCY OF PERFORMANCE

### 20-CPR-139-(C-31/2015)

In compliance with Government decree no. 275/2013. (issued on 16<sup>th</sup> July) this certificate applies to the construction product

**ALFA ACCIAI S. P. A. made weldable, ribbed, hot rolled reinforcing steel in bars in steel quality B500B (DIN 488-1:2009 and MSZ/T 339:2012.03) with  $R_{eH} = 500$  MPa declared yield strength calculated from nominal cross-section** 

with product performance and intended use shown in the annex as page 2/2 of this certificate and produced by

**ALFA ACCIAI S. P. A**

Via S. Polo 152, I-25134 Brescia, Italy

and produced in the manufacturing plant:

**ALFA ACCIAI S. P. A**

Via S. Polo 152, I-25134 Brescia, Italy

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in **National Technical Assessment no. A-264/2014 dated at 03.08.2015.** under system (1+) are applied and that

***the product fulfils all the prescribed requirements set out above.***

This certificate was first issued on 19.10.2015. and will remain valid as long as the test methods and/or factory production control requirements included in the National Technical Assessment, used to assess the performance of the declared characteristics, do not change, and the product, and the manufacturing conditions in the plant are not modified significantly.

***This certificate consists of 2 pages!***

Dated at Szentendre, on 14<sup>th</sup> December 2015





Pataki Erika  
Head of Certification Office  
Certification Office  
of ÉMI Non-profit Ltd.

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### ANNEX

#### Nominal diameters:

Ø8, Ø10, Ø12, Ø14, Ø16, Ø18, Ø20, Ø22, Ø25, Ø28 and Ø32 mm

#### Intended use of the product:

The steel bars may be used as reinforcement of concrete structures according to EN 10080:2005, in steel quality B500B (DIN 488-1:2009 and MSZ/T 339:2012.03).

The reinforcing steel bars can be taken into account with the parameters of B60.50 (MSZ 339:1987) reinforcing steels by performing diagnostic works on building designed in accordance with withdrawn standards series no. MSZ 15022:1986 and no. MSZ 15022:1986/1M:1992.

The reinforcing steel bars can be taken into account as product in ductility class B with  $R_{eH} = 500$  MPa declared yield strength calculated from nominal cross-section at design works and strength calculations, according to Annex C of standard no. EN 1992-1-1:2010 (EUROCODE 2).

Essential characteristics	Performance
Yield or proof strength ( $R_{eH}$ or $R_{p0,2}$ ) <sup>1)</sup>	≥ 500 MPa (characteristic) ≥ 485 MPa (individual)
Tensile strength ( $R_m$ )	≥ 580 MPa (characteristic) ≥ 563 MPa (individual)
Stress ratio, $R_m / R_{eH}$	≥ 1.08 (characteristic) ≥ 1.06 (individual)
Yield ratio, $R_{e,act} / R_{e,nom}$	≤ 1.30 (individual)
Extension ( $A_{gt}$ )	≥ 5.0 % (characteristic) ≥ 4.5 % (individual)
Elongation, $A_5$	≥ 18.0 % (average)
Bendability	180 degrees: $d \leq 16$ mm: 3d mandrel $d > 16$ mm: 6d mandrel
Tolerances from nominal cross-section	$d = 8$ mm: ± 6,0 $d > 8$ mm: ± 4,5
Bonding strength ( $f_R$ )	$8$ mm ≤ $d$ ≤ $12$ mm: 0,040 $d > 12$ mm: 0,056
Weldability ( $C_{eq}$ or CEV):	$C_{eq} \leq 0.52$
Durability (product analysis)	$C \leq 0.24$ ; $S \leq 0.055$ ; $P \leq 0.055$ ; $N_2 \leq 0.014$ ; $Cu \leq 0.85$
Fatigue:	$\sigma_{max} = 300$ MPa; $2\sigma_A = 150$ MPa $n = 2 \cdot 10^6$
<sup>1)</sup> Upper yield strength ( $R_{eH}$ ), when real yield phenomena occurs, otherwise proof strength ( $R_{p0,2}$ )	

Dated at Szentendre, on 14<sup>th</sup> December 2015.

