

000030



MILL TEST CERTIFICATE

HIGH TENSILE ROUND BARS TESTS
PRODUCED UNDER TEMPOCARE METHOD

Rebar Steel "FE 400" manufactured by METAFRIQUE STEEL S.
A. & Used in VARIOUS INFRASTRUCTURE Projects IN
CAMEROON] / Quote N° 000005 dated 27th January 2026

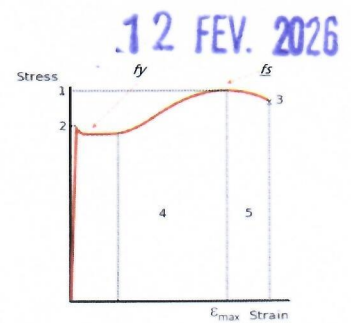
09-févr.-26

Collected on 27-janv-26

Received on 6-févr-26

NF EN 10002-1 [Part 1: Test at Room Temperature]

Tests carried out on 9-févr.-26



INSPECTION REPORT OF STEEL BAR & collected by METAFRIQUE STEEL S.A.

- Measurements of nominal Diameter
- Measurements of the metric weights and lengths of the bars
- Determination of elastic limit f_y
- Determination of failure stress f_s / - Measurement of Elongation (Strain), A5

Diameter	Steel No.	Metric Weight	Elastic limit (proportional limit)	Ultimate stress	ELONGATION (STRAIN) at failure	Area Reduction at failure Z
(mm)		(gr/ml)	f_y (MPa)	f_s (MPa)	A5	$Z = (S_o - S_u) * 100 / S_o$
		Moy - 0.25σ	Moy - 0.25σ	Moy - 0.25σ	Moy - 0.25σ	Moy - 0.25σ
8 TMT	1	354.4	518.6	621.6	28.8%	72.1%
10 TMT	2	545.2	496.8	562.7	25.5%	61.2%
12 TMT	3	829.7	482.4	551.1	16.2%	51.9%

f_y and f_s Values are calculated by dividing loads obtained to the nominal section and not to the real (striction) section

Observations about Steel Grades

EUROCODE 2 (Concrete structural Calculation)

Diameter	NF EN 10002-1 [Part 1: Test at Room Temperature]	ASTM	Minimum Yield Strength (N/mm ²)	f_s/f_y	ELONGATION under Maximum load, $\approx \epsilon_{max}$	GAP between standard diameter with actual steel (mm)
mm	Metric Grade	615				$5 \leq \phi \leq 12 \quad \pm 7\%$ $14 \leq \phi \leq 20 \quad \pm 6\%$ $25 \leq \phi \leq 40 \quad \pm 5\%$
8 TMT	Fe 500	GR 72	500	1.24 > 1.05	5.1% [High ductility]	4.59% -> Conforme
10 TMT	Fe 500	GR 72	500	1.12 > 1.05	4.5% [Normal Ductility]	5.46% -> Conforme
12 TMT	Fe 460	GR 66	460	1.19 > 1.05	2.9% [Normal Ductility]	2.91% -> Conforme

NOTE: DUCTILE STRUCTURE, WHERE IS CLOSE TO COLLAPSE, WARNS OF HIS POSITION IN UNDERGOING LARGE DEFORMATIONS AND LARGE CRACKS

NOTE: IF THE STRUCTURE IS FRAGILE, THE COLLAPSE TAKES PLACE WITHOUT PRIOR NOTICE, WITH SMALL DEFORMATION AND REDUCED CRACKING

REMINDER OF CONTROL METHODS FOR REINFORCED CONCRETE
french standard Title 1 of CCTG Part 4

The Elastic limit Rem , the guaranteed value Reg

The probability of having a test result lower than the reference value should be at most 5%. For an application for approval covering 60 tests spread over 10 production lots. It had to be checked:

$Rem - 2s \geq Reg$ (guaranteed value); s is the standard deviation

To satisfy a self test on 3 tests per lot: $Rei \geq Remin$

The minimum value or lower bound: $Remin = Reg - 20 \text{ MPa}$

In case this condition was not satisfied, it must be verified by additional test, to bring the number of samples to 12: $Rem1 - 2s1 \geq Remin$





Sheet of tensile tests of a standard steel specimen

Universal Testing Machine (UTM) LABOGENIE / Capacity 600 KN

Date of tests

9-févr.-26

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Yield Point

Failure Point

Steel Diameter (mm)	Section (cm ²)	Tensile Yield load, KN	Elastic limit (proportional limit), N/mm ²	Failure tensile load (Mpa)	Ultimate stress (N/mm ²)	Reference Pack
8 TMT	0.503	26.1	519	31.2	621.6	1
8 TMT	0.503	26.1	519	31.2	621.6	2
8 TMT	0.503	26.1	519	31.2	621.6	3
10 TMT	0.785	39.0	497	44.2	562.7	1
10 TMT	0.785	39.0	497	44.2	562.7	2
10 TMT	0.785	39.0	497	44.2	562.7	3
12 TMT	1.131	54.6	482	62.3	551.1	1
12 TMT	1.131	54.6	482	62.3	551.1	2
12 TMT	1.131	54.6	482	62.3	551.1	3

Lab Operator

FOTOUO FAUSTIN



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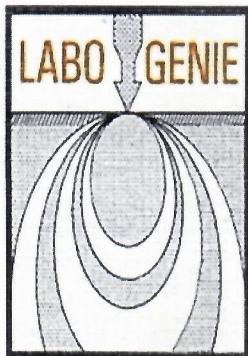
MESURE DU POIDS UNITAIRE DES FERS

Masse linéique					Moy - 0.25σ	Reference Pack
Steel Diameter (mm)	TYPE	Length (cm)	Weight (gr)	Metric density (gr)		
8 TMT	TMT	51.300	183.00	356.73	354.43 gr/ml	1
8 TMT	TMT	50.000	177.80	355.60		2
8 TMT	TMT	50.000	176.30	352.60		3
10 TMT	TMT	49.700	264.50	532.19	545.20 gr/ml	1
10 TMT	TMT	50.400	282.80	561.11		2
10 TMT	TMT	49.500	274.10	553.74		3
12 TMT	TMT	49.400	411.90	833.81	829.67 gr/ml	1
12 TMT	TMT	49.500	411.20	830.71		2
12 TMT	TMT	49.500	409.40	827.07		3

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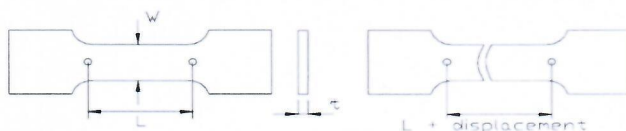
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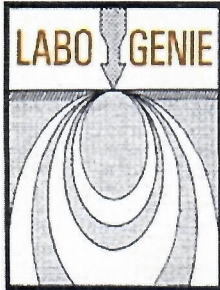
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MESURE DE L'ELONGATION

Steel Diameter (mm)	Original length, 5f (cm)	Elongation (strain)			Reference Pack
		Displacement (L+) after failure (cm)	Elongation (strain)	Moy - 0.25σ	
8 TMT	4.0	5.20	30.0%	28.8%	1
8 TMT	4.0	5.20	30.0%		2
8 TMT	4.0	5.10	27.5%		3
10 TMT	5.0	6.20	24.0%	25.5%	1
10 TMT	5.0	6.40	28.0%		2
10 TMT	5.0	6.30	26.0%		3
12 TMT	6.0	6.90	15.0%	16.2%	1
12 TMT	6.0	7.00	16.7%		2
12 TMT	6.0	7.10	18.3%		3



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FICHE DE SUIVI DES ESSAIS

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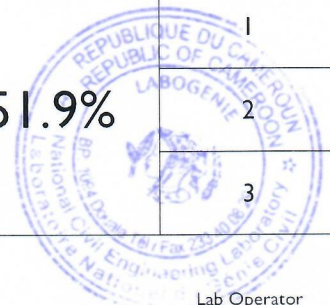
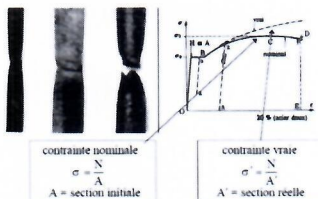
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Striction à la rupture

Steel Diameter (mm)	Initial diameter (mm)	Final diameter after failure (mm)	Area Reduction at failure	Moy - 0.25σ	Reference Pack
8 TMT	8.0	4.10	73.7%	72.1%	1
8 TMT	8.0	4.30	71.1%		2
8 TMT	8.0	4.20	72.4%		3
10 TMT	10.0	6.10	62.8%	61.2%	1
10 TMT	10.0	6.20	61.6%		2
10 TMT	10.0	6.30	60.3%		3
12 TMT	12.0	8.20	53.3%	51.9%	1
12 TMT	12.0	8.30	52.2%		2
12 TMT	12.0	8.40	51.0%		3

Striction



Lab Operator
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