

GLOBAL SPECIAL STEEL PRODUCTS S.A.U.

TEST CERTIFICATE FOR SEVEN-WIRE STRAND

Inspection certificate EN 10204-3.1

CUSTOMER EUROBUL ENGINEERING LTD
DELIVERY N° 26666236
OUR ORDER 16542586
NOM.CROSS SECTION 140,00 MM2
DESIGNATION EN 10138-3 Y 1860 S 7-15.3-F2-C1

MATERIAL PC-s. 15.20 right h.lay bright
NET WEIGHT 25.273 KG
NOM. DIAMETER 15,30 MM
LAY right hand lay

Coil N°	Heat N°	Cross Section mm2	Mass g/m	Maximum Force kN	Fp0.1 kN	Fp0.2	Fp0.1/Fm	Modulus Elasticity GPa	Agt %	Length. M	Net Weight KG
Mínimos		137,20	1071,20	260,00	229,00			185,0	3,50		
Máximos		142,80	1114,80	299,00				205,0			
35932533	GS15494901	141,36	1104,00	263,50	232,20			203,6	5,90	2.455	2.639
35932171	GS15494901	139,94	1092,90	264,60	234,80			193,2	5,00	2.453	2.662
35932152	GS15494901	139,71	1091,10	263,70	233,00			195,8	6,10	2.664	2.886
35932163	GS15494901	140,51	1097,40	264,40	233,90			193,5	5,00	2.664	2.885
35932094	GS15494901	141,19	1102,70	264,10	233,30			194,2	5,00	2.664	2.887
35932081	GS15494901	139,86	1092,30	264,00	233,20			196,1	5,70	2.446	2.662
35932057	GS15494901	139,72	1091,20	264,50	234,80			193,5	4,80	2.653	2.883
35932029	GS15494901	140,49	1097,20	263,50	230,80			191,9	5,80	2.659	2.884
35932065	GS15494901	140,23	1095,20	264,40	233,60			196,5	4,90	2.653	2.885

prEN 10138



QUALITY CONTROL

CHEMICAL COMPOSITION

Heat N°	C(%)	Mn(%)	Si(%)	P(%)	S(%)
GS15494901	0.800	0.645	0.199	0.014	0.025

Material manufactured by TYCSA-PSC in Santander
 TYCSA certifies that the materials above have been manufactured and tested according to the customer's order

kN

300

250

200

150

100

50

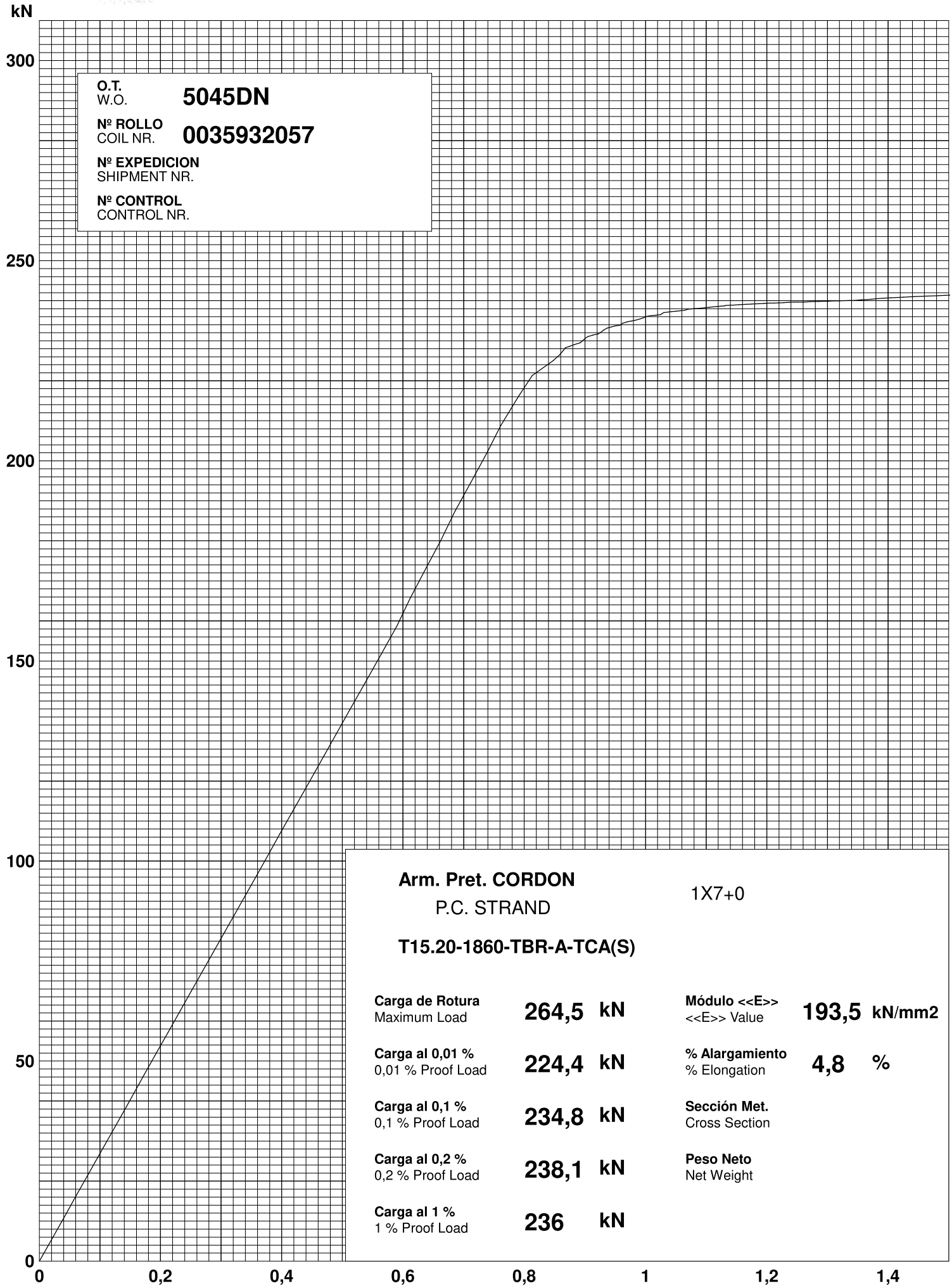
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O.T. **5045DN**
W.O.
Nº ROLLO **0035932029**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	263,5 kN	Módulo <<E>> <<E>> Value 191,9 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	208,6 kN	% Alargamiento % Elongation 5,8 %
Carga al 0,1 % 0,1 % Proof Load	230,8 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	236,3 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	235 kN	

0 0,2 0,4 0,6 0,8 1 1,2 1,4

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH



O.T. **5045DN**
W.O.
Nº ROLLO **0035932057**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	264,5 kN	Módulo <<E>> <<E>> Value 193,5 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	224,4 kN	% Alargamiento % Elongation 4,8 %
Carga al 0,1 % 0,1 % Proof Load	234,8 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	238,1 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	236 kN	

kN

300

250

200

150

100

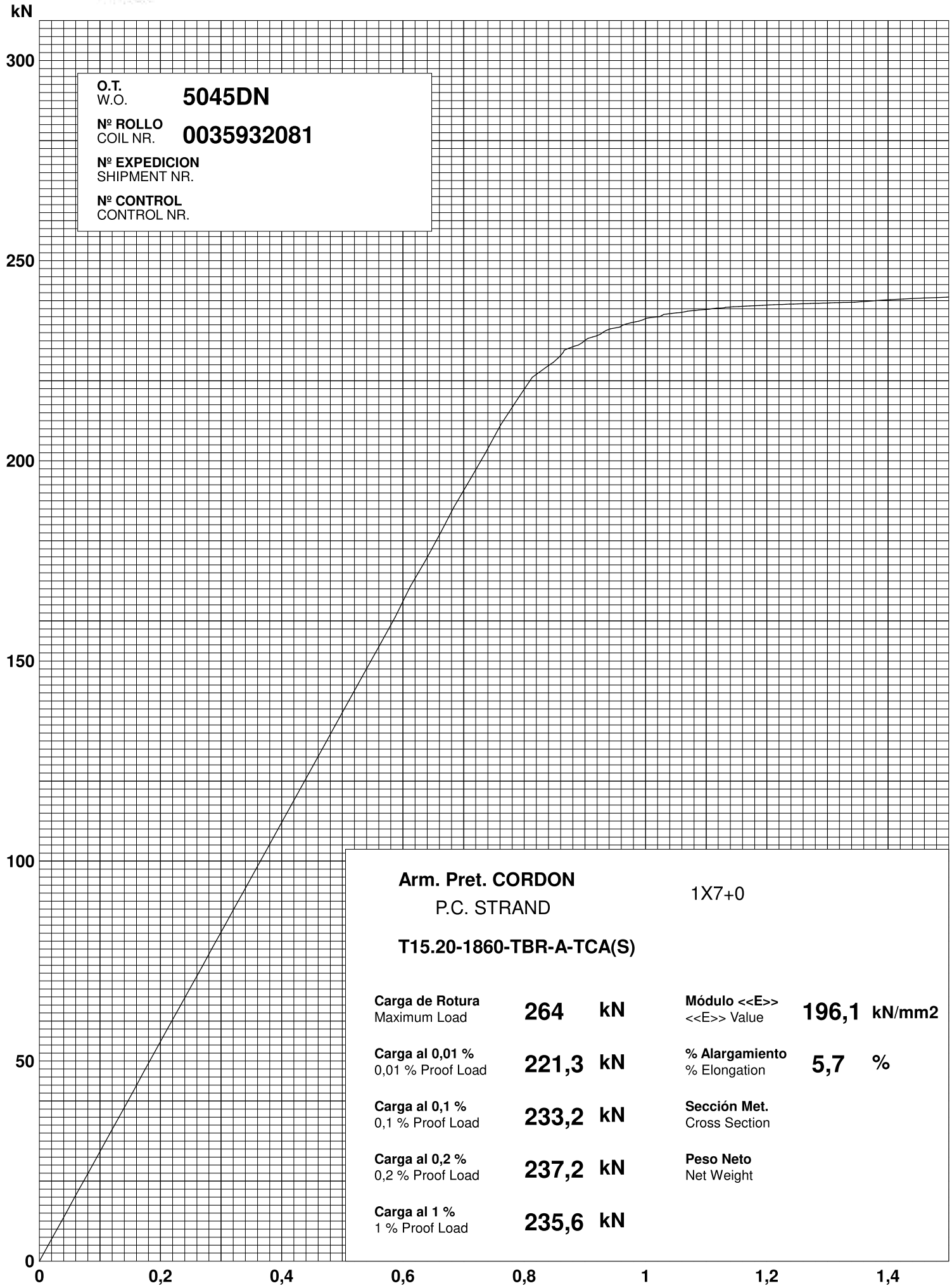
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O.T. **5045DN**
W.O.
Nº ROLLO **0035932065**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	264,4 kN	Módulo <<E>> <<E>> Value 196,5 kN/mm²
Carga al 0,01 % 0,01 % Proof Load	221,5 kN	% Alargamiento % Elongation 4,9 %
Carga al 0,1 % 0,1 % Proof Load	233,6 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	237,5 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	235,9 kN	

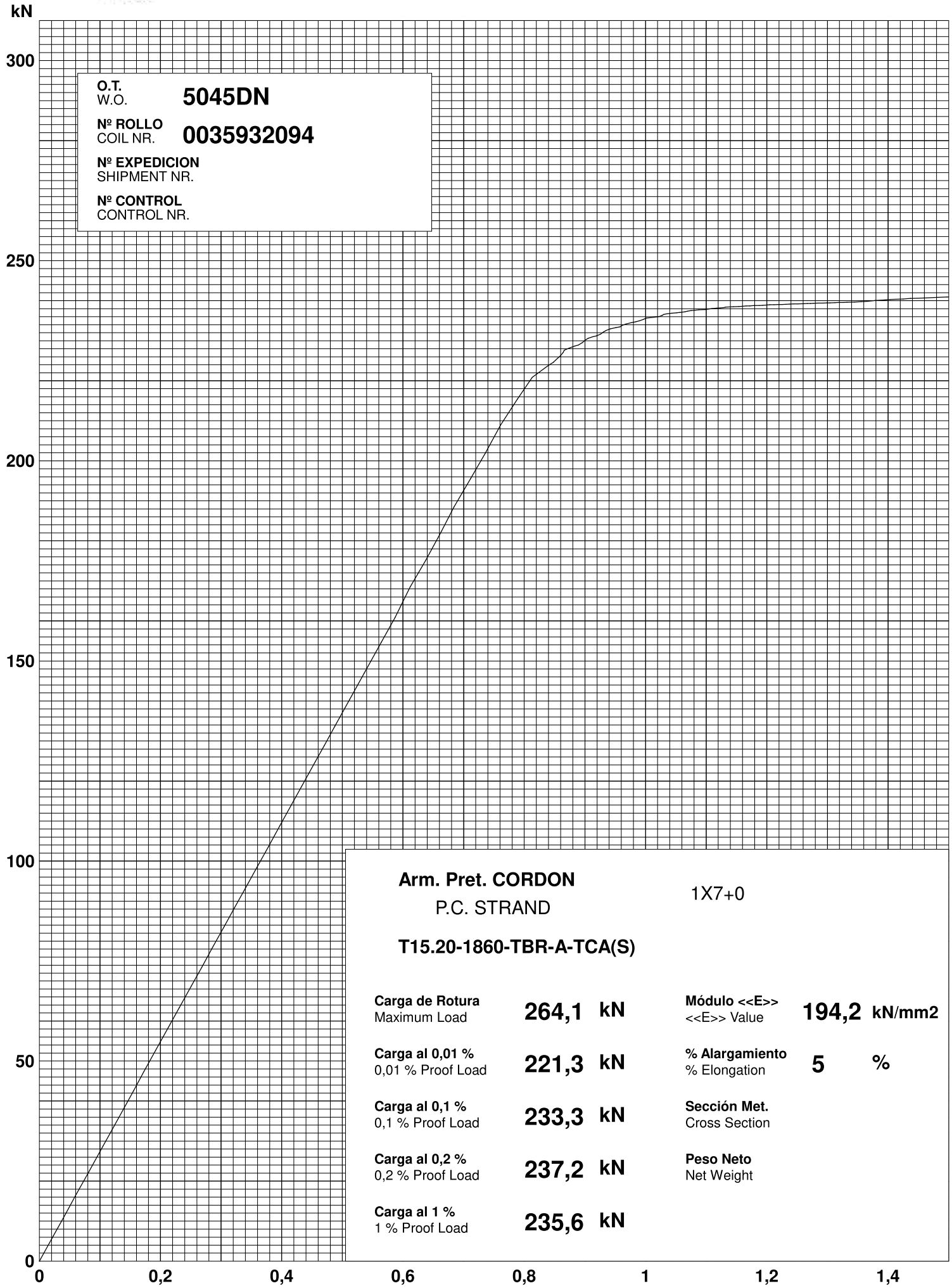
% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH



O.T. **5045DN**
W.O.
Nº ROLLO **0035932081**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON
P.C. STRAND
T15.20-1860-TBR-A-TCA(S)
1X7+0

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH



O.T. **5045DN**
W.O.
Nº ROLLO **0035932094**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	264,1 kN	Módulo <<E>> <<E>> Value 194,2 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	221,3 kN	% Alargamiento % Elongation 5 %
Carga al 0,1 % 0,1 % Proof Load	233,3 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	237,2 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	235,6 kN	

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH

kN

300

250

200

150

100

50

0

O.T. **5045DN**
W.O.
Nº ROLLO **0035932152**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	263,7 kN	Módulo <<E>> <<E>> Value 195,8 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	221,3 kN	% Alargamiento % Elongation 6,1 %
Carga al 0,1 % 0,1 % Proof Load	233 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	237,1 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	235,2 kN	

0 0,2 0,4 0,6 0,8 1 1,2 1,4

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH

kN

300

250

200

150

100

50

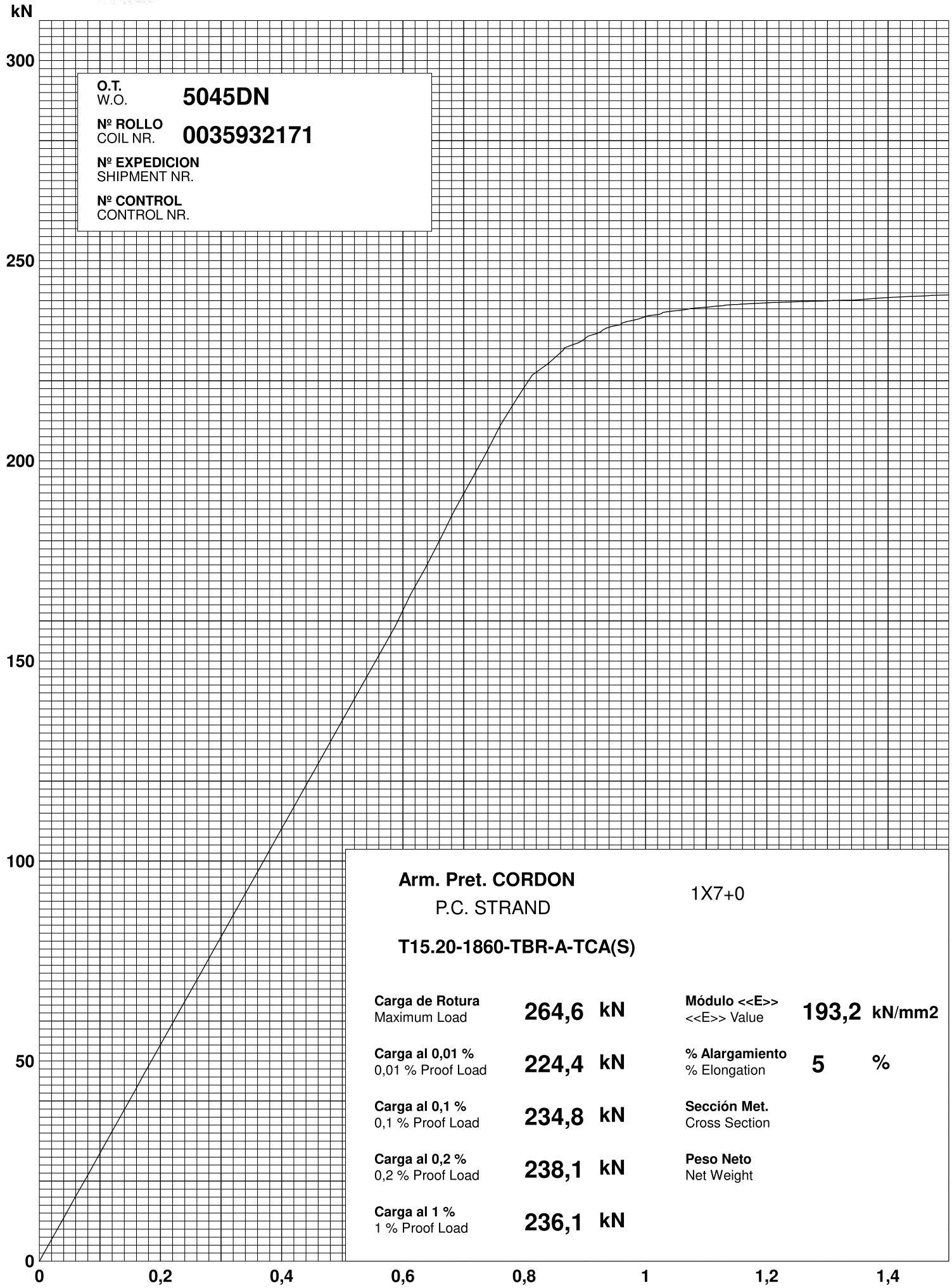
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O.T. **5045DN**
W.O.
Nº ROLLO **0035932163**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	264,4 kN	Módulo <<E>> <<E>> Value 193,5 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	223,1 kN	% Alargamiento % Elongation 5 %
Carga al 0,1 % 0,1 % Proof Load	233,9 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	237,9 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	236 kN	

0 0,2 0,4 0,6 0,8 1 1,2 1,4

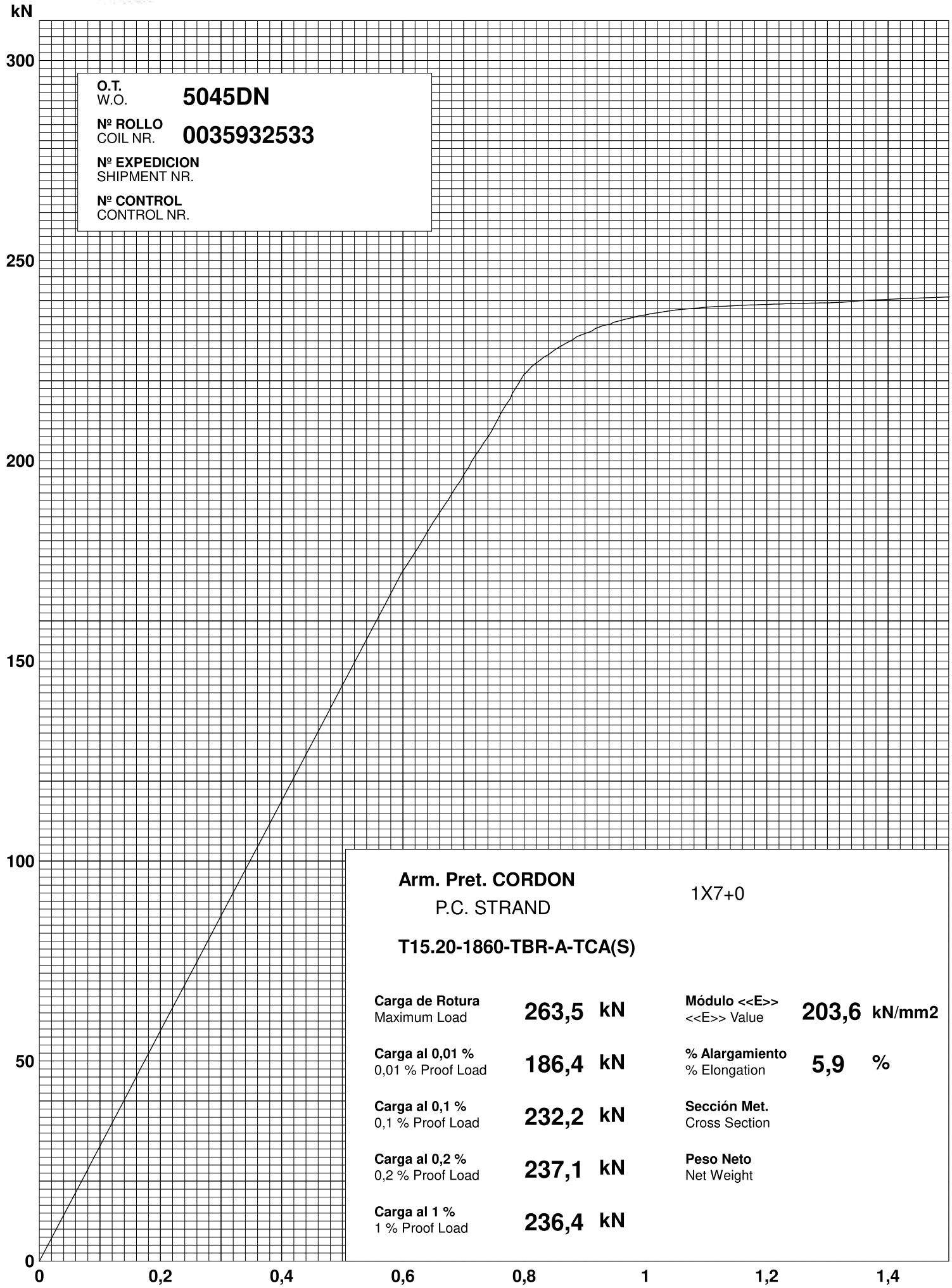
% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH



O.T. W.O. **5045DN**
 Nº ROLLO COIL NR. **0035932171**
 Nº EXPEDICION SHIPMENT NR.
 Nº CONTROL CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	264,6 kN	Módulo <<E>> <<E>> Value 193,2 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	224,4 kN	% Alargamiento % Elongation 5 %
Carga al 0,1 % 0,1 % Proof Load	234,8 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	238,1 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	236,1 kN	

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
 % ELONGATION ON 24" GAUGE LENGTH



O.T. **5045DN**
W.O.
Nº ROLLO **0035932533**
COIL NR.
Nº EXPEDICION
SHIPMENT NR.
Nº CONTROL
CONTROL NR.

Arm. Pret. CORDON		1X7+0
P.C. STRAND		
T15.20-1860-TBR-A-TCA(S)		
Carga de Rotura Maximum Load	263,5 kN	Módulo <<E>> <<E>> Value 203,6 kN/mm2
Carga al 0,01 % 0,01 % Proof Load	186,4 kN	% Alargamiento % Elongation 5,9 %
Carga al 0,1 % 0,1 % Proof Load	232,2 kN	Sección Met. Cross Section
Carga al 0,2 % 0,2 % Proof Load	237,1 kN	Peso Neto Net Weight
Carga al 1 % 1 % Proof Load	236,4 kN	

% ALARGAMIENTO SOBRE LONG. DE 610 mm.
% ELONGATION ON 24" GAUGE LENGTH

TECHNICAL RECOMMENDATION FOR THE TRANSPORT, STORAGE AND HANDLING OF STEEL FOR PRESTRESSING.

TRANSPORT&RECEPTION

The material in any delivery format, regardless of the product packaging, must be transported under cover, to prevent damage which may encourage water leakage caused by the weather.

Upon receipt of material, the condition of material received must be checked, facing any irregularity about the condition of the material, this should be stated on the transport document CMR and factory must be notified as soon as possible.

If the material were to be returned to the plant upon customer request, the material should not present any modifications or alterations as compared to the initial conditions, it should not present any spots, paint, oxidation, superficial damage, damage on the wrapping etc..., unless the material was already being dispensed in the coil dispenser.

STORAGE

All material must be protected against physical damage or corrosion from production to use, well maintained material from rain and humidity, also avoiding aggressive environments that may cause corrosion (corrosive liquids such as acids ...).

The storage facility must be set in a way that is kept far enough away from the floor, especially if dirty or contaminated

Stacking should not exceed 3 heights.

Any damage to the packaging should be corrected and returned to its original state to maintain protection. Avoid covering the products with materials that can facilitate the process of condensation.

HANDLING

Handling will be made by appropriate means (forklift) to avoid excessive movements and deformations in the product that may cause problems later when decoiling.

The use of slings or other approved lifting equipment for handling the coils is strongly recommended.

The material should not be handled using the steel straps as lifting element! Steel straps are part of the packaging of the coils.

Decoiling must be done by pulling from the end marked by the black arrow on yellow background, located in one of the strips. The roll should be placed on the winder, with the direction of the arrow indicating the direction of unfolding. You need to ensure that the unfolding is carried out with ease to avoid problems and knots.

All information relating to the identification of the package is collected in plastic label in case it is lost, TYCSA should be informed.

It is recommended during handling by staff the use of personal protective equipment defined as risk assessment for the operations to perform.

In case of any nonconformity detected during use of product, must be transmitted to TYCSA by its sales representative.