

# CINTA DE COBRE ELECTROLITICO

etp c11000

MEDIDA: 0.080mm x 25mm x 100ml x carrete

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# CARACTERÍSTICAS

Cobre es un Metal muy dúctil con magníficas propiedades como conductor de la corriente eléctrica y conductor del calor.

Cobre no oxida y es por eso un material muy importante para tubería de agua, vapor y climas artificiales.

Se ha usado el Cobre para techar ya hace siglos y ha demostrado aparte de su bonito color, llamado Patina, que es el metal más apropiado para este uso.

El Cobre se puede prensar, laminar, restirar, rechazar, forjar, martillar, soldar y pulir.

# BARRAS

CORRESPONDENCIA CON OTRAS NOMENCLATURAS					
MATERIAL					
Material Prima	Semi-Fabricado	Estado	Resistencia a la rotura Kilo-m/m <sup>2</sup>	Límite de restirado %1-10d	Dureza Brinell kg-m/m <sup>2</sup>
Cobre electrolítico	Barra	Recocido	22	10	50
	Solera	Semiduro	25	20	
	Perfil	Duro	30	10	80
Cobre electrolítico	Alambre	Recocido	23	30	
	Lámina	Semiduro	25	20	
	en Cinta	Duro	35	5	
	en Cinta	Acerado	45	1-3	
Cobre 99.4% Pureza	Láminas	Acerado	23	35	
	Tubos	Duro	35	5	
Cobre	Fundido		18	12	45

BARRAS

Las barras se usan como conductores eléctricos en la distribución de energía y en la fabricación de tableros y maquinarias eléctricas en general. Se fabrican con cobre ETP (cobre electrolítico) según norma: ASTM B187.

Las barras de ELECON pueden ser dobladas en ángulo de 180° para el estado blando y de 120° para el estado duro, sin que se presenten grietas o fisuras.

Las barras se suministran en tramos rectos con las dimensiones indicadas en la Tabla I (dorso).

Estado	Medidas mm	Resistencia tracción kg/mm <sup>2</sup>		% Elong. Min.	Resistn (Máx) Eléctrica 20°C Ω.g/m <sup>2</sup>	Dureza Rockwell F
		Min.	Máx.			
Blando	Todas	19,3	25.5	25	0,15328	50 Máx
Duro	Esp. ≤ 9,5 An. ≥ 102	26,0	34,5	10	0,15737	80 Min
	Todas las otras	23,0	31,0	15	0,15577	65 Min

La rgo estándar: 5.0 metros (otras longitudes consultar)

Los bordes pueden ser:

Con esquinas cuadradas (C), en cuyo caso los radios de las esquinas tendrán como máximo 25 mm incluido.

Bordes completamente redondeados (R), con un radio de aproximadamente un medio del espesor, sin que sobrepase la mitad del espesor en un 25%.

CINTAS Y FLEGES

Estos productos se utilizan como superficie de transferencia en radiadores e intercambiadores de calor, como arrollado en bobinas de inducción de transformadores y electroimanes o como apantallado en cables de señal y de potencia. Son fabricados con cobre electrolítico ETP según las normas: ASTM B248, B152.

Temple	Resistencia tracción kg/mm <sup>2</sup>		Dureza Rockwell		Resistividad Eléctrica a 20°C Ω.g/m <sup>2</sup> Máx.
	Min.	Máx.	Escala F	30T	
Blando	-	-	65 máx.	-	0,15328
Semi	23,5	29,6	60-84	18-51	0,15775

Las cintas se suministran en rollos con los diámetros y pesos indicados en la Tabla IV (dorso). Cada rollo lleva en el núcleo un anillo de cartón de diámetro interno de 161,9 mm, que impide que el rollo pierda su consistencia.

Los flejes se suministran en rollos con pesos comprendidos entre 10 y 85 kilos, dependiendo de la medida del fleje.

PLETINAS DESNUDAS

Se usan como conductores eléctricos para el bobinado de motores y transformadores. Se fabrican con cobre electrolítico ETP según la norma: ASTM B48.

Espesor (mm)	Elongación %(Min)	Resistividad Eléctrica a 20°C Ω.mm²/m (Máx).
0,99 A 6.90	32	0,017241

Los bobados pueden ser con esquinas redondeadas o completamente redondeados

PLETINAS ESMALTADAS Y EMPAPELADAS

Pletinas Esmaltadas: Es una medida que indica el grado al cual el conductor esmaltado puede ser mecánicamente deformado sin mostrar grietas visibles en el esmalte o pérdida de adhesión de este al conductor.

Pletinas Empapeladas: El recubrimiento no debe abrir lo suficiente para exponer el conductor desnudo, ni debe mostrar desgastes. Tampoco debe deslizarse a lo largo del conductor.

PLETINAS EMPAPELADAS CON KRAFT

En transformadores en aceite de gran capacidad y tensiones elevadas.

PLETINAS EMPAPELADAS CON NOMEX

En transformadores secos y motores con elevadas exigencias térmicas

PLETINAS ESMALTADAS CON POLIVINIL ACETAL (FORMVAR)

En transformadores en aceite y donde se requiera gran resistencia a la abrasión o aplicación con máquinas bobinadoras de alta velocidad.

PLETINAS ESMALTADAS CON POLIESTER

Cuando se requiere alta Clase Térmica, alta Rigidez Dieléctrica y resistencia a las sobrecargas.

# PRESENTACIÓN



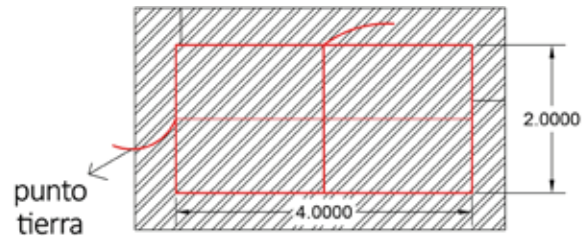
X CARRETE

ANCHO: 25MM

ESPESOR: 0.080MM

LARGO: 100 ML x ca-

## Distribución de la Malla de cobre



piso



malla de cobre





# Certificate of Compliance

No. 01170801.SMDQ57



Certificate's  
Holder:

Shanghai Metal Corporation  
20th Floor Yuan Mansion, 738 Dongfang Road, Shanghai,  
China

Certification  
ECM Mark:



Product:

MANUFACTURE AND SALES OF ALUZINC, GALVANIZED  
AND PREPAINTED STEEL COIL, SHEET, STRIP;  
STAINLESS STEEL COIL, SHEET, STRIP, PIPE, TUBE, FITTING,  
FLANGE, BAR, ROD AND WIRE;  
ALUMINIUM AND ALUMINIUM ALLOY PLATE, COIL, SHEET,  
STRIP, FOIL, TUBE, PROFILE, ROD AND WIRE;  
COPPER AND COPPER ALLOY TUBE, COIL, SHEET, BAR  
AND WIRE;  
STEEL AND STEEL ALLOY COIL, PLATE, ROD, WIRE, FLANGE,  
TUBE, FITTINGS AND FASTENERS;  
LIGHT-DUTY STEEL STRUCTURE (NATIONAL CLASS 1  
AUTHORIZATION);  
SALES OF ELECTROMECHANICAL EQUIPMENTS AND PARTS,  
HARDWARE, APPARATUS & METERS.  
Standard:  
EN 10204:2004

Verification to:

related to CE Directive(s):  
2014/68/EU (Pressure Equipment) ANNEX I, PARAGRAPH 4.3

**Remark:** The product(s) has been verified on a voluntary basis. The product(s) satisfies the requirements of the Certification Mark of ECM, in reference to the above listed Standard(s). The above Compliance Mark can be affixed on the product(s) accordingly to the ECM regulation about its release and its use. The regulation can be found at [www.entecerma.it](http://www.entecerma.it). This Certificate of Compliance can be checked for validity at [www.entecerma.it](http://www.entecerma.it).

This verification doesn't imply assessment of the production of the product(s).

Additional information, clarification about the **CE** Marking:



We attest that a TCF for the **CE** Marking process is in place. Whereas the Manufacturer is Responsible to start the **CE Marking Certification Procedure** through an appointed Notified Body and the perform all the necessary activities, as required by the Directive and accepted by the Notified Body, before placing the **CE** Mark on the product(s).

Date of issue: 01 August 2017

Expiry date: 31 July 2022

Chief Manager  
Marta Morino

Deputy Manager  
Amanda Payne

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HONOR INSPECTION INTERNATIONAL LTD

REF. NO.: CIC/PSI/HONOR-208/2015

DATE: 16.07.2015

**PRE-SHIPMENT INSPECTION CERTIFICATE**

JOB REF. NO.	:	1342/BCIC (UFFL)
APPLICANT	:	BCIC, 30-31 DILKUSHA C/A, DHAKA-1000 A/C: UREA FERTILIZER FACTORY LTD. GHORASAL, NARSINGDI, BANGLADESH
BENEFICIARY	:	M/S. SHANGHAI METAL CORPORATION 20F YUAN MANSION, 738 DONGFANG ROAD, SHANGHAI, CHINA.
PURCHASE ORDER NO.	:	UFFL/FP-PM/1/2014-2015/CT-2512/640 DATED 18-02-2015
L/C NO. AND DATE	:	127415010033 DTD 09.03.2015 & UFFL L/C AMENDMENT LETTER REF NO. UFFL/FP-PM/1/2014-2015/882 DATED 12-05-2015
H.S. CODE NO.	:	7412.20.00
LCA NO.	:	34665
RUPALI BANK BIN NO.	:	21031000018
BASIC BANK BIN NO.	:	19011031722
DESCRIPTION OF GOODS	:	1000 NOS. TUBE FOR ATB SURFACE CONDENSER FOR UFFL
DATE & PLACE OF INSPECTION	:	2015-06-05 & SUPPLIER'S PREMISES
QUANTITY	:	1000 NOS.
PACKING	:	TOTAL PACKAGES : THREE (3) PACKAGES ONLY GROSS WEIGHT: 2,996 KG NET WEIGHT : 2,740 KG
COMMERCIAL INVOICE NO.	:	1416086-P16 DATED: 03.06.2015







## HONOR INSPECTION INTERNATIONAL LTD

REF. NO.: CIC/PSI/HONOR-208/2015

DATE: 16.07.2015

**COUNTRY OF ORIGIN** : THE PEOPLE'S REPUBLIC OF CHINA

**B/L NO. & DATE** : EURFL 15620506CGP DATED: 09.07.015

**VESSEL NAME** : KOTA CARUM V.031W

**PORT OF LOADING** : SHANGHAI SEA PORT OF CHINA

**PORT OF DESTINATION** : CHITTAGONG, BANGLADESH

**ACTUAL MARKING** :



**QUALITY** : BASED ON OUR VISUAL INSPECTION AND TEST REPORT, THE ABOVE STORES WERE FOUND TO BE IN ORDER,

**CONCLUSION** : WE HEREBY CONFIRM THAT THE INSPECTED GOODS AS STATED ABOVE ARE AS PER PURCHASE ORDER AND PACKING LIST.

THE ABOVE REFLECTS OUR FINDINGS AT TIME AND PLACE OF INSPECTION AND LOADING ONLY AND IS ISSUED ON THE UNDERSTANDING THAT DOES NOT RELIEVE THE PARTIES CONCERNED FROM THEIR CONTRACTUAL AGREEMENT.

ISSUED WITHOUT PREJUDICE.

ISSUED ON 09.04.2015



**HONORINSPECTION INTERNATIONAL LTD.,**  
**AS ACCREDITED REPRESENTATIVE OF M/S. CONTINENTAL INSPECTION CO.,(BD) LTD., 1**  
**8/1, NAYA PALTAN (5<sup>TH</sup> FLOOR), DHAKA-1000, BANGLADESH**  
**(FAX NO. 880-2-9347197)**



**DNV CERTIFICATION (CHINA) CO., LTD**  
**VERIFICATION REPORT**  
(Report No.: SHA/872800/1304-696)

**Verification Product:** Cold-Rolled and Welded Rectangular Pipes

**Standard/Specification:** ASTM A529, Grade 50

$R_p \geq 345 \text{ Mpa}$ ,  $R_m \geq 485 \sim 690 \text{ Mpa}$ ,  $A(5\%) \geq 21\%$

$Akv(-20^\circ\text{C}) \geq 36\%$  (Average)

**Manufacturer:** Shanghai Metal Corporation

**P.O.No.** 1213220-3

**Inspection Date:** March 26, 27, 28 and April 1<sup>st</sup>, 2013

**Inspector:** David Wang (DNV Shanghai)

**DNV Project No.** 872800

**Product description:**

Item No.	Dimension W x H x t x L	Material	Heat No.	Qty (ton)
1	50 x 50 x 4.25 x 6000mm	ASTM A529/Grade 50	13S5-00549	43.787
2	50 x 50 x 4.25 x 6000mm	ASTM A529/Grade 50	13S5-00552	42.673
3	100 x 100 x 6.35 x 6000mm	ASTM A529/Grade 50	13S5-00548	89.764
4	100 x 100 x 6.35 x 6000mm	ASTM A529/Grade 50	13S7-00590	178.816
5	100 x 160 x 6.35 x 6000mm	ASTM A529/Grade 50	13S7-00591	66.73
6	120 x 120 x 4.76 x 6000mm	ASTM A529/Grade 50	13S5-00550	84.052
7	120 x 120 x 4.76 x 6000mm	ASTM A529/Grade 50	13S5-00551	98.064
8	120 x 160 x 6.00 x 6000mm	ASTM A529/Grade 50	13S5-00549	44.21

**Scope of verification**

Upon the request of INTERTANK, DNV's undersigned inspector attended at the manufacturer's factory on March 26, 27, and 28 and April 1<sup>st</sup> and performed the following verification activities for above mentioned products.

- Tracing and review following manufacturer's product quality documents:
  - Steel material quality certificates (provided by the steel-plate maker).
  - NDT (Eddy testing) reports.
- Make visual inspection and dimension check on the finished pipes (per Shanghai Metal Corporation's request, select 10 pcs of pipes from each size of finished pipes at random for dimension check).
- Making visual inspection on the package of products.
- Witness NDT (MT and UT) performed on the finished pipes (per Shanghai Metal Corporation's request, select 3 pcs of pipes from each size finished pipes at random for NDT).

The verification certificates of NDT instruments (MT and UT) to be used for the product inspection were





reviewed and validity of these instruments was found to be effectiveness.

The qualification certificates of NDT personnel (MT and UT, level II) were reviewed and found to be validity.

5. Witness the test materials to be sampled from each size of finished pipes for each heat number of steel and witness their materials test (including chemical composition analysis and mechanical property test) performed on these test materials as the following results.

(Note: The verification certificates of test machines were reviewed and performance of these facilities was found to be in valid period.)

#### Chemical Composition Analysis (%)

Item No.	product	Material	Heat No.	C	Mn	Si	P	S
1	50 x 50 x 4.25	ASTM A529 Grade 50	13S5-00549	≤0.27 0.15	≤1.35 1.01	≤0.40 0.16	≤0.04 0.015	≤0.05 0.007
2	50 x 50 x 4.25	ASTM A529 Grade 50	13S5-00552	0.15	1.01	0.17	0.014	0.006
3	100 x 100 x 6.35	ASTM A529 Grade 50	13S5-00548	0.12	1.11	0.18	0.021	0.005
4	100 x 100 x 6.35	ASTM A529 Grade 50	13S7-00590	0.16	1.10	0.18	0.017	0.004
5	100 x 160 x 6.35	ASTM A529 Grade 50	13S7-00591	0.17	0.94	0.18	0.013	0.004
6	120 x 120 x 4.76	ASTM A529 Grade 50	13S5-00550	0.15	0.99	0.16	0.014	0.008
7	120 x 120 x 4.76	ASTM A529 Grade 50	13S5-00551	0.14	0.82	0.20	0.012	0.005
8	120 x 160 x 6.00	ASTM A529 Grade 50	13S5-00549	0.16	0.89	0.17	0.014	0.004

#### Mechanical Property Test Results

Item No.	product	Material	Heat No.	Rm 485-690 (MPa)	Rp ≥345 (Mpa)	A(%) ≥21	AkV(-20°C) ≥36J		
1	50 x 50 x 4.25	ASTM A529 Grade 50	13S5-00549	497	356	29.0			
2	50 x 50 x 4.25	ASTM A529 Grade 50	13S5-00552	507	367	33.0			
3	100 x 100 x 6.35	ASTM A529 Grade 50	13S5-00548	523	409	29.09	98.7	102.1	100.4
4	100 x 100 x 6.35	ASTM A529 Grade 50	13S7-00590	496	356	35.0	87.6	58.0	83.6
5	100 x 160 x 6.35	ASTM A529 Grade 50	13S7-00591	517	355	30.0	122.5	103.2	102.4
6	120 x 120 x 4.76	ASTM A529 Grade 50	13S5-00550	499	361	30.0			
7	120 x 120 x 4.76	ASTM A529 Grade 50	13S5-00551	500	346	32.0			
8	120 x 160 x 6.00	ASTM A529 Grade 50	13S5-00549	526	372	43.0	93.8	108.5	130.0





- Note: 1. The tensile test specimens were sampled in longitudinal direction.  
2. The impact test were only made to the pipe wall thickness  $\geq 6\text{mm}$ .  
The impact test specimens were sampled in longitudinal direction and the actual size of impact test specimens is  $5 \times 10 \times 55\text{ mm}$ .

**Conclusion:**

1. The results of visual inspection and dimension check performed on the sampled products were found to comply with the requirements of product specification and purchase orders.
2. The product package was found to comply with requirements of purchase order.
3. The NDT results (MT and UT) performed on the sampled pipes were found to comply with the requirements of product specification.
4. The results of chemical analysis and mechanical property test performed on the test materials sampled from the finished pipes for each heat number of steel were found to comply with the requirements of product specification.
5. Review and endorse the manufacturer's Mill Test Certificates No.LW2013-04-003-109.

**DNV CERTIFICATION (CHINA) CO., LTD.**

*David Wang*

David Wang  
Issued in Shanghai  
April 5, 2013.







Cinta de cobre electrolitico

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Para mas información visite [www.melavinyll.com](http://www.melavinyll.com)



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