



SEVEN WIRE PRESTRESSED STRAND



Your reliable partner

SEVEN WIRE PRESTRESSED STRAND

REFERENCES



ccl PCS 15.7mm 1860 N/mm2 supplied for La Marina des Portes Océanes, Casablanca, Maroc



PCS 15.7mm 1860 N/mm2 supplied for Belval University (Luxembourg)



PCS 12.7mm 1860 N/mm2 supplied for Marina Mosque in Dubai Marina



PCS 12.7mm 1860 N/mm2 Leaf Tower in Abu Dhabi



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SEVEN WIRE PRESTRESSED STRAND

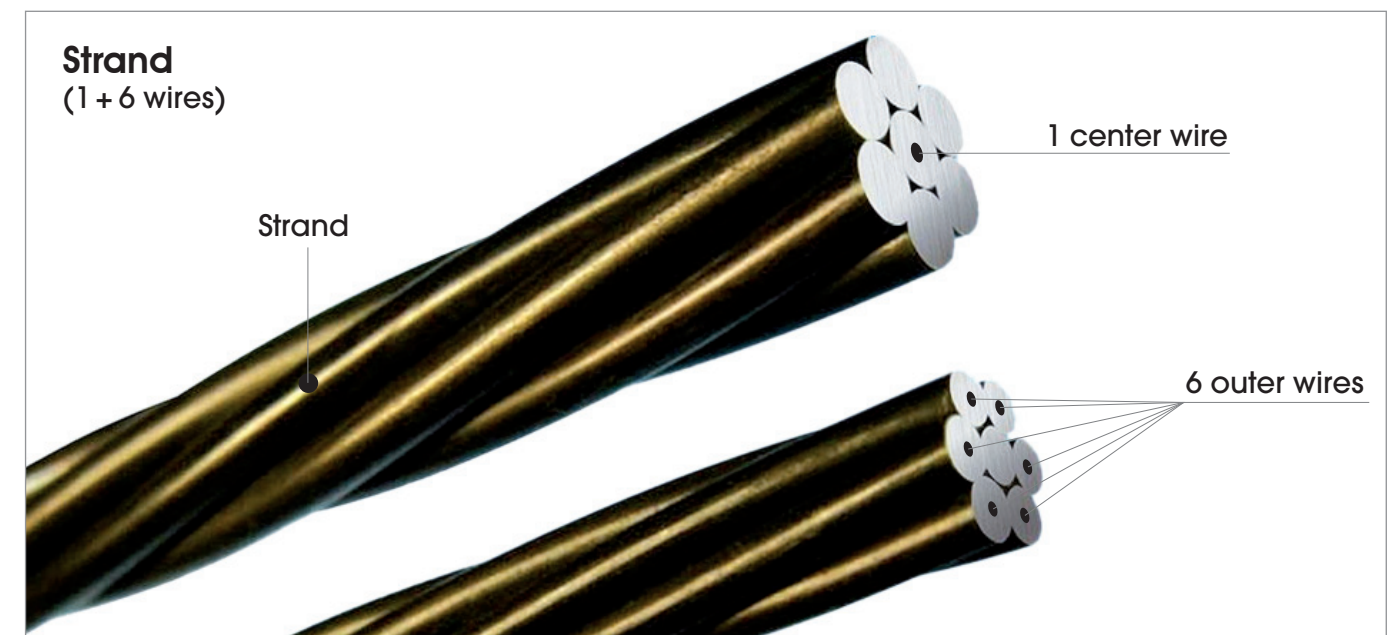
COMPAGNY PROFILE

Maklada is part of a Stunas Group, leader in steel industries in mediterranean area. Stunas Group includes a total of 13 companies, manufacturing 200.000 Mt of steel from sandwich panels, structures, modular buildings, wires, ropes, strands,... up to consulting services and real state. **Maklada** produces more than 100.000 Mt of drawn steel wires and has a worldwide customer portfolio among 35 countries.



Since its creation in 1984, with the Cooperation and Technical Assistance of Suzuki Metal Industry Japan, **Maklada** has reinforced its technical skills through benchmarkings with leading steel companies Arcelor Mittal, Lucchini, Tatasteel,... and equipped our plants with the highest end technology and first class supplies for our Production Lines and Laboratories.

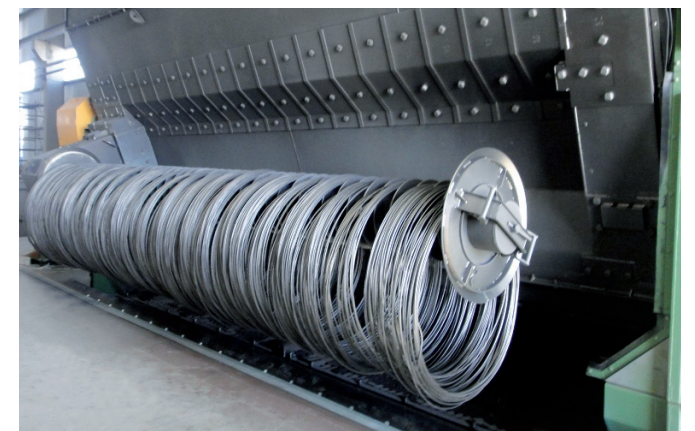
Our philosophy is to develop products according to our customers expectations and facilities, and to look after Excellence in Product Performance through our collaborations with Universities, Quality Organizations, Specialists,



Backed by 30 years of experience and his know-how, **Maklada** is specialized in the manufacturing of High Carbon Steel Wires and Strands according to international standards and / or client's specifications. Today, we continue investing in Technology, in R and D for new products, in environment protection and in customer service.

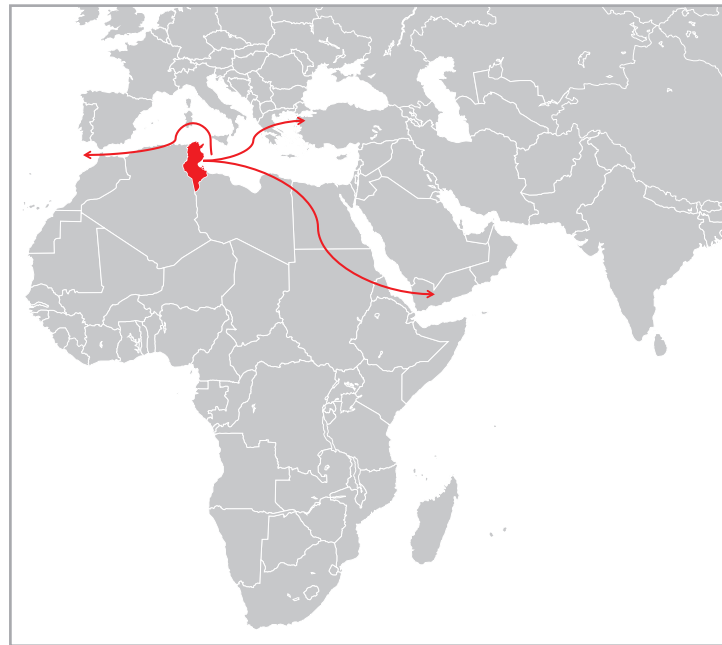
MODERN TECHNOLOGIES

Our plants are equipped with modern machinery and we are still heavily investing in new equipments and technologies in collaboration with worldwide leading companies and consultants. Our aim is to maintain high quality standard at all levels.



SEVEN WIRE PRESTRESSED STRAND

OUR GEOGRAPHIC LOCATION



Our new offices in Europe, Morocco and UAE allow us to be closer to our customers improving the level of service and reaction capability. Moreover, Maklada is offering just in time deliveries worldwide through specialized local partners to secure our customers satisfaction.

Our ideal geographic location, on the Mediterranean Sea, offers us the possibility to reach most of destination at competitive transport costs.

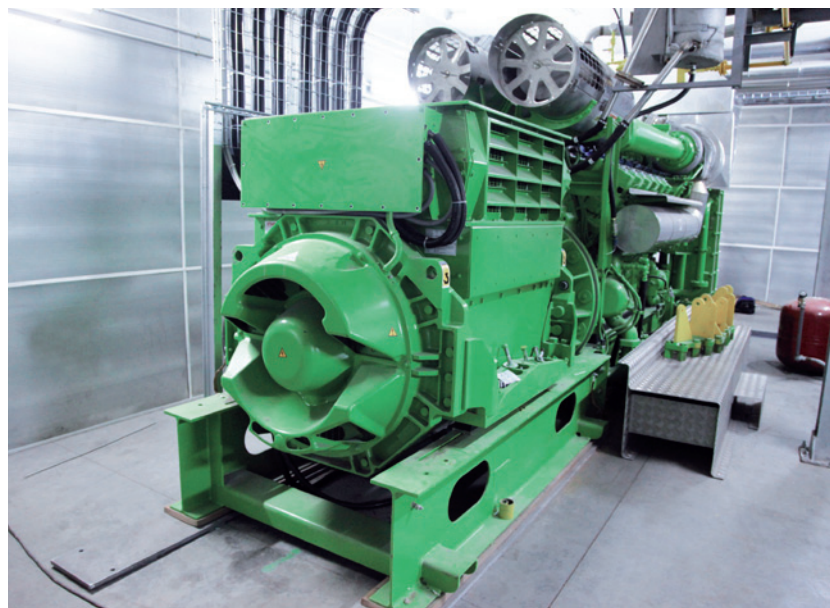
We've supplied PC Strands to USA, Europe, Middle East, Worldwide reputed firms as Freyssinet, CCL, Consolis, Suncoast,.... have relied on us for their Projects.



Our new Office in Dubai

MAKLADA GOES GREEN

Maklada engages in environmental protection and energy management . Our new production site generates its own energy, with a full tri-generation plant, and is reducing also chemicals emissions by adding a mechanical shot blasting system for raw material cleaning.



A REPUTATION FOR QUALITY SINCE 1984



Maklada has a performing quality system allowing to control all its manufacturing process. The company is ISO 9001 : 2008 certified by TÜV and obtained the award of the presidential quality in 2010.



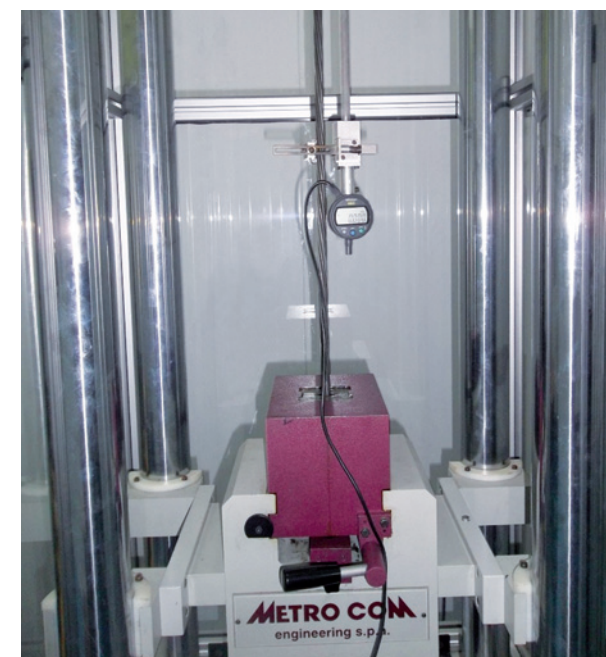
Our range of steel strands (7 wires) for the prestressed concrete is certified in compliance with the standards BS 5896 and ASTM A416. The technical characteristics were checked and verified by the Dubai Central Laboratory (DCL).



The prestressed armatures of our steel strands are certified in compliance with the technical specifications of ASQPE.

Our factories are equipped with PC Strand machines, chemical and mechanical cleaning installations, stress relieving lines to get all kind of relaxation (normal, low and very low), conditioning and wrapping shop, and a complete laboratory equipped with the most updated technology for mechanical and chemical tests (including relaxation test).

The properties of the strands are controlled during all stages of manufacturing according to a detailed quality control plan.



SEVEN WIRE PRESTRESSED STRAND

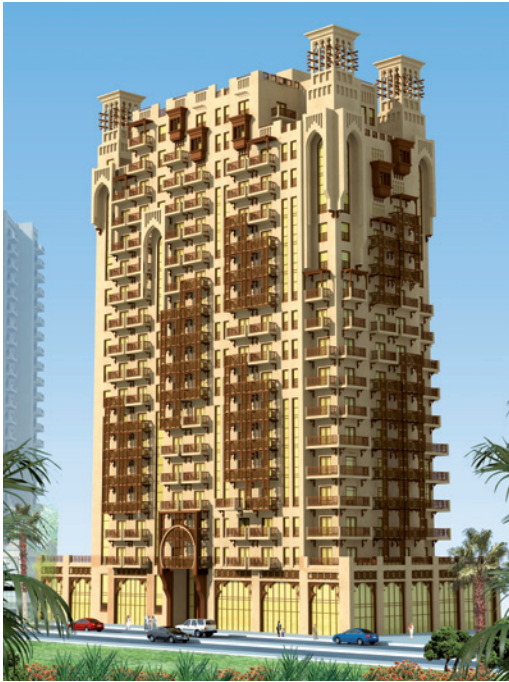
REFERENCES

PROJECT	COMPANY	LOCATION
Marina Mosque, Dubai	FREYSSINET	UAE
	Constructor : Modern Executive Systems Contracting LLC	
	Consultant : Access Engineering Consultant	
PI Staff Accommodation, Abu Dhabi	FREYSSINET	UAE
	Constructor : SK Contracting	
	Consultant : Engineering Consultant Groupe (ECG)	
New York University - B Blocks Works, Abu Dhabi	FREYSSINET	UAE
	Constructor : Al Futtaim Carillion	
	Consultant : GHD	
Belval Univesity - Luxembourg	FREYSSINET	Luxembourg
Xutor Bridge, Baku	FREYSSINET	Azerbaijan
Various Housing Projects	Various Precasters, through MEGASTEEL	UK
Various Housing Projects	Suncoast, Builders Postension, Ready Cables, through WESTCO	USA
Various Housing Projects	CCL	USA
La Marina des Portes Océanes Casablanca	CCL	Maroc

PCS 12.7mm & 9.3mm 1860 N/mm2 supplied for various projects in Abu Dhabi, Dubai, USA, UK



PCS 12.7mm 1860 N/mm2 supplied for SPORT CITY (DUBAI)



PCS 12.7mm 1860 N/mm2 supplied for CULTURAL VILLAGE, Culture Village



PCS 12.7mm 1860 N/mm2 supplied for New York University, Abu Dhabi



SEVEN WIRE PRESTRESSED STRAND

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Application : 7 wires Prestressed Concrete Strand is used in pre-tensioned and post-tensioned prestressed concrete construction such as Bridges, Ground Anchors, Buildings, Water Tanks, Hollow Cores, Railway Sleepers,...



Standards : These steel strands are produced in conformity with more reputed standards:

- ASTMA416, BS5896 certified by Dubai Central Laboratory (DCL),
- EN 10138-3,
- ASTMA779,
- ISO 6934,
- UNE 36094,
- Clients's specifications.

Relaxation : Low relaxation strand with maximum relaxations losses of 2.5% after 1000 hours under initial load 70% of actual breaking load.

MANUFACTURING PROCESS

1- Wire Rod Cleaning & Pre-coating :

All wire rod (raw material) must be de-scaled to remove the mill scale (iron oxides) present on the steel surface. This descaling process can be done chemically or mechanically using shotblasting line. After the mill scale has been removed, the wire rod is then coated with a textured carrier coating that promotes lubricant adherence during the subsequent wire drawing process. The most commonly used carrier coating is Zinc Phosphate but other coatings are sometimes used (borax, lime, etc...).



2- Drawing :

The wire rod is drawn through a series of normally 9 dies to achieve the desired mechanical properties. This is a cold-working process ; therefore the wire drawing practices are tightly controlled to prevent premature die wear or damage to the steel wire. After the wire drawing process, the wire tensile strength increases in 50% due to work hardening.

3- Stranding :

Once seven (7) spools of wire are produced, six (6) outer wires and one (1) center wire, they are loaded into the stranding machine.

The stranding machine pulls the wire off of the spools while maintaining a specified rate of stranding.

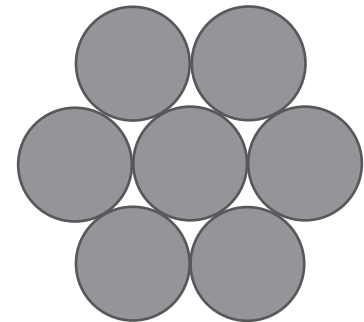
This rate controls the lay of the strand to comply with standards.

4- Stabilization :

After the wires have been wound into strand, the strand is subjected to a thermo-mechanical process in which the strand is continuously heated to $\sim 380^{\circ}\text{C} \pm 25^{\circ}\text{C}$ while under tension at $\sim 40\%$ - 50% of the minimum ultimate tensile strength of the strand. This process acts to relieve the residual wire drawing stresses, permanently elongate the strand, increase the yield strength and reduce relaxation losses. This combination of factors gives the strand a very consistent modulus of elasticity up to and exceeding 80% of the strand's ultimate strength.

SEVEN WIRE PRESTRESSED STRAND

TECHNICAL DATA AND PRODUCTION RANGE



BS5896 : 2012

Relaxation Class 2

Steel name	Steel number	Diameter mm	Tensile Strength N/mm ²	Cross sectional area mm ²	Mass per meter g/m	Deviation on mass per meter %	Charac-teristic value of max. force Fm KN	Maximum value of maximum force Fm KN	Fp 0.1 % KN	Rt. 1.0 % KN	Min. Elong. Lo= 500 mm %	Curvative of strand	Lay Length mm
Y1670S7	1.136 4	15,20	1670	139	1086	± 2	232	267	204	NA	3,5	Max.bow height = 25mm / 1meter	(14-18) x d
Y1700S7G*	1.137 0	18,00	1700	223	1742	± 2	379	436	334	NA	3,5		
Y1770S7	1.136 5	9,30	1770	52	406,1	± 2	92	106	81	NA	3,5		
Y1770S7	1.136 5	11,00	1770	70	546,7	± 2	124	143	109	NA	3,5		
Y1170S7	1.136 5	12,50	1770	93	726,3	± 2	165	190	145	NA	3,5		
Y1770S7	1.136 5	15,70	1770	150	1172	± 2	266	306	234	NA	3,5		
Y1820S7G*	1.137 1	15,20	1820	165	1289	± 2	300	345	264	NA	3,5		
Y1860S7	1.136 6	8,00	1860	38	296	± 2	70,7	81,3	62,2	NA	3,5		
Y1860S7	1.136 6	9,30	1860	52	406,1	± 2	96,7	111	85,1	NA	3,5		
Y1860S7	1.136 6	9,60	1860	55	429,6	± 2	102	117	89,8	NA	3,5		
Y1860S7	1.136 6	11,30	1860	75	585,8	± 2	140	161	123,0	NA	3,5		
Y1860S7	1.136 6	12,50	1860	93	726,3	± 2	173	199	152,0	NA	3,5		
Y1860S7	1.136 6	12,90	1860	100	781	± 2	186	214	164,0	NA	3,5		
Y1860S7	1.136 6	15,20	1860	139	1086	± 2	259	298	228,0	NA	3,5		
Y1860S7	1.136 6	15,70	1860	150	1172	± 2	279	321	246,0	NA	3,5		
Y1860S7G*	1.137 2	12,70	1860	112	874,7	± 2	208	239	183,0	NA	3,5		

Max. relaxation loss after 1000 Hrs ≤ 2,5% when initial load at 70% of specified breaking Load
The diameter of the central wire shall be at least 3,0% greater than the diameter of the outer helical wires
* : Compacted strand

ASTM A416M : 2012

Low relaxation

GRADE	Nominal Diameter		Tolerance on Diameter mm	Steel area of strand		Weight of strand		Tensile Strength N/mm ²	Minimum Breaking Load KN	Minimum Load at 1% Extension KN	Rp 0.1 % KN	Min. Elong. Lo= 610 mm %	Curvative of strand	Lay Length mm
	mm	in.		mm ²	in. ²	kg/1000m	lb/1000ft							
250 (1725)	7,90	5/16	+/- 0,40	37,40	0,058	294	197	1725	64,50	58,10	NA	3,5	Not specified	(12-16) x d
	9,50	3/8	+/- 0,40	51,60	0,08	405	272	1725	89,00	80,10	NA	3,5		
	11,10	7/16	+/- 0,40	69,70	1,108	548	367	1725	120,10	108,09	NA	3,5		
	12,70	1/2	+/- 0,40	92,90	0,144	730	490	1725	160,10	144,09	NA	3,5		
	15,20	6/10	+/- 0,40	139,40	0,216	1 094	737	1725	240,20	216,18	NA	3,5		
270 (1860)	9,53	3/8	+0,65/-0,15	54,80	0,085	432	290	1860	102,30	92,10	NA	3,5		
	11,11	7/16	+0,65/-0,15	74,20	0,115	582	390	1860	137,90	124,10	NA	3,5		
	12,70	1/2	+0,65/-0,15	98,70	0,153	775	520	1860	183,70	165,30	NA	3,5		
	15,24	6/10	+0,65/-0,15	140	0,217	1 102	740	1860	260,70	234,60	NA	3,5		
	17,78	7/10	+0,65/-0,15	189,7	0,294	1 487	1000	1860	353,20	318,00	NA	3,5		

Max. relaxation loss after 1000 Hrs ≤ 2,5% when initial load at 70% of specified breaking Load

EN 10138 - 3 : 2011

Uncoated Strand 7- steel wire for prestressed concrete

Steel name	Steel number	Diameter mm	Tensile Strength N/mm ²	Cross sectional area mm ²	Mass per meter g/m	Deviation on mass per meter %	Charac-teristic value of max. force Fm KN	Maximum value of maximum force Fm KN	Fp 0.1 % KN	Rt. 1.0 % KN	Min. Elong. Lo= 500 mm %	Curvative of strand	Lay Length mm
Y1770S7	1.1365	9,30	1770	52	406,1	± 2	92	106	81	NA	3,5	Max.bow height = 25mm / 1meter	(14-18) x d
Y1170S7	1.1365	12,50	1770	93	726,3	± 2	165	190	145	NA	3,5		
Y1860S7	1.1366	9,30	1860	52	406,1	± 2	96,7	111	85,1	NA	3,5		
Y1860S7	1.1366	12,50	1860	93	726,3	± 2	173	199	152,0	NA	3,5		
Y1860S7	1.1366	15,20	1860	139	1086	± 2	259	298	228,0	NA	3,5		
Y1860S7	1.1366	15,70	1860	150	1172	± 2	279	321	246,0	NA	3,5		
Y1960S7	1.1367	9,30	1960	52	406,1	± 2	102	117	91	NA	3,5		
Y1960S7	1.1367	12,50	1960	93	726,3	± 2	182	209	162	NA	3,5		
Y2060S7	1.1368	12,50	2060	93	726,3	± 2	192	221	171	NA	3,5		
Y2060S7	1.1368	12,90	2060	100	781	± 2	206	237	183,0	NA	3,5		
Y1860S7G*	1.1372	12,70	1860	112	874,7	± 2	208	239	183,0	NA	3,5		
Y1860S7G*	1.1372	15,20	1860	165	1289	± 2	307	353	270	NA	3,5		
Y1700S7G*	1.1370	18,00	1700	223	1742	± 2	379	436	334	NA	3,5		

Max. relaxation loss after 1000 Hrs ≤ 2,5% when initial load at 70% of specified breaking Load
The diameter of the central wire shall be at least 3,0% greater than the diameter of the outer helical wires
* : Compacted strand

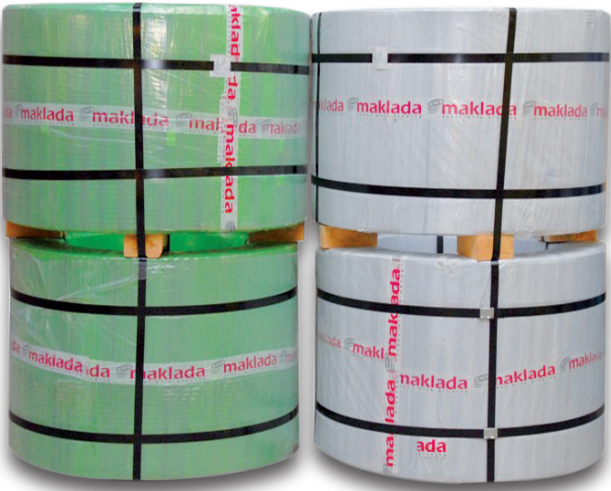
SEVEN WIRE PRESTRESSED STRAND

PACKAGING



Each coil is secured with 8 steel straps and wrapped with propylene sheets and outer shrink plastic. It's marked with 2 water resistant tags having following information : Work Order, Diameter, Standard, Grade, Weight.

Other Wrappings are also possible.
Strands can be supplied oiled under request.



- In Option :**
- on pallet skyward
 - on pallet eye horizontal



Sizes :	
Width w	750 mm
Inner diameter d	800 mm
Outer diameter D	1500 mm
Weight	4000 Kgs Max.

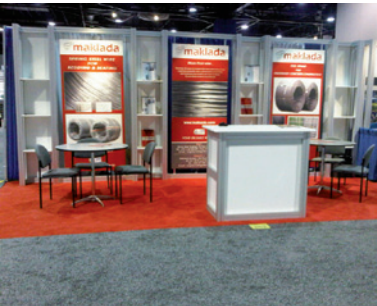
INTERNATIONAL EXHIBITIONS AND EVENTS



Big Five – Dubai 2012



Interzum- Dusseldorf 2013



Interwire- Atlanta 2013



Project Qatar 2012



Batimat - Casablanca 2012

Presidential award of quality - 2010



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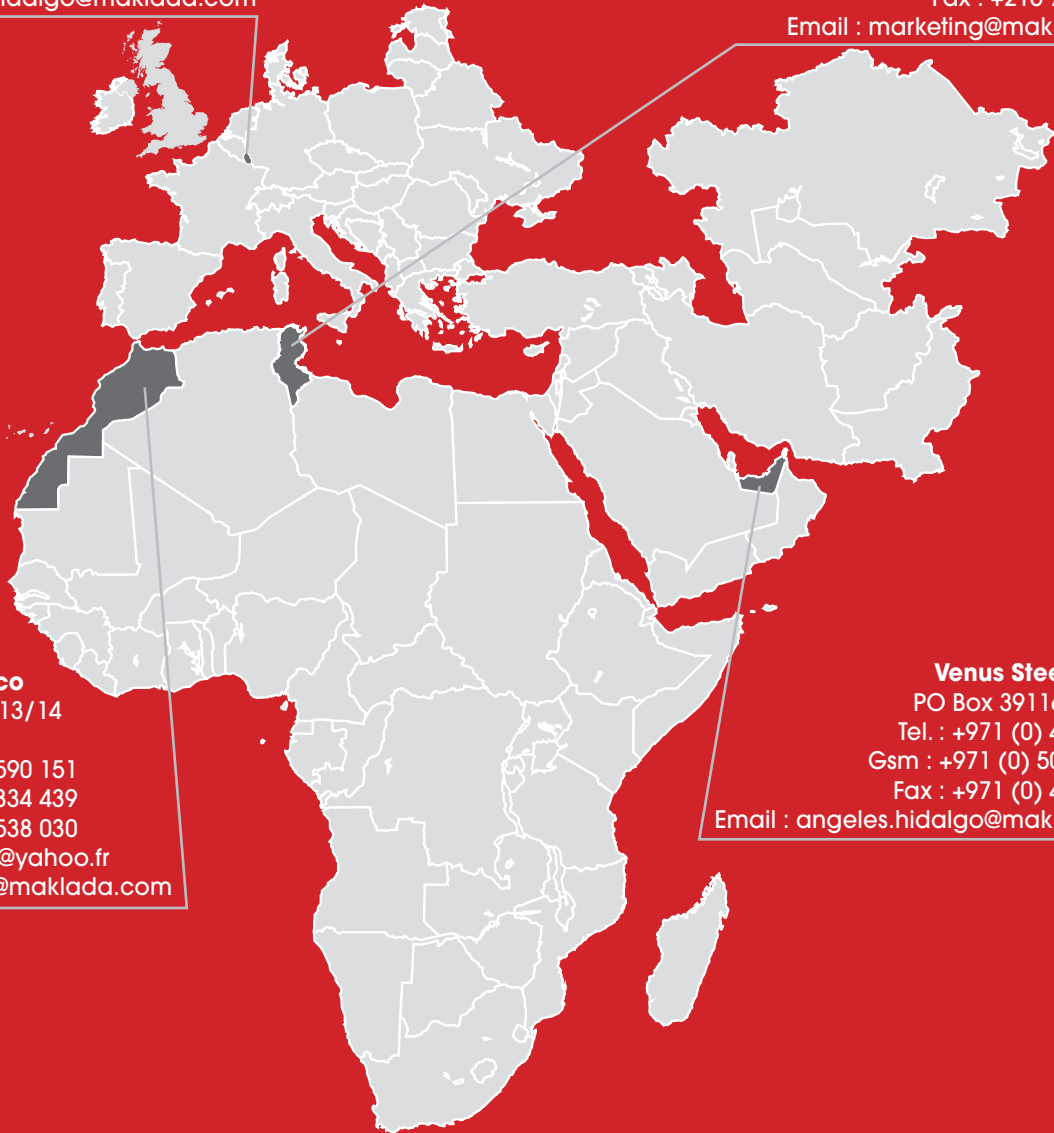
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