The Ministry of Public Business Sector

HADISOLB

Egyptian Iron And Steel Company

The Company has the honor to introduce to herself as the Major Steel producing Company in egypt.
Local and foreign Organizations, and Customers who are interested in Iron and Steel Products and services have the opportunity to be served authentically.
We undertake the confidence in our ability for the Customers to receive cnsistently desired product or service.
We develop an environment in wich to mobilise all resources to make continuous improvement.
For detailed information about HADISOLB Company, kindly visit our web site or directly contact us for more insight on the available opportunities.
Looking forward for an opportunity to serve and excel in light the pursuing mutually beneficial relationship.
Sustaining and maintaining national and international welfare.

Best Regards

Executive Managing Director

engineer \ Ali Abdul Mohsen Ali Bakhit

Quality Management Systems Certification

On 1997 Hadisolb has established & maintained ISO quality Management Systems.


Germanischer Lloyd Certification

CERTIFICATE

MGMT. SYS. RvA C 720

• Certificate Q.S - 015

(Since January 27,1999)

* Manufacturing of Cold Formed sections.
* Manufacturing of hot rolled steel products, coils, strips, plates and sheets.


Germanischer Lloyd Certification

CERTIFICATE

MGMT. SYS. RvA C 720

• Certificate Q.S - 038

(Since April 24,1997)

* Manufacturing of steel billets, slabs (c.c.).
* Manufacturing of steel bars, angles, rails (M.S.M.).


Germanischer Lloyd Certification

CERTIFICATE

MGMT. SYS. RvA C 720

• Certificate Q.S - 055

(Since December 31,2002)

* Production of spare parts.

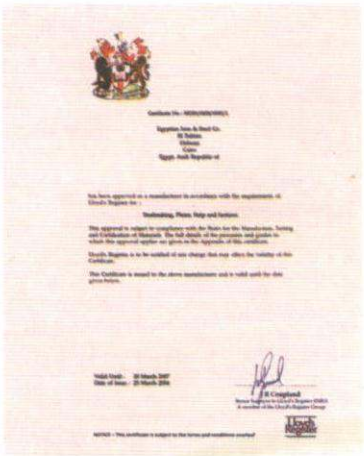
Idler rollers conveyers.

Investment equipments.

PRODUCT CERTIFICATE

HADISOLB has been approved as a manufacturer to the requirements of Lloyd's Register for:

Steelmaking, Plates, Strips & Sectios (Certrficate is Periodically Change) Since 23 March, 1998



Lloyd's Register

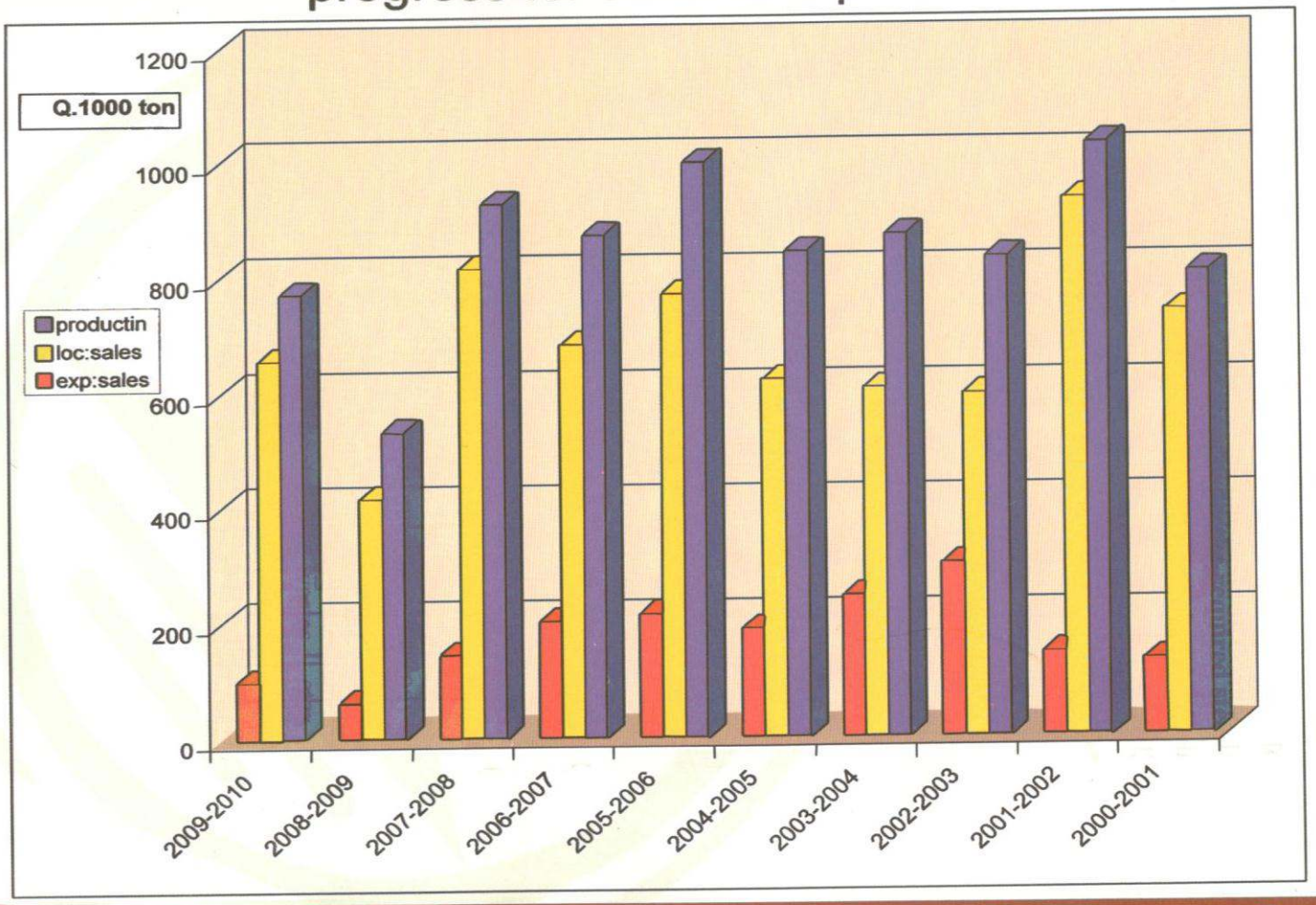
TESTING CERTIFICATE

HADISOLB is authorized to mark its products with the mark of conformity (Ü mark) the certificate has confirmed from TUV Rheinland Anlagentechnik Since 1998,


TÜV Rheinland

Testing Certificate

progress for sales and production



CHRONOLOGY (MEMOIR)

1917 : Discovery of iron ore deposits in ASWAN

1954 : On 14-6-1954 Foundation Stone of HADISOLB company at HELWAN

1955 : Start up mining of iron ore from ASWAN

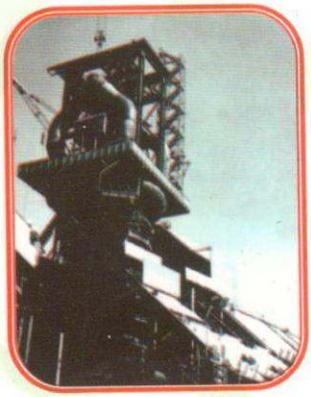
1957 : Start up of Electric Arc Furnaces (2 x12 t) For Steel production from scrap

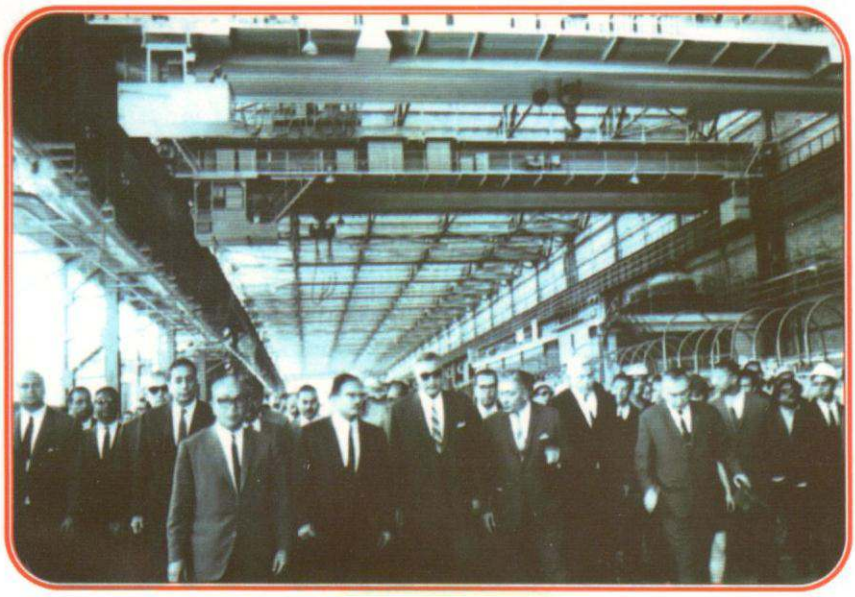
1958 : * Start up of Blast Furnace No 1 for pig Iron Production

* Start up production of steel by Thomas Converters (4 Converters x17 t)

* Start up of Blooming mill, Heavy section mill & Plate mill

* Start up of REFAII lime stone quarries and ADABIA Dolomite quarries





1960 : Start up of Blast Furnace No 2.

1961 : Signing contract with USSR for build up of Hot & Cold Strip Mills.

1964 : * Foundation Stone for Strip Mill (with design capacity 500,000 t/y).

* Start up of Sinter plant No 1.

* Injection of Blast Furnaces with mazout.

1969 : Start up of Hot strip mill.

1972 : * Start up of Spare Parts workshops.

* Start up of Beni khalid quarries to supply the works with lime Stone.

1973 : * Start up of B.F No 3. 1033 m^3,500 thousand t/y.

* Start up of machines 1&2 in Sinter No 2.

* Start up of Oxygen Converters LD & the Continuous Casting units.

1977 : Injection of B.F No 3 with natural gas (1033m^3, 500 thousand t/y).

1978 : Oxygen enrichment of B.F No 3.

1979 : Start up of B.F No 4.

* Start up of machines 3 & 4. in Sinter Plant No 2.

* Start up of Cold Forming mill.

1982 : Injection of B.F. No 4 with Oxygen gas.

1986 : Modernization of Heavy Section mill aiming for :

* new product mix & increase of capacity.

1987 : Argon stirring of liquid steel.

1989 : Start up of machine (5) in Sinter Plant No 2.

1990 : Modernizing of Cold Strip Mill

* Start up of Radial caster Slab.

* Revamping of Billet casters.

1994 : Start up of mixer II in the Steel Shop.

1995/1996 : Increasing the capacity of the three converters from 80 to 90 t/ vessel.

1996 : Introducing automatic Processing Control to the Hot Strip mill .

1996 : injection of BF. No 4 with Natural gas .

1996 :

- Revamping of existing iron ore stock yard rise its capacity to 45000 ton
- Construct new iron stock yard of capacity 180 000 ton
- Start up of wagon tippler No.2 which production capacity is 3 000000 ton/year

1998 : injection of BF. No 1 with Natural gas.

1999 to 2000

- Improve capacity of spear parts production work shop to produce 100 tons weight spear parts by:-
  a) Erection of new vertical lath 10m base.
  b) Erection of new computer numerical controlled milling machine.
  c) Erection of new over lined machine for blast furnace bells

2002 - Install automatic load dispatching system.

2005 - Start up of sinter surge pile of capacity 50 000 ton

2005 2006 - Install 2 boiler to produce steam using exhaust hot gases of rotary kiln and oxygen converters

2007 2009 - Construct new quarry south Gable EL Tear , Mania governorate for limestone supplies stabilization

2007 2010 - Revamp mines heavy equipment and transportation machine to improve raw material supply:-

a) Hydraulic excavator

b) 2—15 trucks + 3 loaders + 2 bulldozers + 2 crushers

- Commissioning of new single stack bell type furnace at cold rolling mill using hydrogen to get free annilling surface

2007- 2011 Construct new oxygen plant No. 4 of production 1500m³/h and purity 99.5%:-

a) It provides nitrogen and argon to steel making plant and cold rolling mill.

b) Put into operating at May 2011

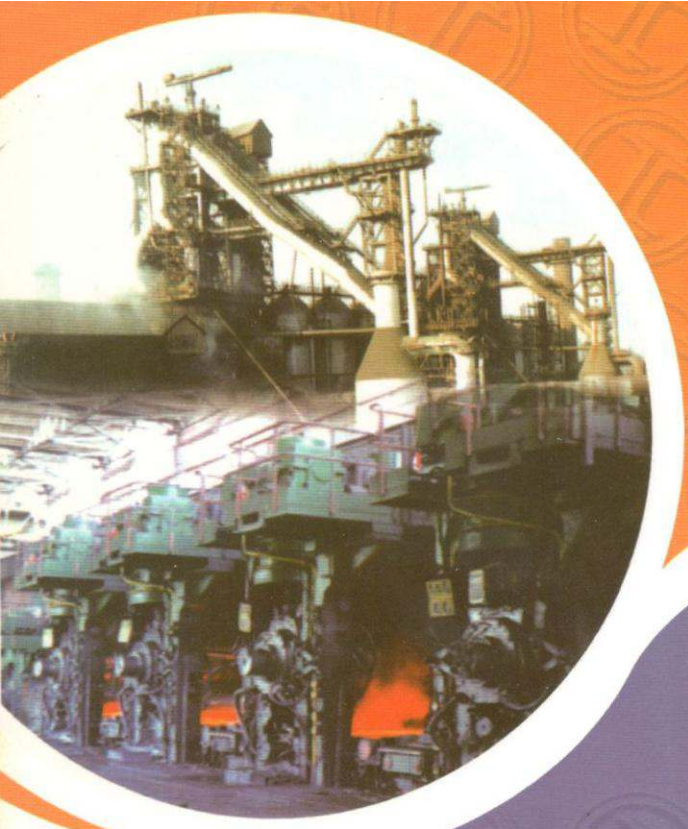
2008 - Construct (2) underground water well at EL WAHAT EL BAHARIA

2009 ---

- Rehapletation of turbo blower station of blast furnace 3&4 to provide their need of compressed air

2009- 2011 Install complete integrated information system for company

2010 - Install new dolomite crusher at EL ADABIA to improve dolomite supply according to needs growth.



The Production Sectors

-Minees & Quarries Sectors.

-IRON - Making Sectors.

-Steel - Making Sectors.

-Sections & Plates Mill Sectors.

-Strip Mill Sectors.

-Workshop & Maintenance Sectors.

Mines & Quarries Sectors

- IRON ORE MINES :

1 - BAHARIA mines :

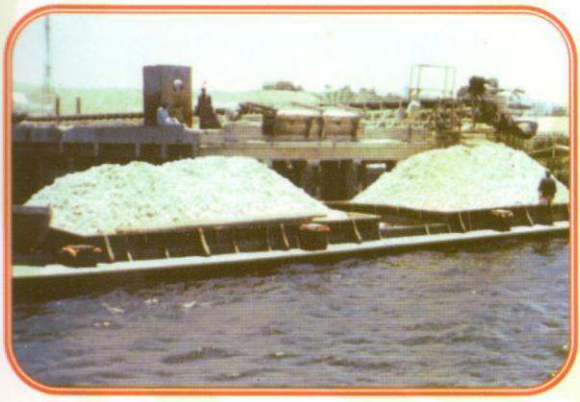
Located in the Western desert, about 380 km south west of Cairo.

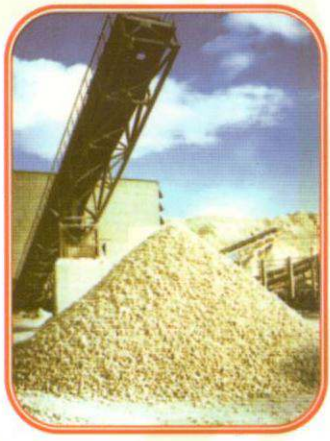
- Annual production 3.3 M.T. from El GEDIDA deposit.
- Other ore reserves are GHORABI, El HARA & NASSER deposits, prospected reserves about 200 M.T.
- Ore is mined, crushed & blended then transported by railways to Helwan.

2 - Aswan mines : shut down from 1973.

Quarries :

- **BENI KHALID limestone quarries :** Located at SAMALLOUT 200 km South of Cairo, annaul Production 1 M.T.
- **ADABIA Dolomite quarries** located at 120 Km north east of Cairo, annual Production about 240 000 M.T.





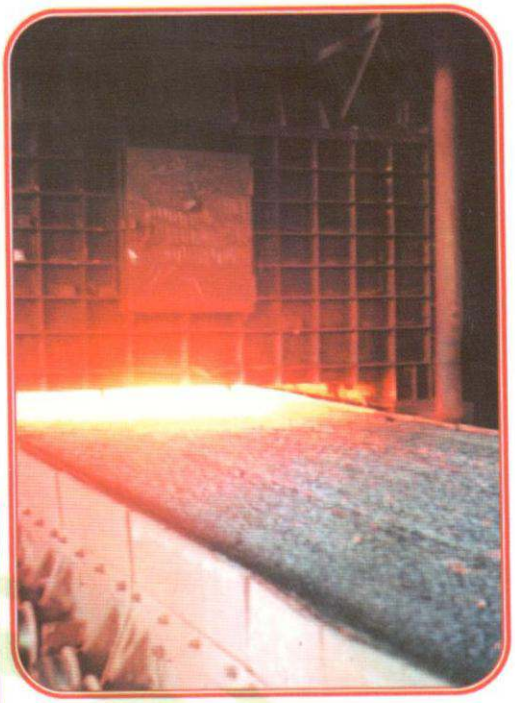
IRON - MAKING SECTORS

Sintering units :

There are two sintering plant's.

Plant No 1 has two 50m^2 machines, which commissioned at 1958 and 1960 respectively.

Plant No 2 has five 75 m^2 machines, two commissioned at 1974, two in 1978 and one in 1992 total capacity is 3 M.T./y



BLAST FURNACES :

There are four Blast Furnaces (BF) having the following indices :

- BF1 and BF2 installed 1958/60 , each of 575 m^3.
- BF3 and BF4 installed in 1972/77, each of 1033m^3.

- The rated capacity of pig iron production is currently around 1.4 million T/y.
- Oxygen enrichement & Natural gas injection are used in the furnaces to maximize the production & minimize coke consumption .
- **The sectors comprises also**
- Pig casting machine 1600 t/day.
- Slag processing unit.

STEEL MAKING SECTORS

The sectors comprise the following

A- Converter shop

- Two hot metal mixers of capacity 1300 T each
- Three Oxygen converters (BOF) installed at 1972-1974 each 90 t capacity .
- Three Argon stirring stations for adjusting of liquid steel analysis, temperature & cleanness

B- Continuous Casting shop

Slab Casters

• Three x2 strands vertical slab casters of USSR origin.
* year of start up 1973.
* Slab thickeness 150- 170 mm.
* Slab width 530-1040 mm.
* Maximum cut to length 7m.
• One single strand bending slab caster of VOEST- ALPINE Origin,
* Year of start up 1990
* Slab thickness 170 -250 mm
* Slab width 1050-1500 mm
* The total capacity of the slab casters is 600,000 T/Y

Billet caster

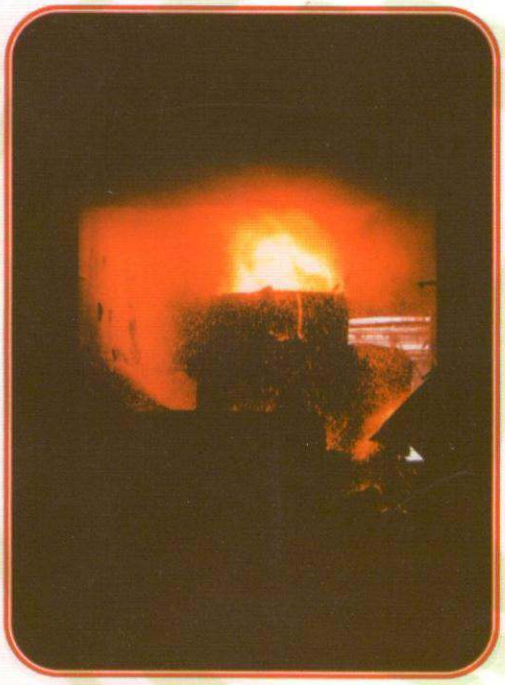
Three x6 strand vertical commissioned at 1973 of USSR origing ,modernised 1992.
The total capacity of the billet caster is 600,000 T/Y

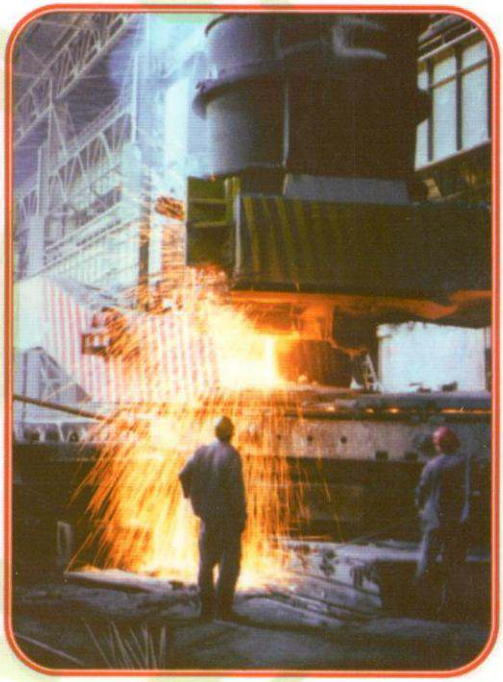
The steel making shop also has the following facilities:

1- Scrap processing yard.
2- Lime preparation shop : five kilns of capacity 600 T/ day
3- Roasted dolomite Rotary kiln for burning dolomite.
4- Lime briquetting station.
5- Refractory units for the manufacturing of converter bricks, building of ladles, maintenance of slide gates

The steel making shop awarded

The continuous casting shop awarded





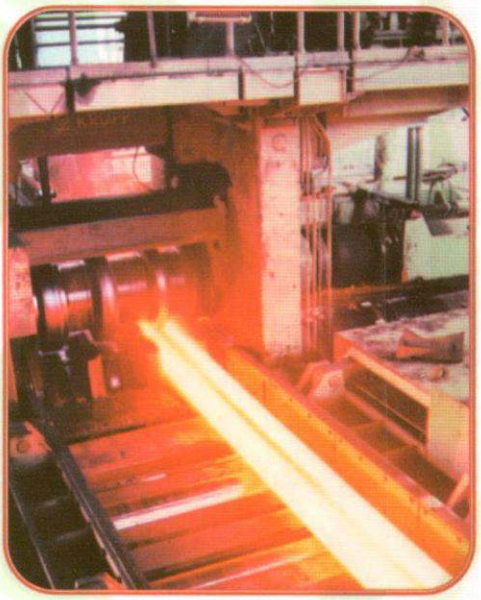
Sections & Plates Mill Sectors

Blooming mill

Start up	1958
Last modernization	1986
Manufacturer	Demag
Type of mill	2- hi Rev.
No of reheating Furnaces	4
Type of reheating Furnaces	soaking pits
Capacity t/h	1.7 t / hr / pit
Nominal capacity (x 1000)	300 t/y

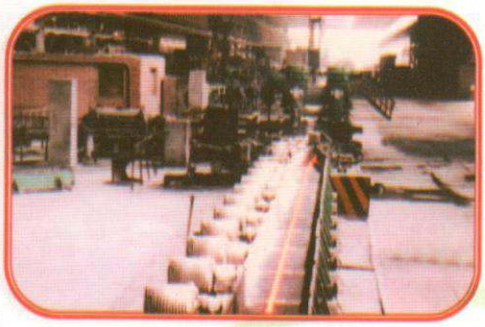
Heavy Section Mill

Start up	1958
Last modernization	1986
Manufacturer	S.M.S
Type of mill	open
No of reheating furnaces	1
Type of reheating furnaces	pusher type
Capacity	40 t/hr
Nominal capacity (x 1000)	180 t/y



Medium Section mill

Start up	1977
Manufacturer	USSR
Type of mill	semi continuous
No of reheating furnaces	1
type of reheating furnaces	pusher type
capacity	50 t/hr
Nominal capacity (x 1000)	200 t/y



Light Section mill

Start up	1964
Manufacturer	SACK
No of reheating furnaces	1
Type of reheating furnaces	pusher type
Capacity	15 t/hr
Nominal capacity (x 1000)	80 t/y

Plate mill

Start up	1958
Last modernization	1985
No of reheating furnaces	2
Type of reheating furnaces	pusher type
Capacity	20 t/hr
Nominal capacity (x 1000)	90 t/y

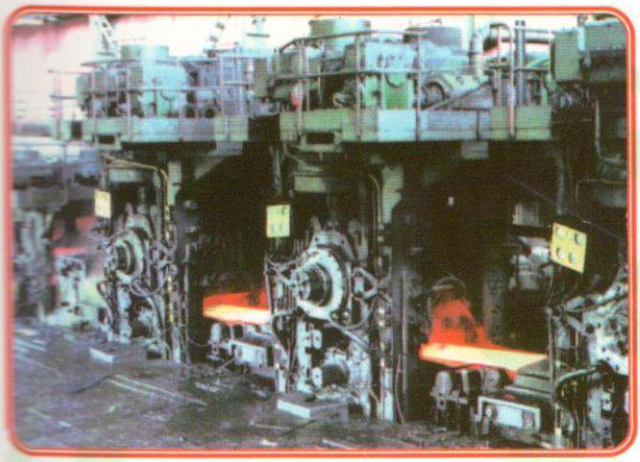
STRIP MILLS
Hot Strip Mill

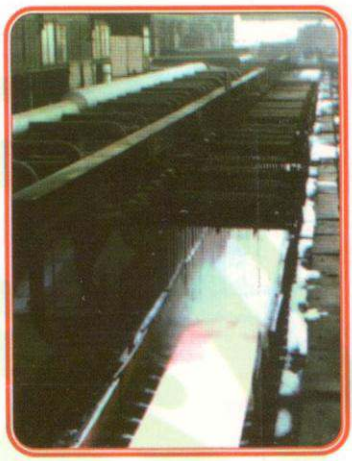
Is considered as the first mill in the Middle East to produce coils from slabs

* Year of start up 1968 by USSR manufacture.
* Last modernization 1995 by V. Alpine & Alstom.

The Plant comprises ;

* Storage yard 30,000 T. capacity.
* Two reheating furnaces 100 t / hr / furnace.
* Scale breaker using water with pressure 100 atmosphere.
* Roughing reversing mill (Finishing mill) (with 6 stands).
* Cooling bed .
* Coiling machines (3).





The strip gauge 2-8 mm. Nominal capacity 50000 ot/y.

The mill is equipped with process control system of high technology

The mill awarded ISO certification since 1999.

The mill is approved as a manufacturer in accordance with the requirements of L.R.

Lloyd's Register

ISO 9001

GERMANISCHER LLOYD GLC Middle East QUALITY MANAGEMENT SYSTEMS CERTIFICATION

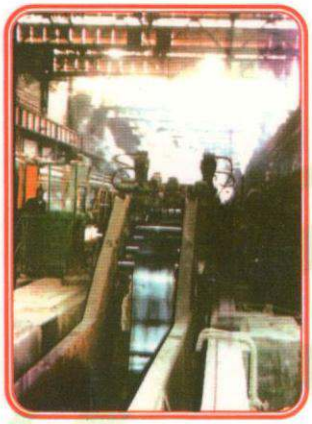
Cold Strip Mill

The mill is designed to produce cold rolled products (coils, strips & sheets thickness from 0.5 up to 3mm) from hot rolled coils supplied from the Hot Strip Mill.

The mill comprises :

* Pickling line using (sulphuric acid).
* 2 - high reversing machines.
* Bell type annealing furnaces (27 furnaces) and 2 new bell type furnaces.
* Temper mill Skin passing.
* Slitting & Shearing lines.

The annual capacity 250,000 t.



COMBINATION CUTTING UNIT

The combination unit is designed for slitting hot, rolled pickled and non pickled coiled strip into narrow bands and reeling them into coils, as well as for shearing coils into sheets of thickness 2-7mm and length up to 6m with annual capacity 300,000 t/y predetermined length.

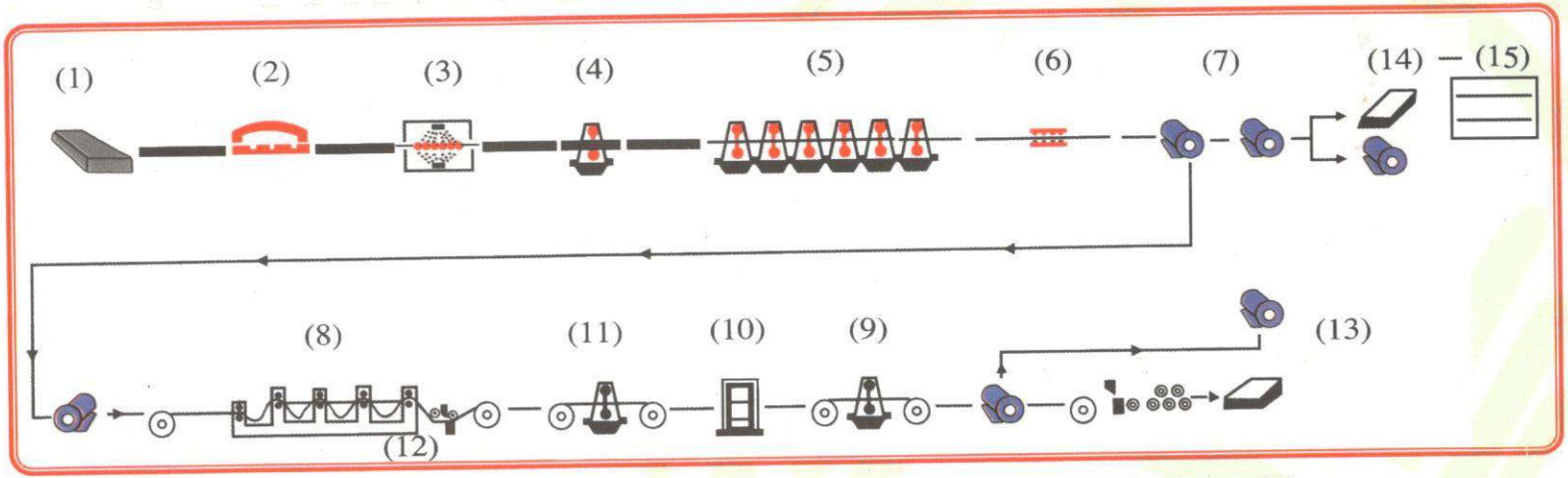
COLD FORMED SECTION MILL

* The mill uses hot strips for the production of sections with different shapes with thickness 2-6,35mm and length up to 12m.
* Rated capacity 40,000 t/y. The mill works under ISO 9001 since 2000.

ISO 9001

GERMANISCHER LLOYD GLC Middle East QUALITY MANAGEMENT SYSTEMS CERTIFICATION

PRODUCTION FLOW CHART IN HOT & COLD STRIP MILLS



Hot Strip mill

1 - Slab
2 - Reheating Furance
3 - Hydraulic Scale breaker
4 - Roughing Mill (Reversing)
5 - Finishing mill (6 Stands)
6 - Cooling Bed
7 - Coiller

Cold Strip mill

8 - Pickling Line
9 - Cold Rolling mill (Reversing)
10 - Annealing (bell type furnace)
11 - Temper Mill
12 - Shearing Line
13 - Slitting Line
14 - Combined
15 - Cold Formed Section

WORKSHOPS & MAINTENANCE

The installation of complicated technological equipment & the high degree of mechanization & automation of the production processes call for a reliable repair and maintenance service for ensuring constant good order of the equipment.

The sectors comprises the following.

- **FOUNDARY SHOP**
  - * Iron casting : with capacity 2000 t/y
  - * Steel casting : with capacity 6750 t/y
  - * Non ferrous casting : with capacity 350 t/y
- **FORGING SHOP** with capacity 4800 t/y
- **STRUCTURAL SHOP** with capacity 8500 t/y
- **IDLER ROLLER SHOP** with capacity about 120.000 Roll / y
- **THERMAL SURFACING SHOP**
- **TIMBER WORK**
- **WORKSHOP FOR REPAIR OF METALLURGICAL EQUIPMENT**
- **MACHINE SHOP :** With capacity about 7500 t/y.

  The machine shop & the Idler roller shop awarded ISO 9000 Since 2002.

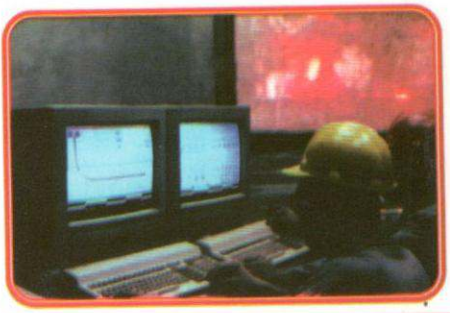
ISO 9001

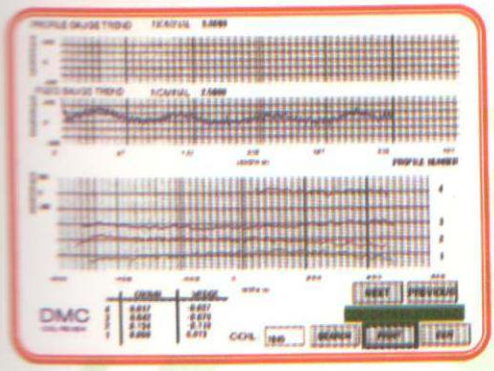
GERMANISCHER LLOYD GLC Middle East QUALITY MANAGEMENT SYSTEMS CERTIFICATION

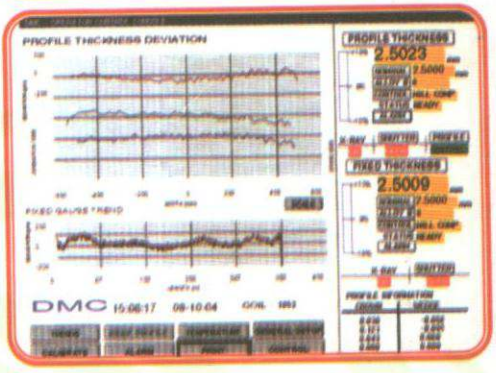
PROCESS CONTROL

Continuous improvement in the manufacturing process allows Hadisolb to obtain a greater flexibility & productivity of our equipments.

Management techniques such as statistical Quality Control, Continous process automation etc. are integrated in our processes.







LABORATORIES

All measuring tools, Testing Instruments are Periodically calibrated with master standards.

* The laboratories are equipped with the most modern technology for material analysis & monitoring.
* Laboratory services is provided for quality control of arriving materials, semifinished steel, finished products, refractories & wastes ... etc:

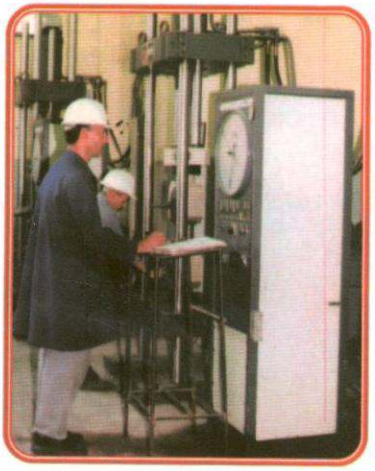
Central laboratory:

Include spectral, chemical, metallographic, refractories & a shop for preparing specimens.

Metallographic labs.
Gas, Oxygen & Water labs.
Refractores labs.
Coke labs.
Sinter labs.
Mechanical labs.

Isotope laboratores:

* Gamma & X-ray defectoscopy.
* Radio active isotopes.



QUALITY

In all production units, production porcess are performed according to documented technical instructions, controlled by quality staff.

Quality Control:

* Quality control staff monitor the incomming materials and follow up the production process, inspecting the products, collecting samples and identifing the products (according to inspection and test results).
* Delivering the products to the customer (after insurring the product conformity of the customer needs & standards).
* Recording any deviations in all above mensioned steps.

Quality Assurance:

* Quality assurance create, monitor and control the system decouments.
* Carrying internal audits on the system to insure:
- Efficiency of the system application.
- Monitoring and evaluating processes of each activity in the system.
- Monitoring and following up targets of each activity.
* Monitoring and following up the corrective actions taken (originated from audites, nonconformation and customer complains.
* Following up the measuring of customer satisfactions.
* Following up procedurs of the suppliers evaluation.

PRODUCTS OF HADISOLB

1-Hot Rolled Sections.

2- Hot & Cold Flat Products.

3- Clod Formed Sections.

4- Non- Prime Produts.

5- Semi- Finshed Products.

6-By- Products

1 - Hot Rolled Sections
Product Mix

Product	Production Unit	Dimensions mm	Weight Kg /m
EQUAL ANGLES	M.S.M.	50X4	2.06
		50X5	3.77
		50X6	4.47
		60X5	4.57
		60X6	5.42
		70X6	6.38
		70X7	7.38
		75X8	9.03
		80X6	7.34
		80X8	9.66
		90X7	9.61
		90X9	12.20
		100X8	12.20
		100X9	13.60
		100X10	15.10
	H.S.M.	120X10	18.20
		120X11	19.90
		120X12	21.60
		150X12	27.30
		150X14	31.60
		150X15	33.80
CHANNELS UPN	M.S.M.	80X45X6	8.64
		100X50X6	10.60
		120X55X7	13.40
	H.S.M.	140X60X7	16.00
		160X65X7.5	18.80
		200X75X8.5	25.30
		260X90 X10	37.90

Product	Production Unit	Dimensions mm	Weight Kg /m
ROUNDS	M.S.M.	30	5.55
		40	9.86
		45	12.50
		50	15.40
		60	22.20
		65	26.00
		70	30.20
		75	34.70
		80	39.5
PLAIN BARS	L.S.M.	13	1.04
		16	1.58
		19	2.23
		22	2.98
		25	3.85
RIBBED BARS	L.S.M.	12	0.888
		13	1.04
		16	1.58
		18	2.00
		22	2.98
		25	3.85
	M.S.M.	28	4.83
		32	6.31
SQUARES	M.S.M.	40	12.60
		80	50.20
	H.S.M.	100	78.50
		120	113.00
FLATS	M.S.M.	60X10	4.71
		65X12	6.12
		120X30	28.30
		130X20	20.40
	H.S.M.	15-50X150-350	-

Product	Production Unit	Dimensions mm	Weight Kg /m
I.BEAM	M.S.M.	120X58X5	11.1
HE..A	H.S.M.	160X152X6.0	30.40
		180X171X6.0	35.50
		200X190X6.5	42.30
I.P.E		140X73X4.7	12.90
		160X82X5.0	15.80
		200X100X5.6	22.40
		240X120X6.2	30.70
		270X135X6.6	36.10
		300X150X7.1	42.20
		360X170X8.0	57.10
		400X180X8.6	66.30
HE...B		160X160X8.0	42.6
		180X180X8.5	51.20
		200X200X9.0	61.30
PLATES	PLATE MILL	8-100 (T) 1000,1250,1500 (w) up to 10000 (L)	
FLAT BOTTOM RAILS (18)	M.S.M		18.0

CHEMICAL COMPOSTION OF LIQUID STEEL ANALYSIS

Steel Garde		De-Oxidation	Carbon % Max.			Mn% Max	Si% Max	P% Max	S% Max	N% Max
DIN 17100	EN 10025		Up to 16 mm	> 16 ≤ 40 mm	Over 40 mm					
Designation										
st 37/2	S 235 JR	OPT	0.17	0.20	-	1.40	-	0.045	0.045	0.009
st 37/2	S 235 JRG1	FU	0.17	0.20	-	1.40	-	0.045	0.045	0.007
st 37/2	S 235 JRG2	FN	0.17	0.17	0.20	1.40	-	0.045	0.045	0.009
st 37/3	S 235 JO	FN	0.17	0.17	0.17	1.40	-	0.040	0.040	0.009
st 37/3	S 235 J2G3	FF	0.17	0.17	0.17	1.40	-	0.035	0.035	-
-	S 235 J2G4	FF	0.17	0.17	0.17	1.40	-	0.035	0.035	-
st 44/2	S 275 JR	FN	0.21	0.21	0.22	1.50	-	0.045	0.045	0.009
st 44/3	S 275 JO	FN	0.18	0.18	0.18	1.50	-	0.040	0.040	0.009
st 44/3	S 275 J2G3	FF	0.18	0.18	0.18	1.50	-	0.035	0.035	-
-	S 275 J2G4	FF	0.18	0.18	0.18	1.50	-	0.035	0.035	-
-	S 355 JR	FN	0.24	0.24	0.24	1.60	0.55	0.045	0.045	0.009
-	S 355 JO	FN	0.20	0.20	0.22	1.60	0.55	0.040	0.040	0.009
st 52/3	S 355 J2G3	FF	0.20	0.20	0.22	1.60	0.55	0.035	0.035	-
st 52/3	S 355 J2G4	FF	0.20	0.20	0.22	1.60	0.55	0.035	0.035	-
-	S 355 K2G3	FF	0.20	0.20	0.22	1.60	0.55	0.035	0.035	-
-	S 355 K2G4	FF	0.20	0.20	0.22	1.60	0.55	0.035	0.035	-
st 50/2	E 295	FN	-	-	-	-	-	0.045	0.045	0.009
st 60/2	E 335	FN	-	-	-	-	-	0.045	0.045	0.009
st 70/2	E 360	FN	-	-	-	-	-	0.045	0.045	0.009

FU: Rimming Steel FN: Semi - Killed, Killed Steel

FF: Specially Killed steel (AL- Killed steel)

CHEMICAL COMPOSITION OF THE FINAL PRODUCT

Steel Grade		De-Oxidation	Carbon % Max.			Mn% Max	Si% Max	P% Max	S% Max	N% Max
DIN 17100	EN 10025 Designation		Up to 16 mm	> 16 ≤ 40 mm	Over 40 mm					
st 37/2	S 235 JR	OPT	0.21	0.25	-	1.50	-	0.055	0.055	0.011
st 37/2	S 235 JRG1	FU	0.21	0.25	-	1.50	-	0.055	0.055	0.009
st 37/2	S 235 JRG2	FN	0.19	0.19	0.23	1.50	-	0.055	0.055	0.011
st 37/3	S 235 JO	FN	0.19	0.19	0.19	1.50	-	0.055	0.050	0.011
st 37/3	S 235 J2G3	FF	0.19	0.19	0.19	1.50	-	0.045	0.045	-
-	S 235 J2G4	FF	0.19	0.19	0.19	1.50	-	0.045	0.045	-
st 44/2	S 275 JR	FN	0.24	0.24	0.25	1.60	-	0.055	0.055	0.011
st 44/3	S 275 JO	FN	0.21	0.21	0.21	1.60	-	0.050	0.050	0.011
st 44/3	S 275 J2G3	FF	0.21	0.21	0.21	1.60	-	0.045	0.045	-
-	S 275 J2G4	FF	0.21	0.21	0.21	1.60	-	0.045	0.045	-
-	S 355 JR	FN	0.27	0.27	0.27	1.70	0.60	0.055	0.055	0.011
-	S 355 JO	FN	0.23	0.23	0.24	1.70	0.60	0.050	0.050	0.011
st 52/3	S 355 J2G3	FF	0.23	0.23	0.24	1.70	0.60	0.045	0.045	-
st 52/3	S 355 J2G4	FF	0.23	0.23	0.24	1.70	0.60	0.045	0.045	-
-	S 355 K2G3	FF	0.23	0.23	0.24	1.70	0.60	0.045	0.045	-
-	S 355 K2G4	FF	0.23	0.23	0.24	1.70	0.60	0.045	0.045	-
st 50/2	E 295	FN	-	-	-	-	-	0.055	0.055	0.011
st 60/2	E 335	FN	-	-	-	-	-	0.055	0.055	0.011
st 70/2	E 3	FN	-	-	-	-	-	0.055	0.055	0.011

MECHANICAL PROPERTIES OF Final PRODUCT

Steel Grade		Tensile Str. N/mm²(min)		Yield Str. N/mm²(min)		Elongation% (min)		V-notch Test J	
DIN 17100	EN 10025	Thickness(mm)		Thickness(mm)		Thickness(mm)		Temperature °C	Thickness (mm) ≥ 10 ≤ 150
		3 ≤	3≥ 100 ≤	≤ 16	≥ 16 ≤ 40	≥ 3 ≤ 40	> 40 ≤ 63		
St.33	S 185	310-540	290-510	185	175	18	-	-	-
St.37-2	S 235 JR	360-510	340-470	235	235	26	25	+20	27
Ust.37-2	S 235 JR G1	360-510	340-470	235	225	26	25	+20	27
St.37-2	S 235 JR G2	360-510	340-470	235	225	26	25	+20	27
St.37-3U	S 235 JO	360-510	340-470	235	225	26	25	0	27
Rst. 37-3N	S 235 J2 G3	360-510	340-470	235	225	26	25	+20	27
	S 235 J2 G4	360-510	340-470	235	225	26	25	+20	27
St.44-2	S 275 JR	430-580	410-560	275	265	22	21	+20	27
St.44-3U	S 275 JO	430-580	410-560	275	265	22	21	0	27
St.44-3N	S 275 J2 G3	430-580	410-560	275	265	22	21	+20	27
	S 275 J2 G4	430-580	410-560	275	265	22	21	-20	27
	S 355 JR	510-680	490-630	355	345	22	21	+20	27
St. 52-3U	S 355 JO	510-680	490-630	355	345	22	21	0	27
St. 52-3N	S 355 J2G3	510-680	490-630	355	345	22	21	-20	27
	S 355 J2G4	510-680	490-630	355	345	22	21	-20	27
	S 355 K2 G3	510-680	490-630	355	345	22	21	-20	40
	S 355 K2 G4	510-680	490-630	355	345	22	21	-20	40
St.50-2	E 295	-	470-610	295	285	20	19	-	-
St.60-2	E 335	-	570-710	335	325	16	15	-	-
St.70-2	E 360	-	670-830	360	355	11	10	-	-

INTERNATIONAL COMPARISON OF STANDARDS

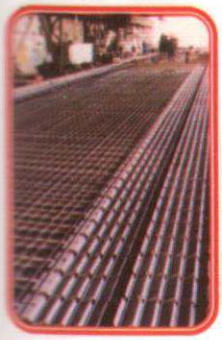
Structural and Constructional steels

Germany DIN	France AFNOR	Great Britain B.S.	Italy UNI	Japan JIS	Spaine UNE	USA ASTM
S250G1 T/UST 34-2	A 34-2	-	Fe 330 Fe 330 B FU	SS 033	-	-
S250G2T/RST 34-2	A 34	1449 34/02 HR.CR.CS	Fe 300 B FN	-	-	-
S185 (Fe 30-0) ST 33	A 33	Fe 310-0 1449 15 HR,HS	Fe 320	-	A 310-0 Fe 310-0	382 Gr.c A 283.33.36
S235JRG1 (Fe 360 B) UST 37-2	-	Fe 360 B 063404 B	Fe 360 B	-	AE 235 B Fe 360 B	A 283 Gr.c
S235 JR (Fe 360 B) RST 37-2	E 24-2	Fe 360 B; 6232-ERW3, CEW3 1449 7332 HR	Fe 360 B;C;D	STKM 12 A;C	AE 235 Fe 360 B	1015 A 283 Gr.c
S235 JRG2 (Fe 360 B) UST 37-2	E 24-2NE	Fe 360 B FU 1449 7232 CR (RE/6323-HFW 3, HFS 3	Fe 360 B FN	-	AE 275 B Fe 430 B FN	A 570 Gr.36
S275JR (Fe 430 B) ST 44-2	E 28-2	Fe 430 B FN, 1449 4325 HR, HS 063534 B; 6323-HFW 4, HFS4, ERW 3, CEW 4, SAW 4	Fe 430 B FE 430 B FN	SM 400 A;B;C	AE 355 B Fe 430 B FN	1020 A 570 Gr. 40 A 572 Gr. 42
S355JR	3 362	4360-50 B	Fe 510 B	-	AE 355 B	-
E295 (Fe 490-2) ST 50-2	A 50-2	Fe 490-S FN 4360-55 B	Fe 490	SS 490	A 490-2 Fe 490-2 FN	A 570 Gr. 50 A 572 Gr. 50
E335 (Fe 590-2) ST 70-2	A 60-2	Fe 590-2 FN 4360-55 E, 55 C	Fe 60-2 Fe 590	SM 570	A 590-2 Fe 590-2 FN	A 572 Gr. 65
P235S (SPH235)	A 70-2	Fe 690-2 FN	Fe 70-2 Fe 690	-	A 690-2 Fe 690-2 FN	-
S235 JO; ST 37-3U	E 24-3	1051 - 164- 400 B LT 20	Fe 360 C	-	AE 235 C	-
S235J2G3 (Fe 360 D1) ST 37-3	E 24-3 E 24-4	4360-40C Fe 360 D1 FF 1449 37/23 CR 4360- 40D 6323 - HFW 4, HFS4	FE 360 C Fe 360 C.D Fe 360 C FN Fe 360 D FF Fe 37-2	- - - -	AE 235 C AE 235 D Fe 360 DI FF	- A 284 Gr.D A 573 Gr. 58 A 570 Gr.35,C A 611 Gr.C
P265S (SPH 265)	A 42 AP	1051 - 164- 400 B LT 20	-	-	SPH 265	-
S275 JOH; ST 44-EU	E 28-3	4360 - 43 C	Fe 430 D	-	AE 275 D	A 572 Gr.42
S275 J2G3 (Fe 430 DI) St 44 - 3	E 28-3 E 28-4	Fe 43DI ff 4360 - 43 C; 43 D	Fe 430 B Fe 430 C (FN) Fe 430 D (FF)	SM 400 A;B;C	AE 275 D FE 430 D I FF	A 573 Gr.70 A 611 Gr.D A 572 Gr.42
S265S (SPH 265)	-	4360 - 43 C	Fe 430 C	-	Fe 430 C	-
DX 51D (ST 02 2)	GC	Z2	FeP 02 G	-	FeP 02 G	-
C 10	C 10 AF 34 C 10 XC 10	040 A 10 540 M 10 1449 01 CS	C10 1C10	S10C	F.1511 F.151.A	1010
DC 01 ST 2; ST 12	TC	1449 4 CR 1449 4 CS	FeP 00 FeP 01	SPCC; CR1	AP 01	A 366 (1012) (1008)
DD 11; STW 22	1 C	1449 4 HR; 14 HR	FeP 11	SPHD; HR1	AP 11	A 621 (1008)
UST 3 (DC0361) UST 13	E	1449 2 CR; 3 CR	FeP 02	SPCD	AP 02	A 619 (1008)
USTW 23 (DDI 2G1)	2 C	-	FeP 12	SPHE	AP 12	A 621 (1008)
DD 13; STW 24	3 C	9441 1 HR	FeP 13	SPHE	AP 13	A 622 (1008)
DC04 ST4;ST 14	ES	9441 1 CR; 2 CR	FeP 04	SPCE; HR4	AP 04	A 620 (1008)

Reinforcing Steel bars

Material : According to Egyptian Standars ES 262

1 - Chemical Analysis :-



Steel Grade	Type Sample	Maximum			
		C %	S %	P %	N %
240, 280	Cast Final	0.250 0.300	0.055 0.060	0.055 0.060	- -
360, 400	Cast Final	0.400 0.450	0.055 0.060	0.055 0.060	0.012 0.013

2- Mechanical Properties

Steel Grade	Tensile Str. N/mm²(min)	Yield Str. N/mm²(min)	Elongation % (Min)	Bending 180	
				Diameter mm	Mandrel Diameter
240	350	240	20	≤ 25	2d
				< 25	3d
280	450	280	18	≤ 25	2d
				> 25	3d
360	520	360	12	≤ 20	4d
				> 20 ≤ 36	5d
400	600	400	10	≤ 20	4d
				> 20 ≤ 25	5d
				> 25 ≤ 36	6d

3 - Weldability :-

- grades 240 & 280 can be welded.
- grades 360 , 400 are weldable on condition that the carbon Equivelant not exceed: 0.51%

$$C.E = C + \frac{Mn}{6} + \frac{Cr + V + Mo}{5} + \frac{Cu + Ni}{15}$$

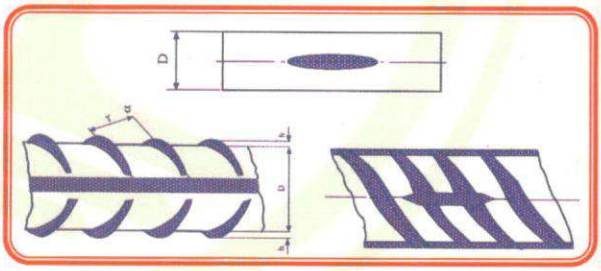
4 - Cold bending :

The test piece should be free from cracks and fissures visible to the naked eye.

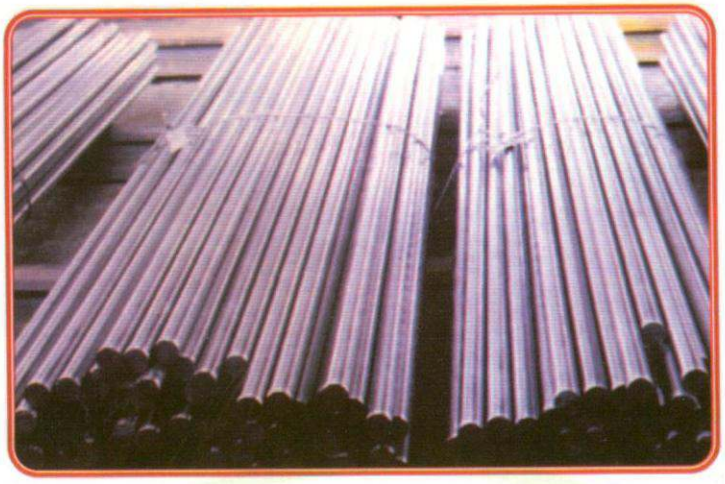
5 - Nominal Size & Mass :

Nominal diameter mm	Type		Weight Kg / m	Permissible var. %
	Smooth Rebars	Ribbed Rebars		
12	√	√	0.888	
13	√		1.04	
16	√	√	1.58	
18		√	2.0	±5
19	√	√	2.22	
22	√	√	2.98	
25	√	√	3.85	
28	√		4.83	
30	√		5.55	±4
32	√	√	6.31	

Ref. :- ES 262



Hot Rolled Round Steel Bars For General Purposes

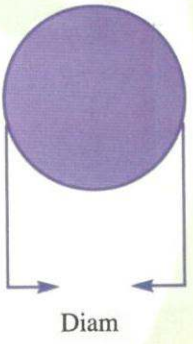


Material :

Preferably be made of steel grades accoding to : ES 260 or EN 10025, DIN 17100.

Dimensions, weight and straightness deviations

Diam. D mm	Perm. Var. ± mm	Weight Kg/m	Straightness
30	0.6	5.55	
32		6.31	
40		9.86	
45	0.8	12.50	
50		15.40	
52		16.70	0.004L
60		22.20	
65	1.0	26.0	
70		30.20	
75		34.70	
80		39.50	



Ref. :- DIN. 1013

ES. 1058

Hot Rolled Squares For General Purposes

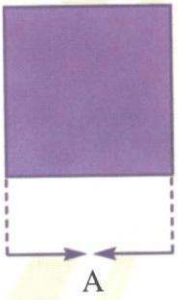
Material :

Preferably be made of steel grades accod-ing to DIN 1700,
EN 10025 & ES 260

Side Length A mm	Perm. Var. ± mm	Weight kg / m	Straightness
40	0.80	12.6	0.004L
80	1.00	50.2	
100	1.30	78.5	.0025L
120	1.50	113.0	
125	2.00	122.66	
130	2.00	133.0	
140	2.00	154.0	
150	2.00	177.0	

Permissible Twist :-

Side Length A mm From	To	Perm. Var.
14	50	3^0/m Max. 18^0
50	-	3^0/m Max. 15^0

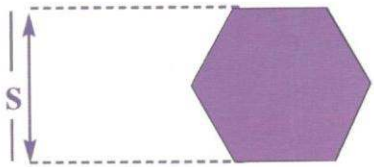


Ref. :- DIN 1014
ES 1059

Hot Rolled Hexagonal Steel

Material :

Preferably be made of steel grades according to ES 260, DIN 17100 and EN 10025



Dimension

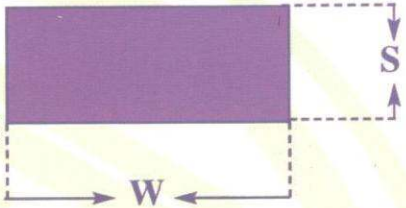
S mm	Perm. Var. ± mm	Weight kg / m
30	± 0.6	6.12

Ref. :- DIN : 1015
ES : 1059

Hot Rolled Flat Steel

Material :

Preferably be made of steel grades according to ES 260, DIN 17100 and EN 10025



W mm	Perm. Var. ± mm	S ± mm	Perm. Var. ± mm	Weight kg / m	Straightness mm
60	1	10	0.5	4.71	0.004L
65	1	12	0.5	6.12	0.004L
120	2.0	30	1.0	20.4	0.0025L
130	2.5	20	0.5	20.4	0.0025L

Ref. :- DIN 1017
ES 1059

Hot Rolled Equal Angles with Rounded Toes

Material : preferably be made of steel grades according to DIN 17100, EN 10025, ES 260

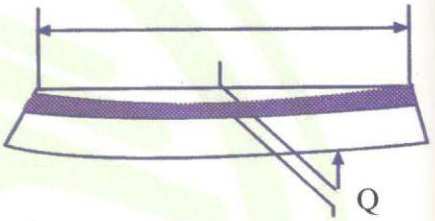
Dimensions & Mass : Page

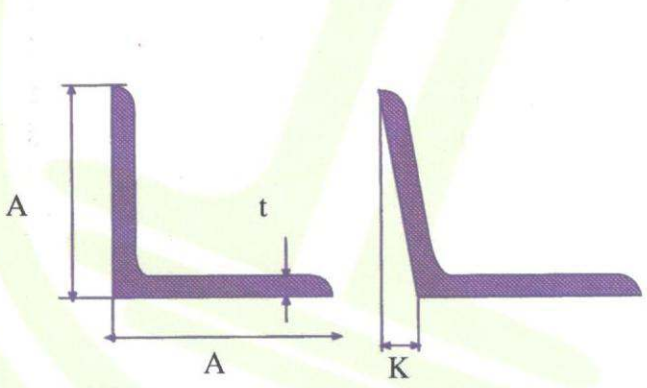
Tolerances of dimensions, Squarness of straightness

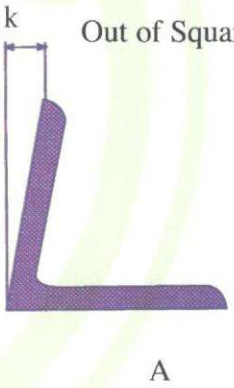
Leg Length (A) mm	Out of Squarness (K) mm	Straightness (Q) mm	Tolerance mm
a < 50	1.00		± 1
50 < a < 100	1.00	0.004 of L	± 2
100 < a < 150	1.5		± 2

Section Thickness :- (t)

Size mm	Tolerance mm
up to 5	± 0.50
5 < t ≤ 10	± 0.75
10 < t ≤ 15	± 1.00

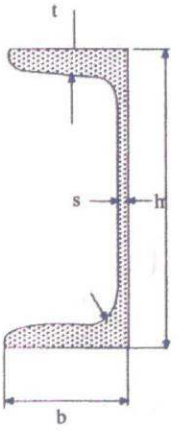






Ref. :- EN 10056 , DIN 1028, ES 1060

HOT ROLLED ROUND EDGE CHANNELS



Material :

Preferably made of steel grades according to DIN 17100, EN 10025 ES 260.

Dimensions & Permissible variations :

(h) mm	Per. var. ± mm	(b) mm	Per. var. mm	(S) mm	Per. var. ± mm	(t) mm	* Per. var. - mm		Wight kg/m
80		45	1.5	6.0		8.0			8.64
100		50		6.0		8.5			10.6
120		55		7.0		9.0	0.5		13.4
140	2.0	60		7.0	0.5	10.0			16.0
160		65	2.0	7.5		10.5			18.8
200		75		8.5		11.5	1.0		25.3
260	3.0	90		10.0		14.0			37.9

*** Positive Variation in (t) Limited by Weigt,. ± 4% For hight more than 125 mm and ± 6% for hight less than 125 mm**

Out of Squarness (K) :

Width (b)		K Max.
above	Up to	
	100	2.0 mm

Web bow (F) :

h mm		Web bow (F) : ± mm Max.
above	Up to	
-	100	0.5
100	200	1.0
200	400	1.5

Ref. :- ES 1061 (Part 2)
DIN 1025
EN 10279

Hot Rolled Narrow Flange IPN,I Beams

Material :

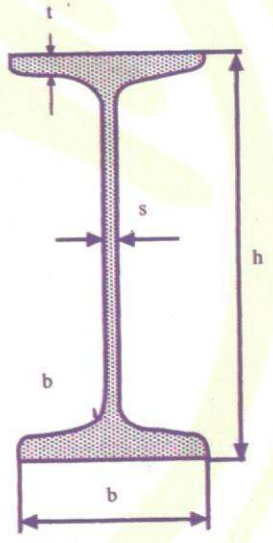
Preferably made of steel grades according to ES 260 , DIN 17100 , EN 10025.

Dimension and premissible variations :

h mm	b mm	t mm	s mm	Weight mm
120 ± 2.0	58 ± 1.5	7.7 $^{+2.0}_{-1.0}$	$^{+0.5}_{-0.1}$	11.1

Premissible dimension variations

- **Web bow : Max. 1.0 mm**
- **Straightness q : Max. 0.003 L**
- **Length = + 100 mm**
  - 0.0 mm
- **Out of Squarness (K) : Max. 2.0 mm**



Ref. :- ES 1061 (Part 2)
DIN 1025
EN 10024

Hot Rolled (I) and (H) Sections

Material : **preferably made of steel grades according to** DIN 17100

EN 10025, ES 260.

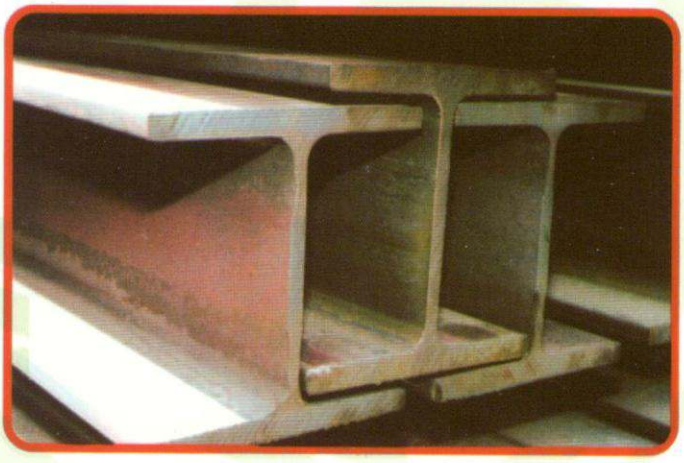
(1) Wide Flange I beams.

(A) Light weight H.E...A

(h) mm	(b) mm	(t) mm	(s) mm	(r) mm	Weight kg/m
152	160	9.0	6.0	15	30.4
171	180	9.5	6.0	15	35.5
190	200	10.0	6.5	18	42.3

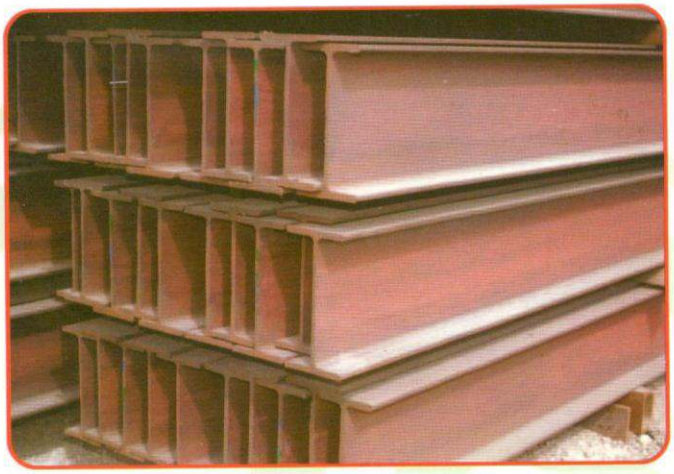
(B) Heavy weight H.E...B

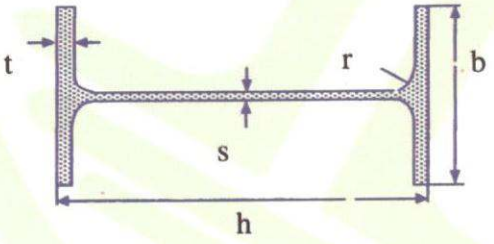
(h) mm	(b) mm	(t) mm	(s) mm	(r) mm	Weight kg/m
160	160	13	8.0	15	42.6
180	180	14	8.5	15	51.2
200	200	15	9.0	18	61.3

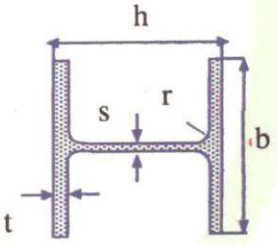


(2) Medium Flange (I) beams
IPE range

(h) mm	(b) mm	(t) mm	(s) mm	(r) mm	Weight kg/m
140	73	6.9	4.7	7	12.9
160	82	7.4	5.0	9	15.8
200	100	8.5	5.6	12	22.4
240	120	9.8	6.2	15	30.7
270	135	10.2	6.6	15	36.1
300	150	10.7	7.1	15	42.2
360	170	12.7	8.0	18	57.1
400	180	13.5	8.6	21	66.3



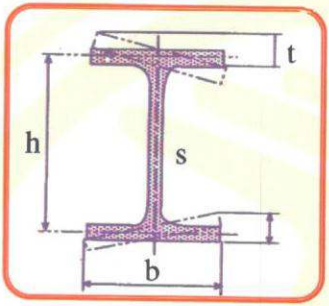




Dimensions and Permissible variations

(EN 10034)

Flange Thicknes ±		Web Thickness (s) mm		Flange Width (b) mm		Section Hight (h)	
Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance
T < 6.5	+ 1.5 - 0.5	S < 7	± 0.7	b ≤ 110	+ 4 - 1	h ≤ 180	+ 3 - 2
6.5 ≤ T < 10	+ 2 - 1	7 ≤ S < 10	± 1.0	110 < b ≤ 210	+ 4 - 2		
10 ≤ T < 20	+ 2.5 - 1.5	10 ≤ S < 20	± 1.5	210 < b ≤ 325	± 4	180 < h ≤ 400	+ 4 - 2
20 ≤ T < 30	+ 2.5 - 2	20 ≤ S < 40	± 2.0	b < 325	+ 6 - 5		
30 ≤ T < 40	± 2.5	40 ≤ S < 60	± 2.5			400 < h ≤ 700	+ 5 - 3
40 ≤ T < 60	± 3	60 ≤ S	± 3.0				
T ≥ 60	±4					701 < h	± 5



Tolerances of straightness

Section Hight (h) mm	Tolerances mm
80 < h ≤ 180	0.003 L
180 < h ≤ 360	0.0015 L
360 < h	0.001 L

Web of center

Flange Width(b)		Maximum mm
above	Up to	
-	110	2.5
110	325	3.5
325	-	5.0

Out of Squarness

Flange Width(b)		Max. Out of Squarness
above	Up to	
-	110	1.5 mm
110	-	2 % of b (6.5 mm Max.)

Ref. :- DIN 1025
EN 10034
E.S 1061

Flat Bottom Rails (18 kg/m)

Chemical Analysis :-

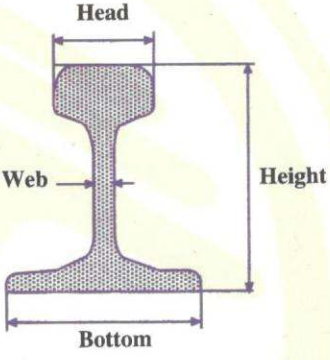
C %	Si%	Mn %	P % Max	S % Max
0.45 - 0.65	0.10 - 0.30	0.90 - 1.20	0.050	0.060

Mechanical Properties :-

- Tensile Strength : 57 Kg / mm2 (min.).
- Elongation : 10 % (min.).

Dimensions :-

- Head (mm) : 43 + 0.5
- Web (mm) : 10 + 1.0 - 0.5 mm
- Battom (mm) : 82 + 1.0
- Height (mm) : 93 + 1.0



Ref. :- ES 1347

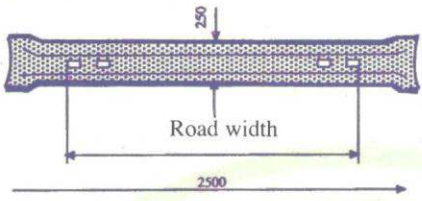
Egyptian Railway Sp. 111

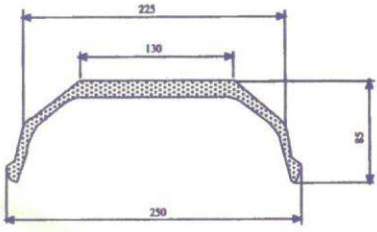
Products For Railway Authority

Steel Sleepers

Specifications: Chemicel analysis

P%	S%	(P+S)%	Rm Kg/ mm^2	Elongation %
max.				
0.100	0.075	0.160	37 - 48	25 min





Types of sleepers :-

Type	Road Width mm	Weight Kg/m	Holes Dimensions mm
54 Normal	1775.8 ±0.75	66.20	26×60.6 26×55.5
52 Normal	1759 ±0.75	66.13	26×71.5 26×56.5

Ref. :- Egyptian Railway Specifications 111

2 - Hot & Cold Flat Product

a- Hot Rolled Steel Plates 3 mm thick or above

And width>600 mm

Material:

Preferably be made of steel grades according to DIN 17100, DIN EN 10025

Specfications	Hot strip mill	Plate mill
thickness mm	3 - 8	8 - 120
Width mm	up to 1020	up to 1500
Length m	up to 6	up to 10

Dimensions and Permissible variations

Permissible Tolerances on thickness, flatness & Excess Mass

(Dimensions in mm)

Nominal Thickness	Tolerance on the Nominal thickness		Maximum thickness difference (within a plate)	Tolerance on flatness (length 2000mm)	Excess mass %
	(-)	(+)			
from 3 < 5	0.4	0.8	0.8	14	8.5
from 5 < 8	0.4	1.1	0.9	12	7.0
from 8 < 15	0.5	1.2	0.9	11	6.0
from 15 < 25	0.6	1.3	1.0	10	4.5
from 25 < 40	0.8	1.4	1.1	9	3.5
from 40 < 80	1.0	1.8	1.2	8	3.5
from 40 up to 150	1.0	2.2	1.3	8	3.5

*** permissible tolerances of WIDTH**

for cut edges GK + 20 - 0 mm, For (Mill edges) NK shall be the subject of agreement.

*** Tolerances of EDGE CAMBER:-** shall be limited to 0.2% of the actual length of the plate:

*** Tolerances of OUT-OF-SQUARNESS:-** shall be limited to 1% of the actual width of the plate.

Ref. :- EN 10029
DIN 1543
Es 1171

*** Permissible tolerances on LENGTH**

Nominal Length	Tolerances	
	Lower	Upper
> 4000	0	+20
> 4000 < 6000	0	+30
> 6000 < 8000	0	+40
> 8000 < 10000	0	+50
> 10000 < 15000	0	+75

b - Hot Rolled Coils & Strips

* Produced from slabs, with chemical & mechanical propeties according to: DIN 17100, EN 10025, E.S 1171

Products:

H.R. coils and strips with cut edges (G.K.)

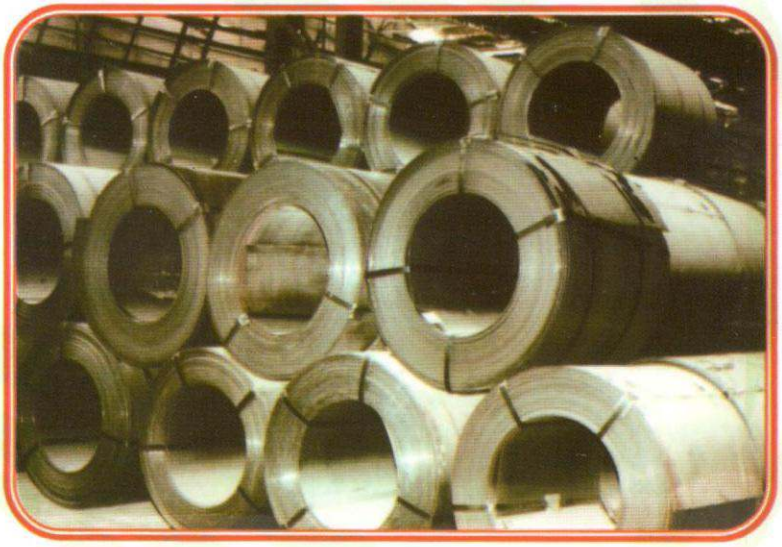
- Thickness from 2.5 up to 6 mm. Slitted on the combined shearing line.
- Width tolerance 0 - 3 mm.
- Thickness tolerance according to DIN 1016.
- Coil weight 5-7,50 t.
- Surface condition according to DIN 1614
- Width from 72 - 1000 mm.

H.R. Coils with mill edge (N.K)

* Chemical analysis according to DIN 17100 & EN 10025.
* Surface conditions according to DIN 1614.
* Dimensions tolerances according to DIN 1016.
* Width up to 1020 mm.
* Thickness 2-8 mm.
* Internal diameter 750 mm ±7%.

Tolerance of thickness, Flatness & Width

Nominal Thickness mm	Tolerance in width ≤ 1200 ± mm	Flatness mm
≤ 2.0	0.17	18
> 2.0 ≤ 2.5	0.18	
> 2.5 ≤ 3.0	0.20	
> 3.0 ≤ 4.0	0.22	15
> 4.0 ≤ 5.0	0.24	
> 5.0 ≤ 6.0	0.26	
> 6.0 ≤ 8.0	0.29	

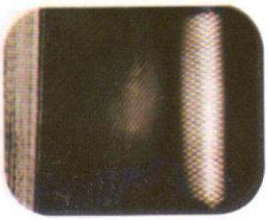


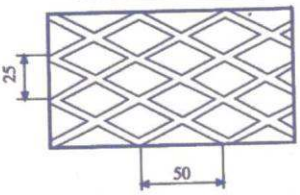
Ref. :- EN 10051

c - Hot Rolled Patterned Plates & Coils

Pattern R

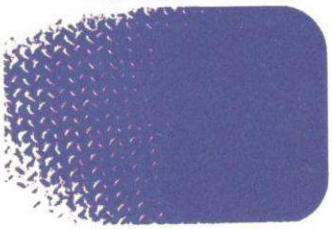
Checker plate

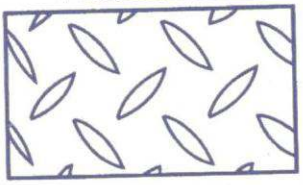




Pattern T

Bulb Plate





Patterned plate means plate one surface of which shows a regular embosed pattern, the other surface has a smooth surface. The pattern improves the nonskid & the non slib properties.

Material :

Preferably be made of steel grades according to DIN 17100, DIN EN 10025

Dimensions : Acc.DIN 59220

Flatness

Nominal thickness S(mm)	Deviation for a gauge length of 1000 (mm)	2000 (mm)
4	9	14
5	8	12
6	8	12

Thickness

Nominal thickness	Permissible Deviations	Permissible veriation in Thickness (referred to
4	+0.8 -0.4	0.8
5,6	+1.1 -0.4	0.9

Length

From	Nominal length (mm) app to but not inciuding	Permissible positive deviation in nominal length (mm)
	4000	20
4000	6000	30
6000	8000	40
8000	10000	50
10000	15000	75

Straightness & squareness

The deviation from straightness shall not exceed 0.2% of the actual length of the plate, and that the out-of-squareness shall not exceed 1% of the actual width of platse.

Width

It is permitted to exceed the nominal width ordered by 20 mm.
A negative deviation in nominal width is not permitted.

d - Cold Rolled Coils, Strips and Sheets

Material :-

- **According to** DIN 1623 **or eqaivalent standards, the required steel grade should be quoted in the designation.**

A - Chemical Composition:

Steel Grade	Deoxidation	Chemical Composition of Liquid Steel %					
		C % Max.	Si % Max.	Mn %	P % Max.	S % Max.	Al % Min.
St 12	Killed	0.10	0.10	0.20 - 0.50	0.050	0.050	-
St 12	Special Killed	0.10	0.10	0.20 - 0.50	0.050	0.050	0.020
St 13	Killed	0.08	0.08	0.20 - 0.45	0.040	0.040	-
St 13	Special Killed	0.08	0.08	0.20 - 0.45	0.040	0.040	0.020
St 14	Killed	0.08	0.08	0.20 - 0.45	0.040	0.040	-
St 14	Speciel Killed	0.08	0.08	0.20 - 0.45	0.040	0.040	0.020

B. Mechanical Properties :-

Steel Grade	Deoxidation	Mechanical Properties			
		Yield Strength N/mm^2 max.	Tensile Strength N/mm^2.	Elongation % max.	Bending
St 12	Killed	280	270 - 410	28	180^0
St 12	Speial Killed	280	270 - 410	28	180^0
St 13	Killed	250	270 - 370	32	180^0
St 13	Speial Killed	240	270 - 370	34	180^0
St 14	Killed	220	270 - 350	38	180^0
St 14	Special Killed	210	270 - 350	38	180^0

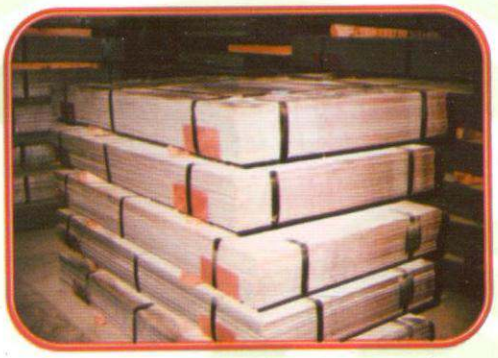
- **St 12** = Drawing quality.
- **St 13** = Deep drawing quality.
- **St 14** = Extra deep drawing quality.

* Dimensions :-

Product	Thickness mm	Width mm	Internal diameter mm	Length mm
Cold Rolled Coils & Strips	0.5 - 3.0	30-1000	500	Coil
Cold Rolled Sheets	0.5 - 3.0	up to 1000	-	up to 4000

* The Tolerances of Thickness, Flatness & Width (Dimensions in mm)

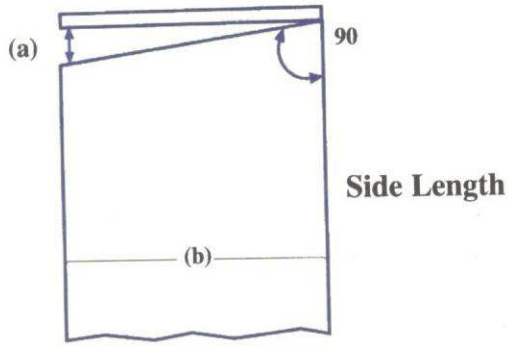
Nominal Thickness	Thickness Tolerance ±	Flatness Tolerance	Width Tolerances For nominal width + mm				
			≤ 125	> 125 to ≤ 250	> 250 to ≤ 400	> 400 to ≤ 600	> 600 to ≤ 1200
>0.4 to ≤ 0.6	0.05	12	0.4	0.5	0.7	1.0	4
>0.6 to ≤ 0.8	0.06	10	0.5	0.6	0.9	1.2	4
>0.8 to ≤ 1.0	0.07	10	0.5	0.6	0.9	1.2	4
>1.0 to ≤ 1.2	0.08	10	0.6	0.8	1.1	1.4	4
>1.2 to ≤ 1.6	0.10	8	0.6	0.8	1.1	1.4	4
>1.6 to ≤ 2.0	0.12	8	0.6	0.8	1.1	1.4	4
>2.0 to ≤ 2.5	0.14	8	0.7	1.0	1.3	1.6	4
>2.5 to ≤ 3.0	0.16	8	0.7	1.0	1.3	1.6	4



* - Tolerances of Length & Edge Camber (Dimensions in mm)

Nominal length (mm)	Length Toleronce + (mm)	Edge Camber Tolerance max. (mm)
≤ 2000	6	0.3% of the length
> 2000	0.003 of the length	6

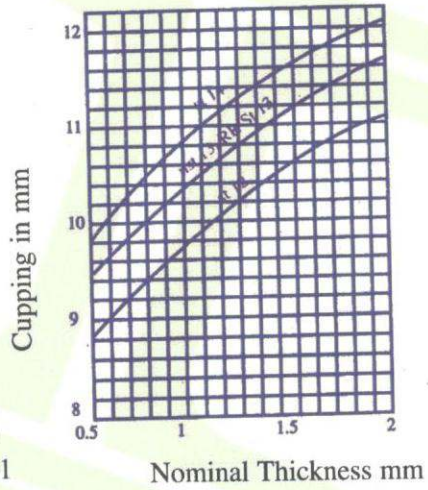
- Tolerances of out-of squarness (a) should not exceed 1% of the product width of the sheet(b).



Cupping test:-

- The minimum cupping test values & mechanical properties shall apply for a period of:-
  - 6 months for grades St. 14 and RR St 13.
  - 8 days For Grades Ust 13 and st 12.

After the products have been made available as agreed on ordering



Ref. :- ES 1110
DIN 1541, 1623
EN 10130, 10131

3 - COLD FORMED SECTIONS

Material:

C.F. Sections are produced in C.F. shop

ISO goal Since 2001

Hot Rolled Steel According to DIN 17100 or EN 10025 steel grade 37, 44 & 52/3 Cold Rolled Steel according to DIN 1623 St.12.

Permissible Variations (In Dimensions, Form):

a) External Dimensions: with Ratio of the lengths of both Free legs (flanges) < 2.

b) Thickness : Permissible variation

1- For Hot Rolled Materail as for DIN 1016 or EN 10051

2- For Cold Rolled Materail as for DIN 1016 or EN 10051

C) Bending Radius (inside radius). is according to table.

Steel grade	bending direction	minmum permissible bending radius for thickness, (mm)						
		> 1.0 ≤ 1.5	> 1.5 ≤ 2.5	> 2.5 ≤ 3.0	> 3.0 ≤ 4.0	> 4.0 ≤ 5.0	> 5.0 ≤ 6.0	> 6.0 ≤ 7.0
37/2	t	1.8	2.5	3.0	5.0	6.0	8.0	10.0
	l	1.8	2.6	3.0	6.0	8.0	10.0	12.0
44/2	t	2.0	3.0	4.0	5.0	8.0	10.0	12.0
	l	2.0	3.0	4.0	6.0	10.0	12.0	16.0
52/3	t	2.5	4.0	5.0	6.0	8.0	10.0	12.0
	l	2.5	4.0	5.0	8.0	10.0	12.0	16.0

t : Transverse to the Rolling direction.

l : Parallel to the Rolling direction.

d) The Bending Zones (radius)

Length of the Shorter Leg mm		Permissible variation on bend angle in degree
Above	Up to	
	10	± 3.0
10	40	± 2.0
40	80	± 1.5
80		± 1.0

e) Straightness:

The permissible variation from straightness is a maximum of 0.0025 X length in mm.

f) Twist:

The twist shall not normally exceed one degree per meter.

g) Cold formed Section ends

Should normally be cut at right angle at the ends. Slight variations from a right angle and also a burr consistent with the method of cutting and the form of the section are permissible as also is minor deformation in the area of the cut.

h) Length:

Fixed length with permissible variation + 50 mm, -0. shorter lengths which must not however be less than 1500 mm, may be supplied up to 6% of the delivered weight.

i) Surface Quality:

* The surface of section shall be free from cracks, laps, scales & lamination.
* Scratches, pits, dents within thickness tolerance are permissible.
* Individual hair cracks are not permissible if they are spread over the section length.

Ref. :- DIN 17100
DIN 59413
DIN 1614
EN 10051
ES 1810 - 9015

COLD FORMED SECTIONS

EQUAL ANGLES

OMEGA SECTION

EQUAL ANGLES

ROAD CRUSH SECTION

C-SHAPED SECTION

CURTAINS SHAPED

OPEN BOX SECTION

Z - SHAPED

COLD FORMED SLEEPER

SECTION SHAPED

SPECIAL C-SHAPED

SECTION SHAPED

4- NON PRIME MATERIALS

Cobbles:

Soft commercial quality with tensile strength max 50 kg/mm^2, stock, rusty.

Width 1000 mm.

Length Up to 12 m.

Thickness as available (20 - 50 mm).

5- SEMI FINISHED STEEL PRODUCTS

Billets:

* Steel is produced in oxygen converters, casted in billet casters
* Steel grades: low carbon structural steel according to DIN 17100 or EN 10025

*** Physical appearance of billets.**

Side length:	130 up to 200 mm
Bend:	40 mm Max from side to side for total length
Twist:	less than 10 mm total length.
Belts:	Nil
Blow holes on surface:	Nil
Length:	From 4 to 8.5 m± 200 mm.
Longitudial crack depth:	Max. 1% of side length
Transverse crack depth:	Max 1% of side length
End fin:	Max. 5 mm
Foreign material:	No slag deposit on billet surface.

Weight & Dimensions

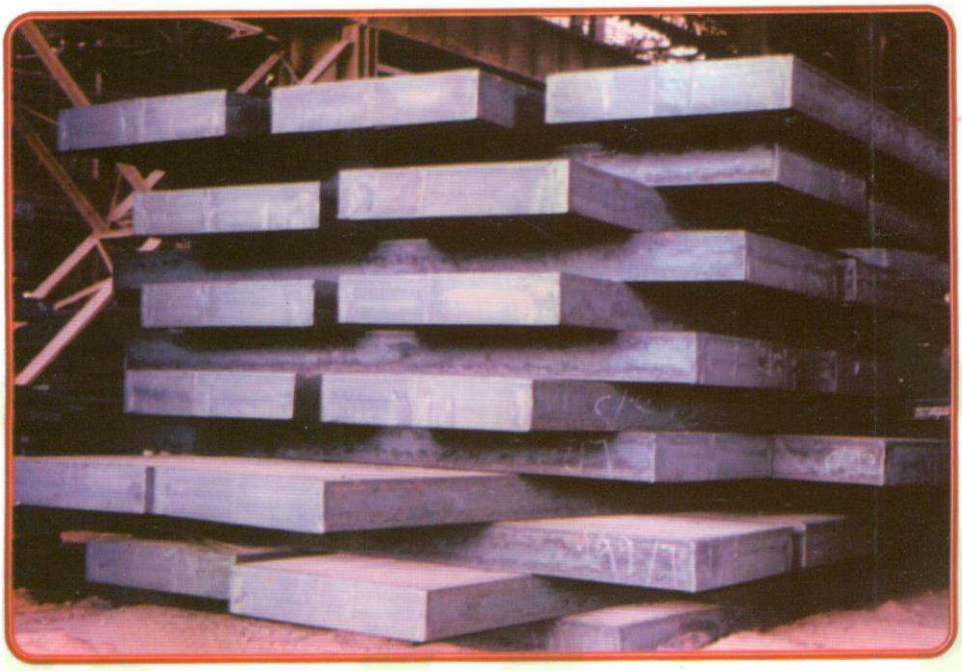
Side length	Kg / m.
130	132.66
150	176.62
180	254.3
200	314

SLABS :

- Steel is produced in oxygen converters, casted in slab casters.
- Steel grades: low carbon structural steel accoreding to DIN 17100, or EN 10025.

Physical appearance of slabs

Thickness	: 150, 170, 200, 250 mm ± 10 mm
Length	: Up to 6 m
Belts	: Nil
Blow holes	: Nil
Foreign materials	: Nil
Convexity or concavity	: Not more than 5 mm
Width	: 720 - 1500mm.



6 - BY - PRODUCTS

IRON ORES & IRON OXIDES

- The ores & the oxides are of various mineralogical structures and of sedimentary origin.
- Mined from Baharia mines.
- Approximate analysis.

Yellow Ore 50 - 55% Iron Baharia ore.

Red Ore 40 - 45% Iron `Aswan ore.

- Size : fines to lumps.

USES :

- As iron ore
- As pigment (yellow OCHRE).
- In cement industry.

BARITE

(Heavy Spar) Barium Sulphate.

- As a Gangue in Iron Ore.
- Hardness 3 - 3.5.
- Specific gravity 4.3 to 4.7 g / cm^3.
- Colourless to white.
- Barium Oxide content = 65% & it may contain varying amounts of impurities as Ferric oxide or Silica.
- Present as crystals in lenses intercalating the iron ore beds.

USES :

Manufacturing of PAINTS, wall paper, Glass, Lithopone :-

- In oil well drilling.
- In medical preparation for radiological purposes.

CLAYS

Green clays usually called glucophane clays.

Composition:

Silica	30 - 40	%
Alumina	Up to 10	%
Magnesium oxide	0.5 - 4	%
Ferric Oxide	20 - 25	%
Potassium Oxide	8 - 10	%
Sod. Oxide	0.3 - 0.5	%
Ignition loss	10 - 12	%
Specific Gravity	Up to 1.8g/cm^3	

USES : In masonary & in building purposes.

BLAST FURNACE SLAG

Produced from Blast Furnaces as a by-product of the iron ore smelting process.

Composition :

Silica	32 - 36 %
Calcium Oxide	28 - 33 %
Alumina	11 - 15 %
Magnesium oxide	3 - 8 %
Manganese oxide	1.5 - 4 %
Sulphur	1.2 - 3 %
R_2O_3	Up to 2 %
BaO	4.5 - 7 %

TYPES OF B.F. SLAG

- **Air - Cooled Slag :**

It resembles rocks but it is of lower hardness.

USES : Construction of roads, concrete aggregate, rail way track & ballast.

- **Water - Cooled Slag :**

Available in the following forms :-

a. Foamed Slag :

Light weight aggregate with the following specifications :

Size (mm)	Specific gravity Kg/m3
0 - 5	950
5 - 10	720
10-20	680
20 - 40	640

USES : Manufacturing of building bricks, blocks & concrete.

b. Granulated Slag :

USES : In Cement industry, production of slag wool & as light weight aggregate in building bricks.

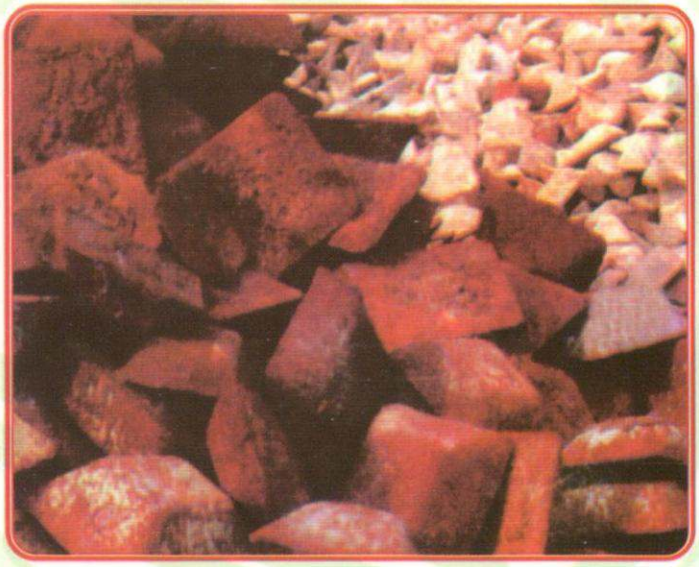
BLAST FURNACE DUST

Composition : Carbon 20 - 30 % Iron 20 - 30 %

USES : In cement industry.

PIG IRON FOR FOUNDERIES

Product of Blast furnaces, casted in Pigs abut 100 ✗ 200 ✗ 60mm In dimentions weight of each Pig - 40 Kgm.



DOLOMITE (Pearl Spar)

Calcium magnesium carbonate.

Chemical Composition.

MgO: 12 -16 % CaO: 30 - 35 % SiO_2: 2 - 5 % R_2O_3: 1 - 2 %

Specific gravity: 2.9 g/cm^3

USES : used as a refractory material .

BURNT DOLOMITE

Produced by calcination of raw dolomite in rotary furnaces.

MgO ≈ 35%

FERROUS SULPHATE (Hydrated)

by-product in the pickling process of steel. Free Sulphuric acid content 0.07% max. Insolubles 1.5% max.

Divalent iron = 19 - 20%.

USES :

* In water treatment
* In washing of soft drink filling lines
* In neutralization of alkaline soil.
* In chemical labs.
* The production of synthetic ferric oxide (Fe 97.5%) Used as a base for paints or inks.
* In production of sodium bi-sulphate used as a bleaching material in Textile industry.

Industrial Gases

- **Oxygen, Argon, Nitrogen**
- **Purity more than 99.999%**
- **Supplied as Liquids or gaseous state**

Mixed gasses as the requirments of customers.

Argon + Hydrogen

Argon + Nitrogen

Argon + Hydrogen + Carbon dioxide

OXYGEN CONVERTERS SLAG

A by-product from the conversion of liquid pig iron to steel in the oxygen converters.

Composition :

Silica	7 - 11	%
Calcium Oxide	40 - 50	%
Magnesium oxide	1 - 4	%
Manganese Oxide	7 - 11	%
Phosphorous Penta Oxide	2 - 3.5	%
Iron	≤ 20	%

The slag is crushed then it undergoes magnetic separation to

A	Scrap	minimum iron 85	%
B	Scrap	minimum iron 60	%
C	Scrap	minimum iron 40	%
D	Flux	(non ferrous).	

BURNT LIME (Fines)

Calcium oxide	80 - 90%
Size	less than 20 mm

USES : In building purposes, in cement industry, as a fluxing material, in neutralization of acids. Available as briquettes.

SAMALLOUT LIME STONE :

It is mainly Calcium Carbonate of high purity, it is either massive, fine grained or fragmented.

USES : In building purposes.

In manufacture of quick (soft burnt) lime,

In Fertilizers,

In Cement industry

As a flux in metallurgical processes and in glass industry.

LIME STONE (Fines)

Size : less than 40 mm.

USES : In building purposes. In water & sewage treatment. In production of some chemicals and as a filler in pigment & glass manufacture.

Identification Markings

1 - Methods of Marking

Painting (Colors)

A - Hot Rolled Products :

Steel grade	1 st grade		2nd grade	Remarks
	according to spec.	(+) Dim		
37/2	Yellow	Green	Red	The marks of (+)
37/3	2 Yellow+White	Green	Red	Dimension or for
44/2	Yellow+White	Green	Red	2nd grade will
44/3	2 White+ Yellow	Green	Red	be add to marking
52/3	3 White	Green	Red	of acceptence.
50/2	2 White	Green	Red	
60/2	2 Yellow	Green	Red	
70/2	2 Gray Lines	Green	Red	
C22	Yellow	Green	Red	
C35	% Yellow	Green	Red	

1 - External inspection : **blue line beside the steel grade colour.**

2 - Product of Commercial Quality: **red Colour.**

3 - Scrap : **black Colour.**

4 - Al Killed Steel : **White Line at the Second edge.**

B - Sleepers & Rails :

ytem	1 st grade	2 nd grade	Scrap
Rail 18	Yellow	Red	Black
Sleeper 54	Yellow	Red	Blue
54 international	Yellow	Red	Blue

C - Rebars :

Steel grade	1 st grade		Scrap
	according to spec	(+) Dim	
240&280 Smooth	Red	Green	Blue
360 Ribbed	White	Green	Blue

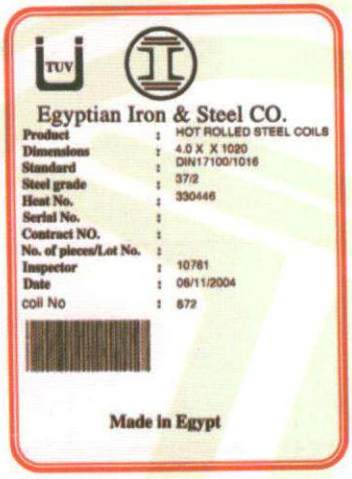
D - Cold Rolled Products :

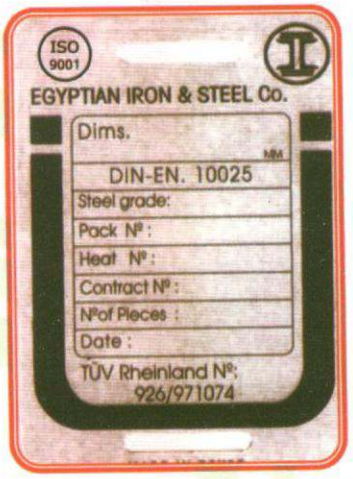
Steel grade	1 st grade	2 nd grade
Drawing Steel	2 Yellow Lines	Yellow+Red
Deep Drawring Steel	3 Yellow Lines	2 Yellow+Red
Extra Deep Drawing Steel	4 Yellow Lines	3 Yellow+Red

1- Al Killed Steel : White line added to marks according to Steel grades.

2- Identification

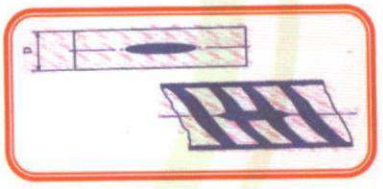
Each bundle of bars, sections, plates sheets and coils shall be a labled or taged stating the grade, nominal dimensions & other specifications.





Rebars :

All Bars shall be identified by symbol rolled into the surface of one side of the bar.



Rolled Beams :

All Hot formed beams are identified by the Egyptian Iron & Steel Trade mark rolled into the inner surface of the section.

Products Packing

Cold Rolled Coils

Coils are wrapped by Anit-corrosion paper, edges are protected by plastic angles and strapped by seven bands (4 through the eye and 3 arouned the belly) .

Cold Rolled Sheets :

The sheets are wrapped by anticorrosion paper and covered by Top Metallic cover and (side & front) panel. Cross wise three strapping bands and two lengthwise strapping bands holding the wooden skid with the package.

Sections:

Are strapped in transverse side with minimum four bands for 12 m length (for exportation).

Hot Rolled Plates:

Are strapped with minimum three bands in transverse side (for exportation).

Hot Rolled Coils:

Coils are strapped with two bands arround the belly, and four bands through the eye (for exportation).

*** All the bands used in strapping are of high tensile strength steel. Packaging instructions are the responsibility of mill management and are monitored by Q.C. personnel.**

Inspection documents

Different types of inspection documents are supplied to the purchaser, In accordance with the requirements of the order.

The documents supplied are :

1- certificate of compliance with the order
2- specific test report
3- test certificate

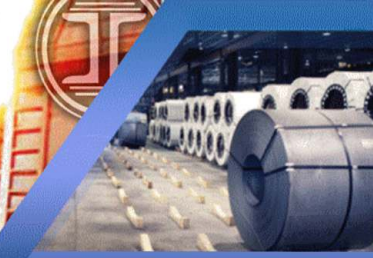
Inspection documents are validated by the manufacturer/ or by inspector authorised by the purchaser (According to : EN 10204 & DIN 50049).

External inspection:

Third party inspection authorities: when outside inspection authorities are involved, the materials laid down in stores for inspection and arrangements are made for the external inspector's visit. An inspector from the Q.C. departments always available to accompany & assist the customer's representative.

Customer complaintes:

All complaintes are routed through Quality control sector to ensure the best possible service to the customer. Customer returns are thoroughly investigated. Quick inquiry response, dependable deliver, consistent quality are always our watch works. We do our best to help our clients to build better end use products.



Telephones and addresses of its branches

Egyption Iron & Steel Company

Administration and factories : (Tabin / Helwan)

Telegraphy : (Hadeed) Cairo

Postal Code: 11912

Telephone : (+20) 27155491 / 93 / 94 / 95

(+20)27155602 - 27155601

whatsapp :(+20) 01028596763

Major operations :(+20)27155610

Fax : (+20) 27155613 - 27155250 - 27155370 - 27155608-27155473

Website : www.hadisolb.com

E_Mail : chairman@hadisolb.com (chairman Office)
org@hadisolb.com (Organization & Management Sector)

Cairo Office : 54 Abdel Khalek Tharwat St. (mailbox 746) Cairo

Phone : (+20) 23900686 / 23900684 / 23913049

E_Mail : export@hadisolb.com
Export Management : (+20) 23900622 / 23916220

Alexandria Office : 5 Salah Salem St. (El-Raml)
Phone : 03/4861145
Stores : 03/4406841 (Telephone , Fax)

Mining and quarrying sectors :

Pit of Marine Oasis :

Telephone : (+20) 38494284 / 38494283 / 38494282

Bani Khaled : (Samalot , Minya)
Telephone : 086/3649201 / 3649071

Pit Of Eladabia , Suez

Telephone : 062 / 92037938

SCAN ME

For more details

Contents

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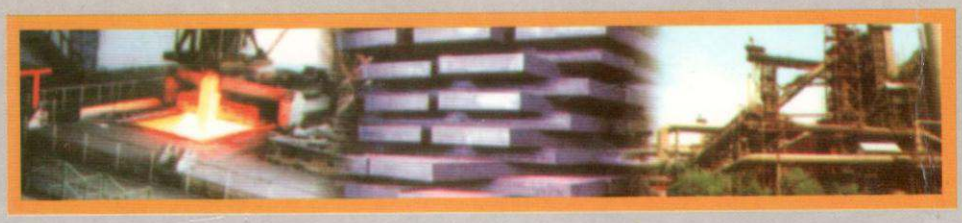
by

the General Administration of Computer



EGYPTIAN IRON & STEEL COMPANY

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