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 **FOUJLAD YAZD**

NOBLE IN THE STEEL INDUSTRY




FOULAD YAZD

The content presented here is limited to available information up to Feb 20, 2018

Noble
in the steel
industry



FOULAD YAZD



Yazd Industrial Constructional Steel Rolling Mill

Yazd Industrial and Constructional Steel Rolling Mill was established in 1996 following upstream expansion plans of the Yazd Manufacturing and Industrial Group (since 1980) by private investment after elimination of legal barriers for presence of non-governmental companies in this sector. The initial investment involved a rebar rolling mill near city of Yazd.

Today, after a more than quarter of a century presence in the industrial and constructional steel market, the group has achieved vertical and horizontal growth in the steel production chain and today can offer more than 12 different products in its portfolio which has been recognized as a remarkable and unprecedented accomplishment in the private sector in Iran since the opening of this sector for private investment.

+ 35

YEARS OF EXPERIENCE

+ 1600

EMPLOYEES

+ 800

CUSTOMERS

 **FOUJLAD YAZD**

Economical feature of steel? Popularity of steel in construction and various other industries comes from the intrinsic property that steel can offer compared to other materials: Economical Unit of Strength

The ambition behind Foulad Yazd products is the enabling of optimization of steel usage for designers and contractors. Direct contact with the users and designers, responding to their specific needs, continuous research and development for designing new steel products and solutions to reduce costs are some of the examples of value added services of Foulad Yazd products.

WHY FOULAD YAZD?



Trusted Brand

More than 30 years of steel production history



Complete portfolio

Most complete steel products portfolio from a supplier in region



Optimal efficiency in purchasing

Controlled weight tolerance per unit length to increase effective area and optimize consumption



Certified material

Certificate of quality for each consignment



Customization of products

Ability to customize and produce special products on basis of customers' needs



Customer relationship management

Responsiveness goes beyond the usual customer relationship principles



Special services

Provide services to facilitate work in the implementation

And...

FOULAD YAZD **PRODUCTS**



FOULAD YAZD



REBAR

- Approved by first-tier construction consultants and general contractors
- Compliance with quality requirements of the local landmark projects
- Full length (12 meters) for all bars in bundles
- Controlled weight per unit length for more economical use
- Mill test guarantee certificate and traceability



PLAIN BAR

- Straight lengths with diameter between 10 mm to 150 mm
- Coils from 16 mm to 28 mm in diameter
- Passed through ED and UT tests



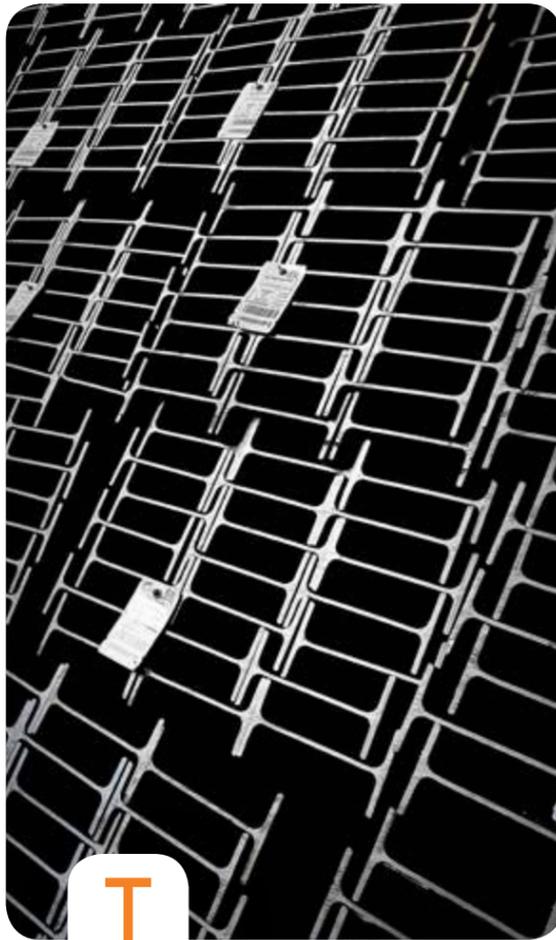
WIRE ROD

- Protective packaging for ease of use and transport
- Technical know-how for production of thermo-mechanically rolled grades
- Various steel grades such as low and high carbon steel, alloy steel, stainless steel,... in all categories including construction grade, drawing grade, cold heading and welding filler material
- Excellent drawing quality without the need for intermediate annealing
- Precision dimensional tolerance for all sizes



FLAT BAR

- An economical alternative for structural steel sheets, used for structure of machinery and agricultural apparatuses
- The possibility of offering various grades
- Possibility to provide specific lengths of more than 6 meters
- Ease of handling
- A well-known product in the world (Flat Bar) and presented for the first time by Foulad Yazd in Iran



IPE BEAM

- Optimal weight per unit length
- Strong tying packaging that protects the beam bundle to the point of use
- Smooth straight ends
- Straightened



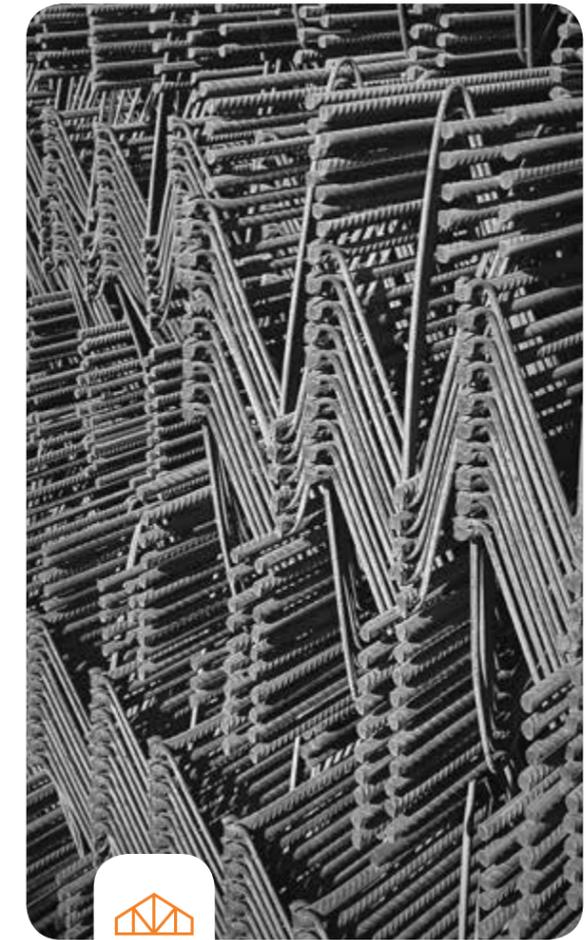
IRON ORE

- Permanent stock for quick delivery
- High FeO to total Fe ratio for Magnetite
- Yielding high recovery in concentrate production
- Available in fines and lumps
- Very low undesirable elements (S, P)



IRON OXIDE CONCENTRATE

- Number One concentrate produced in Iran in terms of grain size and high Blaine
- Extremely low impurities
- Ideal for pelletizing



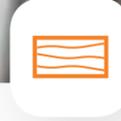
REBAR TRUSS GIRDER

- Produced from internally produced wire rod
- Customizable production based on order
- Quality Certification with FouladYazd backing
- Automatic and mechanized welding in accordance with building codes



INDUSTRIAL GASES

- High purity
- Quick Delivery
- Purity assured



GROUND BAR

- From 7 mm to 95 mm in diameter
- Precise dimensional tolerance control and suitable for all types of bearings
- Dimensional control in accordance with DIN-5936 / H6 & H7



PEELED BAR

- Over than 30 years of production history
- Dimensional control in accordance with DIN-668 / H11
- Customizable for grade
- Quick order processing



COLD DRAWN BAR

- Coil to coil, bar to bar and coil to bar drawing possibility
- Dimensional control in accordance with DIN-671 / H9
- No limitations on steel grade
- Ability to change of diameter or shape of the cross section and producing of round, square, rectangular and hexagonal bars
- More than 30 years of experience



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REBAR

Rebar is one of the most basic components of buildings and structures in urban areas but nonetheless it requires special attention for the very same reason. From an expert's eye, it is easy to see the extent of wealth and human lives that are placed on foundations made of concrete and rebar, in which the reinforcing bar is responsible for maintaining the integrity of those foundation and structures during natural disasters like earthquakes.

Foulad Yazd has set its vision to enable optimize consumption of reinforcing bar for its clients and has introduced rebars of grades 500 and 520 that meet national standard code of ISIRI-3132 for the first time in Iran effectively offering lower cost per unit strength for the designers and contractors.

In pursuance of the above vision, value added services such as cut and bend, custom length orders and threaded rebars are some of the other services offered by of Foulad Yazd.

- Straight lengths from 10 mm to 40 mm in diameter
- Coils from 8 mm to 16 mm in diameter
- Production in accordance with Iranian national standard of ISIRI-3132 and other international standards such as ISO-6935/2, JIS -G3112, ASTM-A615, DIN-488, BS-4449
- Custom thread types based on order
- Many references for supply of cryogenic and others special rebars



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PLAIN BAR

The production of plain bars was an important step in evolution of Foulad Yazd product portfolio. Plain bar production prerequisites is majorly different from rebar production in that it is a product which is used for industrial applications. For the reason strict quality control procedures must be followed for a quality product. Roundness of the bar, proper surface quality, absence of inclusions through the control of the melting and casting process, traceability along with the existence of technical knowledge and the possibility of customization are other benefits of Foulad Yazd plain bars.

- Straight lengths from 10 mm to 150 mm in diameter
- Coils from 16 mm to 28 mm in diameter





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WIRE ROD

Foulad Yazd wire rod continues to enjoy a special place amongst its users in the domestic market which other competitors have not been able to achieve so far. This reputation is also proven in the export markets since its quality match or even exceeds traditional sources in the export market. Foulad Yazd's main focus on customization and flexibility is tailored to meet the customer's technical requirements, which has led to a close relationship with customers and consumers. Plain wire rods are often used as a raw material in wire industries such as fence manufacturing, mesh, truss girder, chain, bead wire, nut and bolt, auto parts, welding filler material, spring making, musical instrument, etc. Thermo mechanically rolled, heat-treated or annealed wire rod is also included in our range which together is considered as most flexible source of wire rod in the market and perhaps in the region.

- From 5.5 mm to 16 mm in diameter (and 16 mm to 28 mm based on order)
- 2 tons coil weight
- Plain and ribbed wire rods according to standard codes
- Ability to produce most steel grades in various categories:
 - Mesh quality (RSt34/ St37/ ST3SP/ ST5SP,...)
 - Drawing quality, low and high Carbon (SAE 1006/ 1008/ 1010/ 1018/ SWRH62B / SWRH82B,...)
 - Cold heading quality (SAE 1010/ 10B21 / 10B28 / 10B38,...)
 - Welding filler materials (S2/ SG2/ SWRY11,...)





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FLAT BAR

Flat bar is a sheet with limited width manufactured and marketed for the first time in Iran by Foulad Yazd. This product is ideal for steel structure buildings, niche application that require mill edge finish, agricultural machinery and other industrial applications. This product is manufactured in lengths of 6 meters as standard and there is the possibility to be produced in other lengths according to requirements.

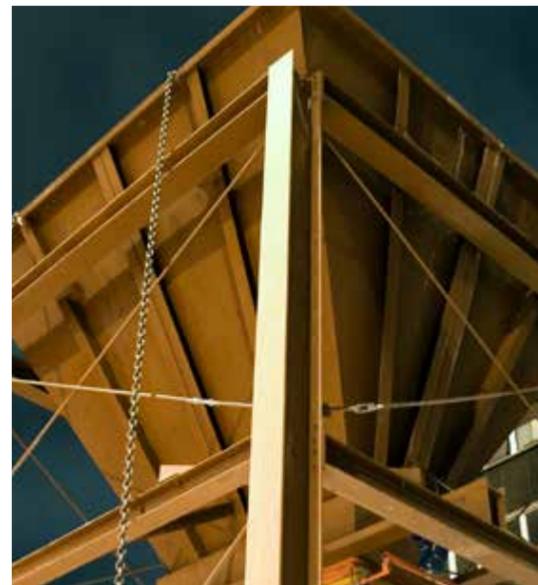
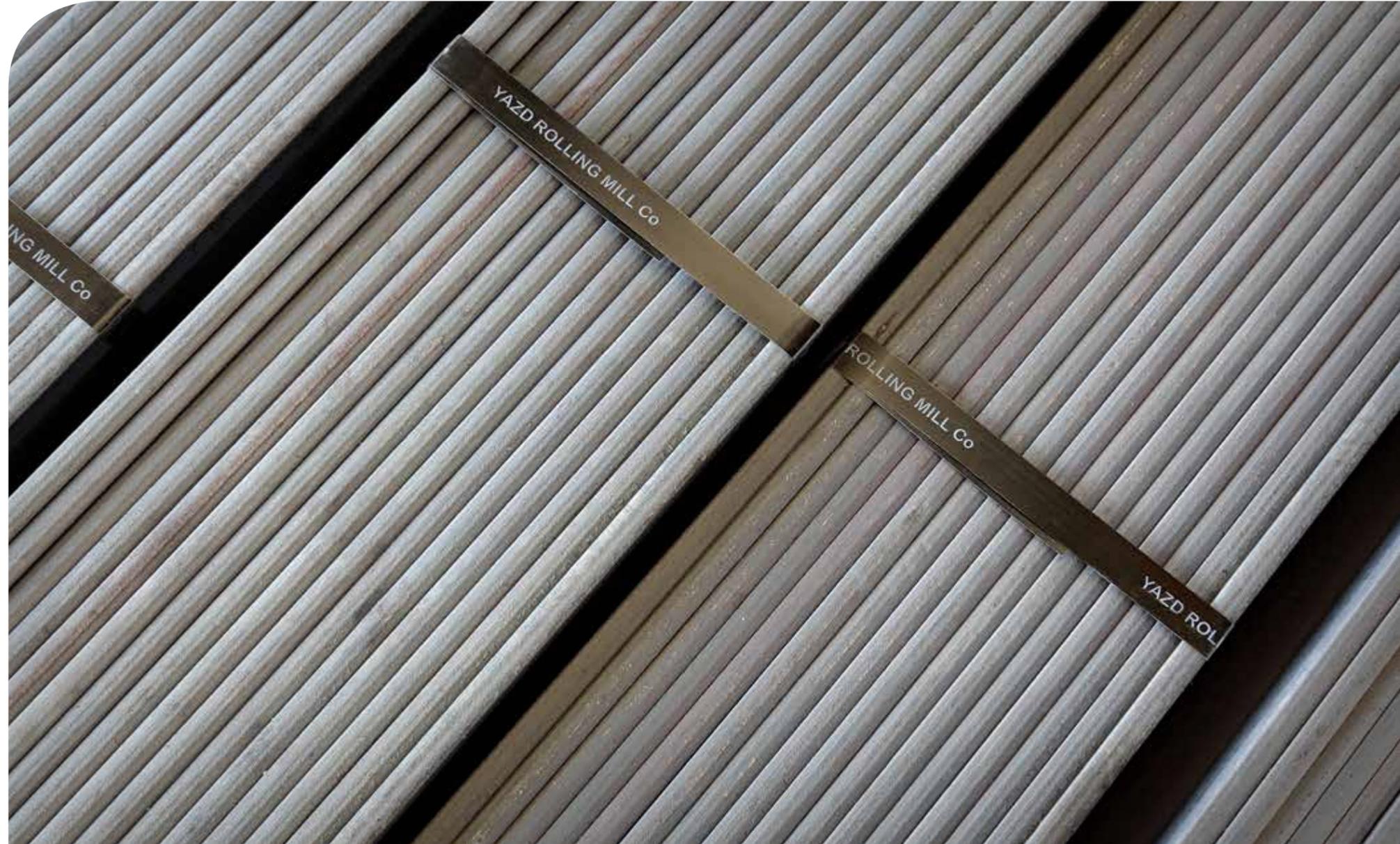
- Width from 120 to 400 mm
- Thickness of 8 mm to 40 mm (customizable)

Technical Benefits:

- No micro cracks due to lack of cutting the sheet
- Mill edges for each piece
- Straightened and ease of assembling on fixtures for welding
- Optimal weldability

Economic Benefits:

- Saving on cutting costs
- Minimal wastage
- Increasing the throughput of workshop from ease of use
- Saving on additional shipping cost



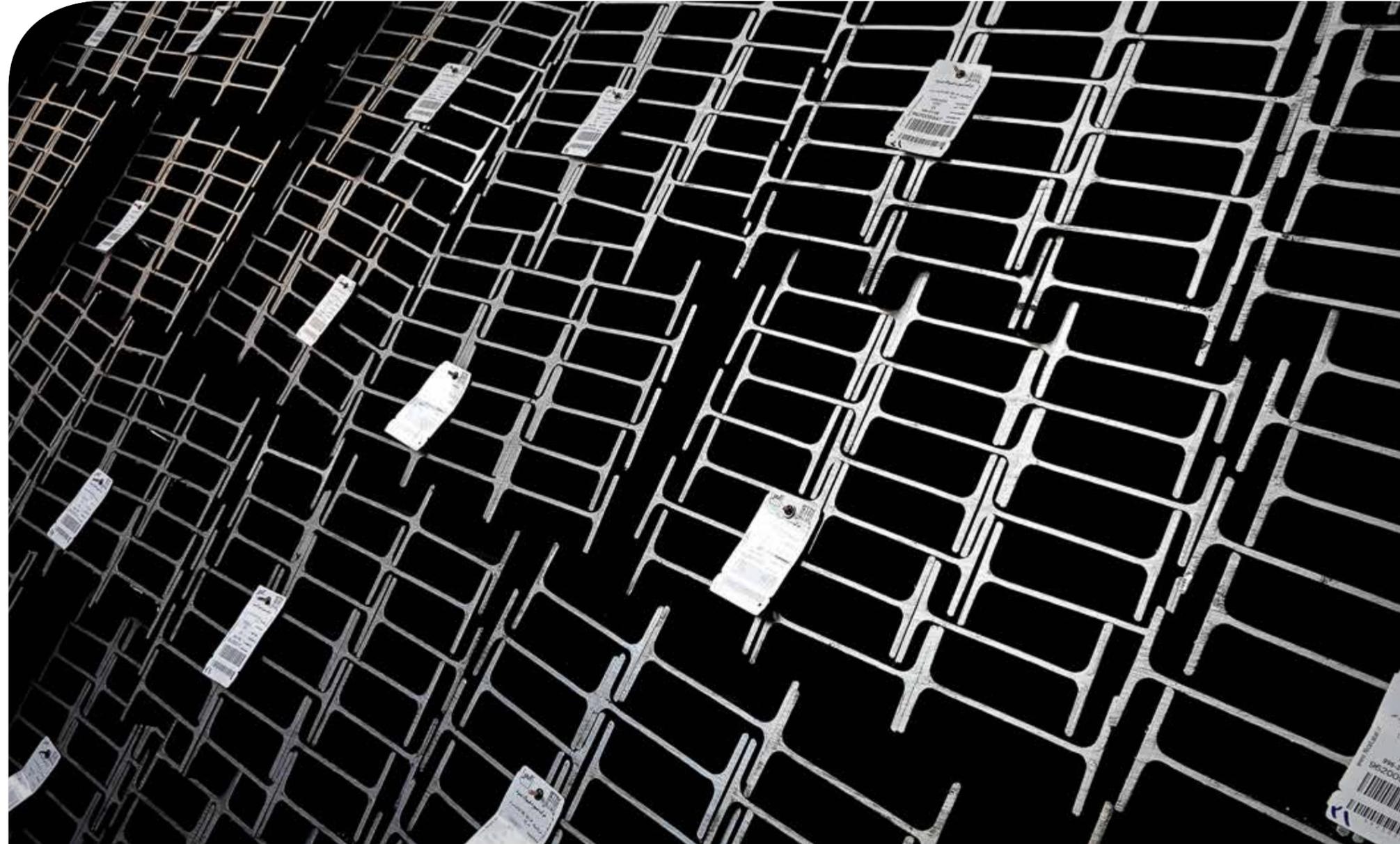
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IPE BEAM

Foulad Yazd IPE beams have a significant share of the local market and in terms of weight per unit length offer a more economical building element compared to the traditional producer in Iran market. This feature amongst others, bring a significant economic benefit to user and stockiest in return.

- Size from 140 mm to 240 mm
- 12 meters in length or other custom lengths
- In accordance with Iranian national standard of ISIRI-1791
- Steel grades of St37, St44 and St52
- Other beam types according to order





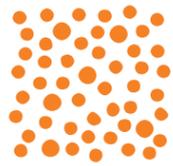
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IRON ORE

Iron ore as a raw material for steel production has a special importance in the Foulad Yazd's portfolio. Quality in the Yazd Steel Rolling Mill products are controlled and planned from the starting point of the raw materials. This is a unique ability of Foulad Yazd in terms of having a complete chain of steel production from the start point of iron ore to the final steel product.

- 45 to 53 % Fe (Magnetite / Hematite)
- Both size grades of fines (0-10 mm) and size lumps (10-40 mm) are available



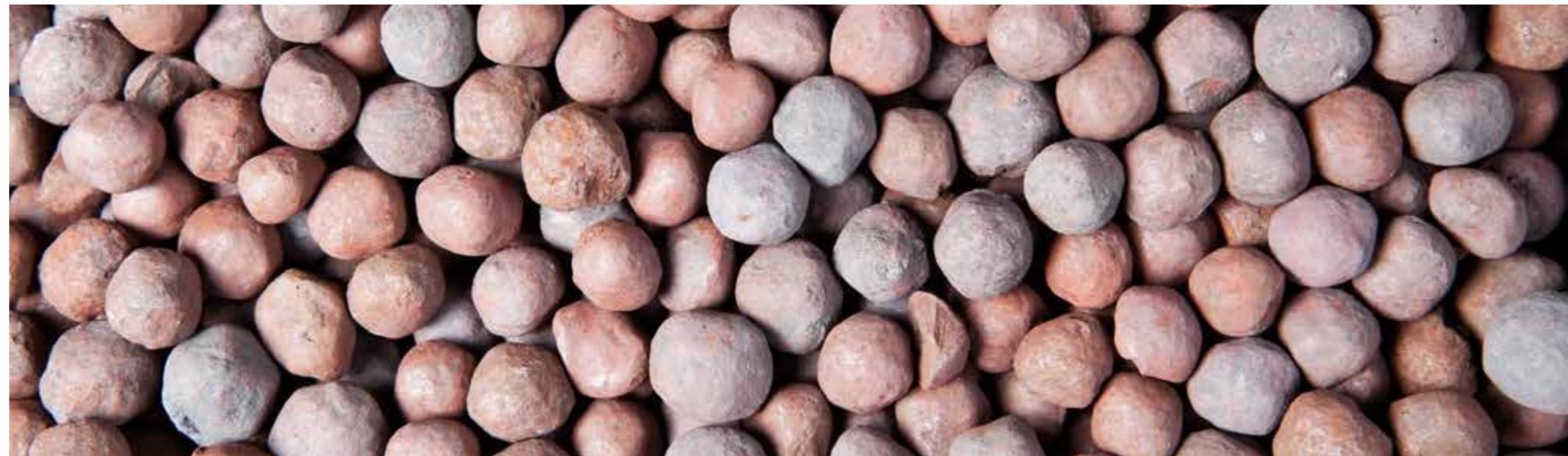


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IRON OXIDE CONCENTRATE

Most economical elimination of impurities and unwanted elements for production of quality steel starts from raw materials. With this in mind Foulad Yazd has focused much R & D work on further reduction of impurities content in order to produce higher quality Iron oxide concentrate. High Fe content, suitable particles size and low levels of impurities are the most important characteristics of a good iron ore concentrate which is offered by Foulad Yazd.

- 65 to 68 % Fe content
- Maximum phosphorus: 0.016 %
- Maximum sulfur content: 0.05 %
- Fines size: 80% under 75 microns





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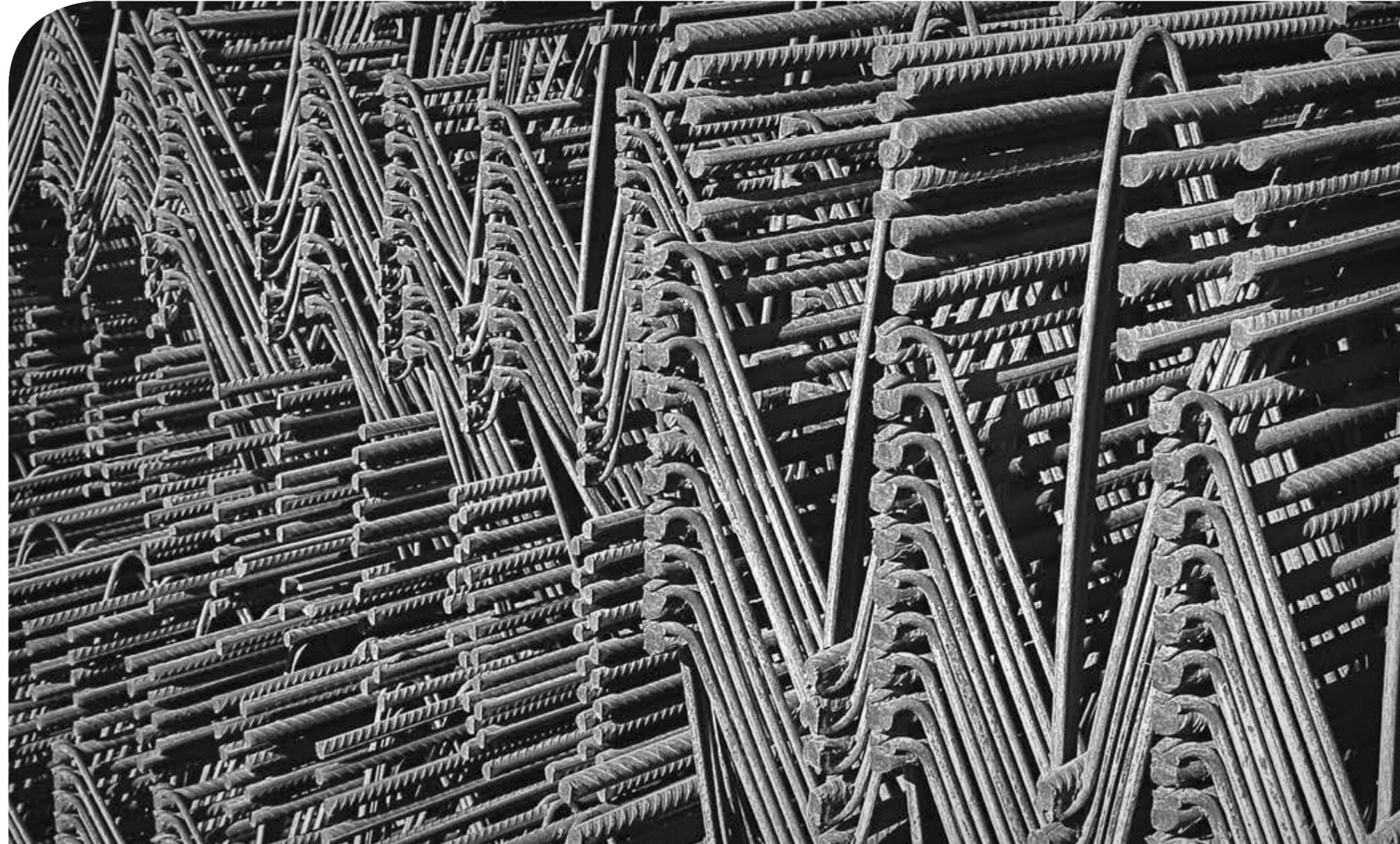
REBAR TRUSS GIRDER

Another product of Foulad Yazd is rebar truss girder, a standard and high quality material produced by fully automated machines to meet the needs of the construction industry. Economic advantages and quality of this type of product have led many construction industry leaders to prefer the use of Foulad Yazd truss girder.

- Heights from 10 cm to 30 cm
- Lengths from 1 m to 14 m
- Diameter of parallel bars between 8 mm to 14 mm
- Diameter of zigzag rod from 4 to 6 mm
- Zigzag's angle at least 45 degrees with 20 cm weld intervals

Advantages of Foulad Yazd truss girder:

- Designed to reduce steel consumption
- Geometric order in truss components in terms of distance, angle, height and length
- Ability to create custom heights to minimize waste
- Speed and ease of transportation as well as speed up the implementation of projects
- Welding by fully automated spot welding machine and thus increasing the welding quality





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INDUSTRIAL GASES

Industrial gases such as Argon, Oxygen and Nitrogen are other products of Foulad Yazd. Application of these industrial gases are in dairy industries, hospitals, petrochemicals, melting and casting industries, chemical and pharmaceutical industries amongst many others.

- Liquid Argon: 99.99 % of purity
- Liquid Oxygen: 99.99 % of purity
- Liquid Nitrogen: 99.99 % of purity



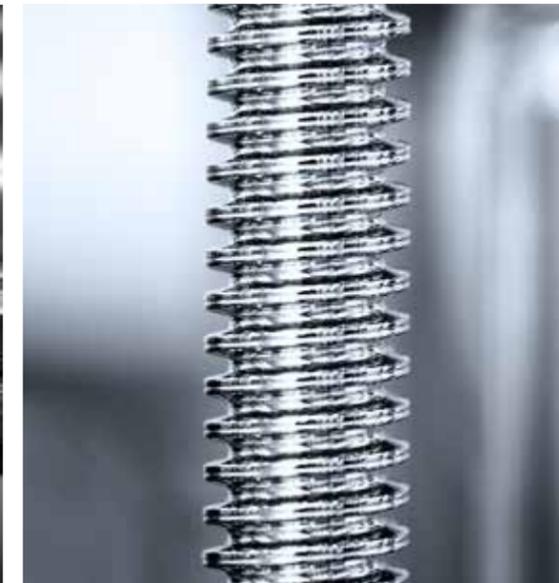


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GROUND BAR

Pump manufacturing industries, automotive parts producers, industrial machinery and many other industries have been relying on the quality of Foulad Yazd bright bars in their products for many years. This product is the result of using 35 years of experience as well as stringent quality control regime.

- From 7 mm to 95 mm in diameter
- Dimensional tolerances in accordance with DIN-5936 / H6 & H7





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PEELED BAR

Peeling of industrial shafts is performed to remove the oxides and smooth their surface to increase the quality of surface and dimensional accuracy for further processing. These shafts are used in cases such as cold drawing, forging, turning, etc.

- From 16 mm to 100 mm in diameter
- Dimensional tolerances according to DIN-668 / H11



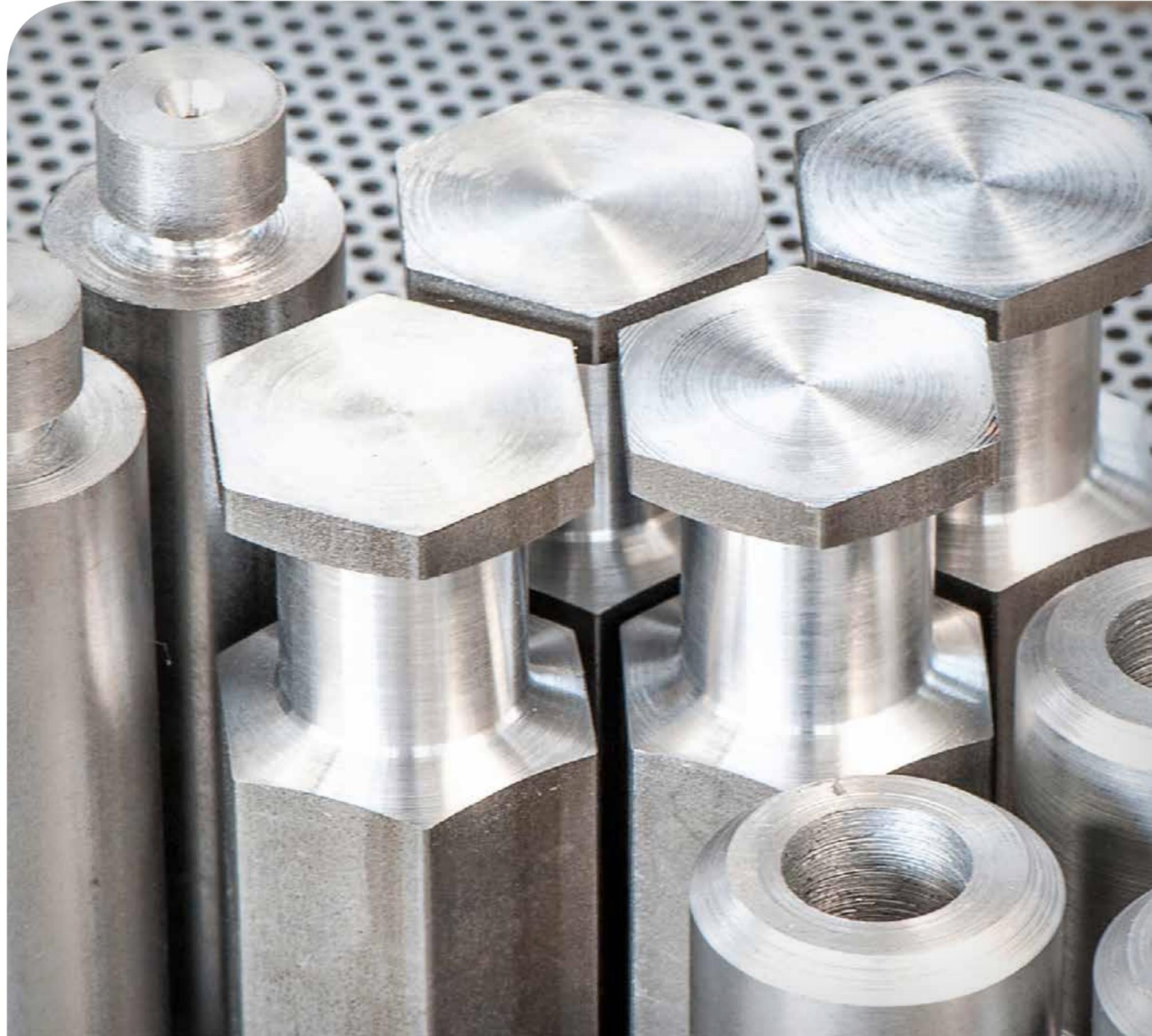


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COLD DRAWN BAR

Foulad Yazd cold drawn bars include round, square, rectangular and hexagonal shafts in various steel grades that are used in forging, machinery structures, agricultural devices and so on. The standard length of the bars is 6 meters or can be produced according to the customer's requirements.

- Round shafts from 7 mm to 100 mm in diameter
- Coils with round section from 6 mm to 36 mm in diameter
- Hexagonal shafts from 6 mm to 70 mm
- Square shafts from 6 mm to 60 mm
- Dimensional accuracy according to DIN-671 / H9





Technical specification tables

of Foulad Yazd products

★ Typical rebar chemical composition

Material	C	Si	Mn	P	S	Cr	Ni
ST55P	MAX 0.37	MAX 0.30	MAX 0.45	MAX 0.040	MAX 0.050	MAX 0.3	MAX 0.3

★ Rebar mechanical properties

Grade of steel	Yield strength	Ultimate tensile strength (Mpa)	Yield strength (Mpa)
AJ-340	350-405	480-600	19-23
AJ-400	415-525	595-710	17-19
AJ-500/520	520-600	645-780	16-17

★ IPE beam mechanical properties (conform to ISIRI-1791)

Grade of steel	Minimum Yield strength	Ultimate tensile strength (MPa)	Elongation (%)
St-37	235	360-510	26
St-44	275	430-580	22
St-52	355	510-680	22

★ Rebar mass variation criteria (in accordance with Iranian national code ISIRI-3132)

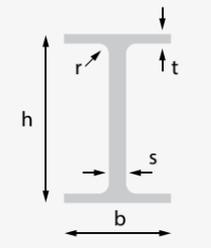
Nominal diameter (mm)	Weight tolerance (%)	
	Single lengths	Bundle
<10	8+	7+
	8-	7-
10 - 16	5/5+	5+
	6-	5-
16 - 25	4+	4+
	5-	4-
25 - 40	3+	3/5+
	4-	3/5-

★ Typical wire rode chemical composition

Material	C	Si	Mn	P	S
RST34-2	MAX 0.12	MAX 0.3	0.26 0.54	MAX 0.040	MAX 0.040
SAE 1006	MAX 0.08	--	0.25 0.040	MAX 0.040	MAX 0.050
SAE 1008	MAX 0.10	--	0.30 0.50	MAX 0.040	MAX 0.050
SAE 1010	0.08 0.13	---	0.30 0.60	MAX 0.040	MAX 0.050
SWRY 11	MAX 0.09	MAX 0.03	0.35 0.65	MAX 0.020	MAX 0.020
SWRY 21	0.10 0.15	MAX 0.03	0.35 0.65	MAX 0.020	MAX 0.020
C67	0.65 0.72	0.15 0.35	0.60 0.90	MAX 0.045	MAX 0.045

★ IPE beam dimensions and mass (Tolerance conform to ISIRI-1791)

IPE Number	Dimensions and tolerances (mm)										
	Height (h)		Width (b)		Thickness (s)		Thickness (t)		r	Weight (Kg/m)	Tolerance%
	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance	Nominal	Tolerance			
14	140		73		4.7		6.9		7	12.9	
16	160	+ 3.0	82	+ 3.0	5.0		7.4		9	15.8	
18	180	- 2.0	91	- 2.0	5.3	± 0.75	8.0	± 0.75	9	18.8	± 6
20	200		100		5.6		8.5		12	22.4	
22	220	± 3.0	110	± 3.0	5.9		9.2		12	26.2	



★ Dimension tolerance of bright bars according to the relevant standards

Diameter (mm)	Tolerance DIN-668/h11		Tolerance DIN-671/h9		Tolerance DIN-59361/h6	
	min	max	min	max	min	max
6-10	90 -	0	36 -	0	9 -	0
10-18	110 -	0	43 -	0	11 -	0
18-30	130 -	0	52 -	0	13 -	0
30-50	160 -	0	62 -	0	16 -	0
50-80	190 -	0	74 -	0	19 -	0
80-120	220 -	0	87 -	0	22 -	0
120-180	250 -	0	100 -	0	25 -	0
180-250	290 -	0	115 -	0	29 -	0

• Tolerance numbers must be multiplied by 0.001 mm

★ Rebar truss girder weight estimation

Lower rebar diameter (mm)	Upper rebar diameter (mm)	Zigzag rod diameter (mm)	Maximum weight/unit length	
			Height	
			20 cm	25 cm
208	80	4	1.64	1.74
208	80	4.2	1.68	1.80
208	80	4.5	1.75	1.89
208	80	4.7	1.80	1.95
2010	10	4	2.28	2.40
2010	10	4.2	2.32	2.44
2010	10	4.5	2.39	2.53
2010	10	4.7	2.45	2.60
2012	12	5.5	3.53	3.74
2014	14	6	4.69	4.94

★ Weight comparison between automatically and manually welded rebar trusses

Automatic weight reduction to manual	Zigzag (lateral rebar)		Upper rebar		Lower rebar		Length of span (m)
	Automatic	Manual	Automatic	Manual	Automatic	Manual	
22 %	04.7	06	08	010	208	2010	3 ≥ L
21 %	04.7	06	08	010	2010	2012	4 ≥ L > 3
18 %	04.7	06	010	010	2010 + 08	2014	5 ≥ L > 4
20 %	04.7	06	012	012	2010 + 014	3014	6 ≥ L > 5
15 %	04.7	08	012	014	2010 + 016	3016	7 ≥ L > 6

- Rebar type: Grade-400
- Height: 25 cm
- Dead load: 550 kg/m2
- Live load: 200 kg/m2
- Specified compressive strength: 250 kg/cm2

★ Flat bar dimensions and weight

Width (mm)	Thickness (mm)	Bars weight (Kg/6m)	Number of bars in each bundle	Bundle weight (Kg)
8	150	56	28	1600
8	200	75	42	3300
8	250	94	34	3300
10	150	70	23	1600
10	200	94	34	3300
10	250	117	27	3300
10	300	141	22	3300
12	150	85	19	1600
12	200	113	28	3300
12	250	141	22	3300
12	300	169	19	3300
15	150	105	31	3300
15	200	141	22	3300
15	250	176	18	3300
15	300	211	15	3300
20	200	188	17	3300
20	250	234	13	3300
20	300	281	11	3300
25	200	234	13	3300
25	250	293	11	3300
25	300	351	9	3300
30	200	281	11	3300
30	250	351	9	3300
30	300	421	7	3300

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CERTIFICATES



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