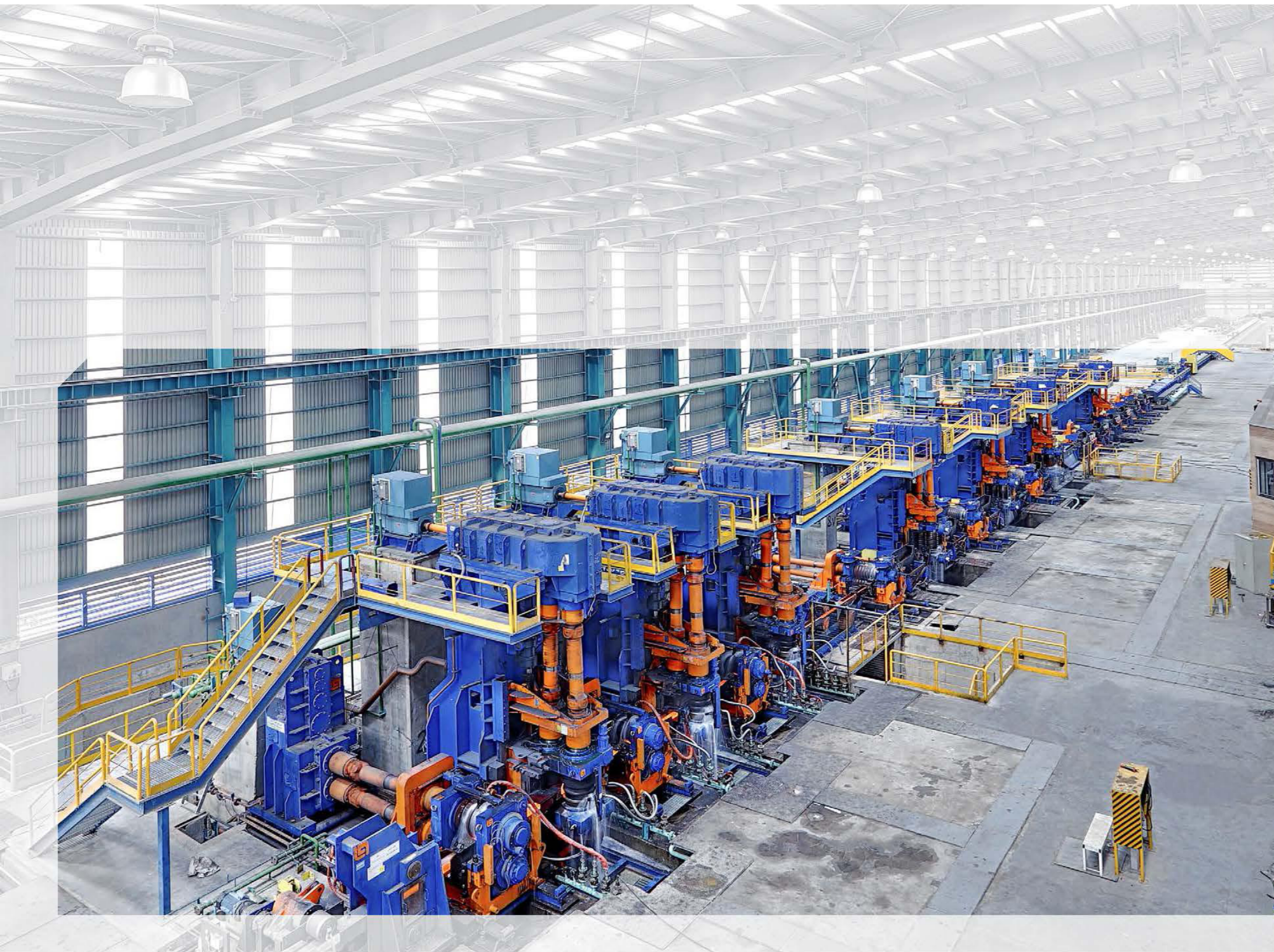




JAM STEEL CO

Jam steel co Mineral complex
iron & steel industry company



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Jam steel co at one glance

Jam steel co Mineral complex Iron & Steel Company (Jam steel co) is one of the largest projects in Iran which was privatized in 2011 and established with the means to prevent the direct sales of raw materials.

Among the major advantages of this project is its vicinity to iron ore mines in central Iran and Choghart which is dubbed as the mining paradise of Iran. Additionally, Jam steel co geographical location in the center of the country allows it to have easy access to all regions via its proximity to transit roads and railway networks in Iran.

Jam steel co's overall aim is the completion of its steel supply chain as well as having an effective presence in steel industry.

The initial phase of this project will encompass the creation of five factories:

- Pelletizing plant with a production capacity of 5 million tons per year
- Direct reduction plant with a production capacity of 1 million tons per year
- Smelting plant with a production capacity of 1 million tons per year
- Rebar rolling mill with a production capacity of 550 thousand tons per year
- Sections rolling mill with a production capacity of 550 thousand tons per year

Jam steel co's goals

- Special attention to safeguarding the environment and social responsibilities
- Insuring that occupational health and job safety are always respected
- Using natural gas as a clean fuel source of energy
- Using appropriate energy management systems
- Annual assessment of the environmental aspects and community development programs

We have proved that with our relentless efforts of the brave youth of this country, no obstacles will hinder our progress and the improvement of our industry. We shall stand strong till our last breath to preserve and elevate the name of our beloved country; Iran.

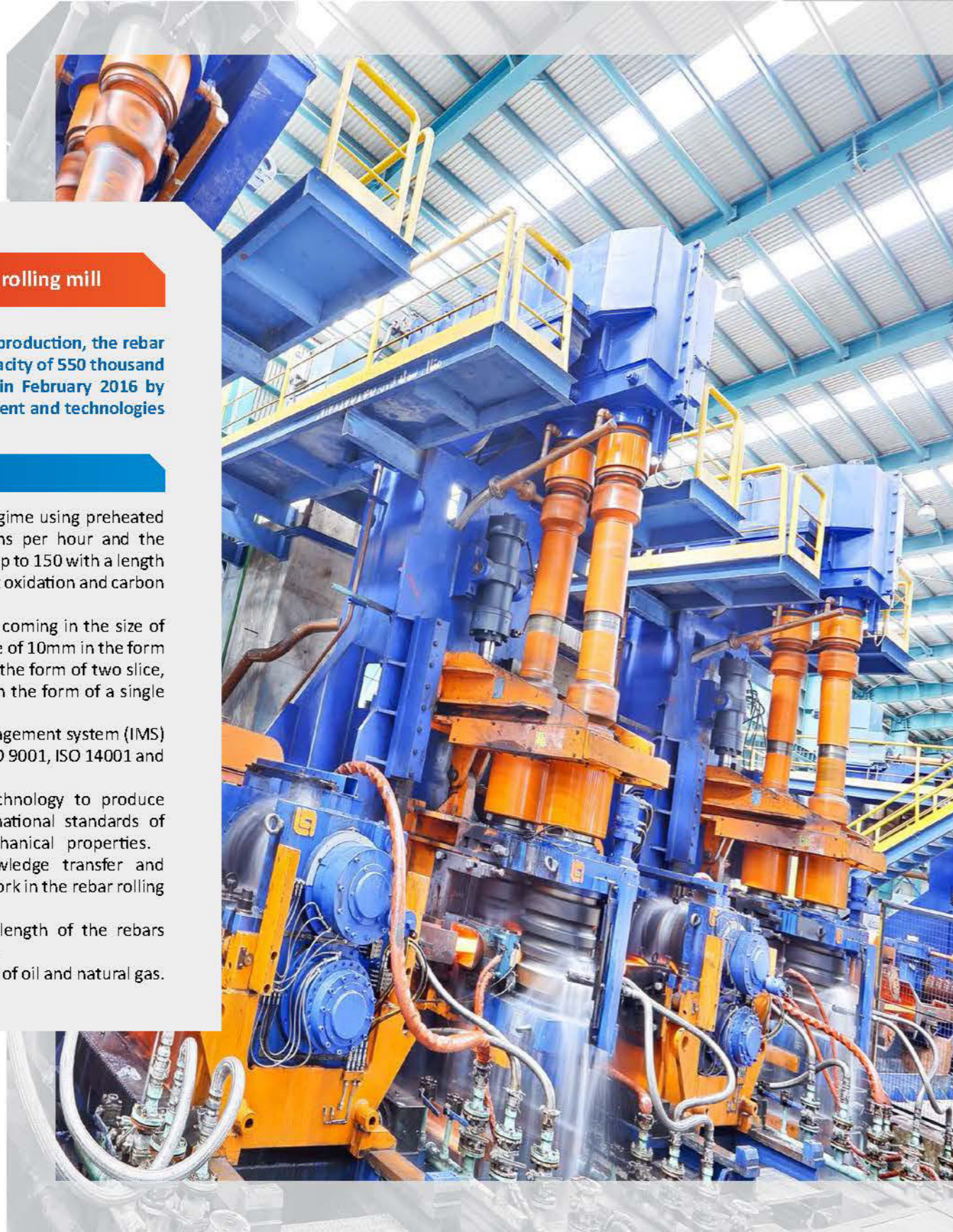


Introduction of the rebar rolling mill

As a first step of Jam steel co's steel production, the rebar rolling mill with a production capacity of 550 thousand tons per year has been started in February 2016 by using the most advanced equipment and technologies provided by Europe.

Rebar rolling mill features:

- Applying a uniform thermal regime using preheated furnace with capacity of 100 tons per hour and the ability of heating billets from 130 up to 150 with a length of 12 meters and having the lowest oxidation and carbon dioxide residues.
- Production of grade A3 rebars coming in the size of 8mm in the form of three slice, size of 10mm in the form of four slice, size 12, 14 and 16 in the form of two slice, and for the sizes of 18 to 32mm in the form of a single slice.
- Establishing an integrated management system (IMS) and obtaining certificates of CE, ISO 9001, ISO 14001 and ISO 18001.
- Using European modern technology to produce products with appropriate international standards of dimensions, tolerance and mechanical properties.
- Localization, technical knowledge transfer and absorption of 300 employees to work in the rebar rolling mill production line.
- Possibility to customize the length of the rebars according to customer's needs.
- Ability to use a dual fuel system of oil and natural gas.



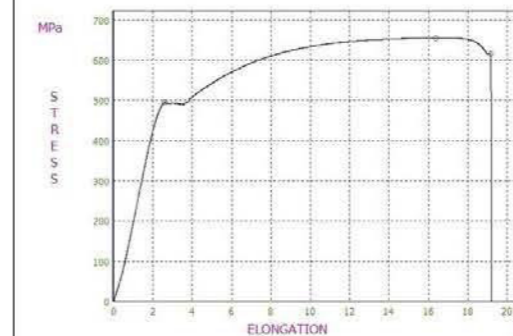
Laboratory and Quality Control

In order to continuously monitor and improve the quality of products, the laboratory and quality control department of Jam steel co use the most advanced equipment and knowledge provided by their experienced personnel. This unit is responsible for carrying out all required tests based on standards or as per customer's request. The conduction of mechanical tests (tensile/ bending

and rebaring) via the most advanced machinery, such as the universal tensile and presses testing machine with capacity of 100 tons including short-running extensometer sensors in order to calculate elongations with a very high accuracy and also bending and rebaring with a capacity of 20 tons for testing rebar sizes of 8 up to 32mm are parts of the services provided by this department.



Jam steel co



Size:25

Results	Force (k)	Extension (mm)	Stress (MPa)	Elongation (%)
Peak	315695	75.085	655.1935	16.2841
Yield	238059	11.89	494.0191	2.5951
Break	296340	87.782	614.9377	19.162

Elastic Module (0 , 100) as long of Peak = 2504.245 MPa

Due to the usage of high quality billets with a high percentage of alloys such as manganese along with a strict control over the production process, experimental results indicate favorable structures even with chemical and mechanical properties regarding Jam steel co's steel products which are not only produced according to the national quality standard of ISIRI 3132, but can compete with international producers as well.



The management and staff of Jam steel co are endlessly working to develop a giant step towards paving the economic development and prosperity of the steel industry in Iran. In this regards, continuing the operations of these units and completing the other phases of this project, as well as the development of human resources is among the most important goals of this company.

Technical specification of Jam steel co's rebar

Production of Jam steel co's rebar mill is designed to produce grade 400 AJ according to SIRI 3132 standard from sizes of 8mm up to 32mm. The rebars sizes and specifications are mentioned on the below tables.

Chemical composition of Jam steel co rebar

Chemical composition of the elements									
Sulfur S		Phosphorus P		Manganese Mn		Silisium Si		Carbon C	
MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
0.05	0	0.04	0	0.8	0.5	0.3	0.15	0.37	0.28

Dimension & Weight of Jam steel corebar

Nominal Diameter	Diameter Tolerance	Cross-Sectional area (mm ²)	Weight per unit length (kg/m)	Weight tolerance (%)	Considerations
8	-0.5	50.3	0.395	8 ±	In the calculation of the weight, the density of the steel is considered to be 7.85gr/cm ³ The difference between minimum and maximum diameter (oval) is 70% in the range of tolerance
10		78.5	0.616		
12		113.1	0.888		
14	+0.3	154	1.21	5.5 ±	
16		201	1.58		
18		254	2.00		
20	+0.4	314	2.47	4.5 ±	
22		380	2.98		
25	-0.6	491	3.85		
28	+0.4	616	4.83		
32	-0.7	804	6.31		
	+0.4				

Mechanical properties of Jam steel co rebar

Characteristics	Tensile Test			Cold Bend Test	
	Min. Yield Strength N/(mm) ²	Min. Tensile Strength U.T.S N/(mm) ²	Min. increase in relative strength N/(mm) ² (Percentage)	Bending Angle (Degree)	Bending diameter/rebar Diameter
240 C	240	360	25	180	2d
340 AJ	340	500	18	180	3d
400 AJ	400	600	16	180	5d
500 AJ	500	650	10	90	5d

Standard Equivalence

Characteristics	Equivalent Standards		
	GOST	ASTM	JIS
C 240	A _I	-	SR24
AJ 340	A _{II}	A615G40	SD35
AJ 400	A _{III}	A615G60	SD40
AJ 500	-	A615G75	SD50

Benefits of purchasing from Jam steel co:

- Appropriate transfer fee due to the central geographic position and being located near transit roads and railway network.
- Customer care and constant interaction with customers to find appropriate terms of payment and delivery
- Convenient packaging, weighing 2 tons, closed from two ends with straps and steel wire
- Production of rebar in sizes of 8 and 10mm directly in the form of bars without coil usage
- Carriage of rebars via magnets insures that rebars are protected from damages and tensions during transport
- Customized weight and rebars dimension according to customer's needs
- Customized length according to customer's needs



Jam steel co's key strategies are:

- Increasing the productivity of human resources
- Securing financial resources which are not impacted by limitations imposed by banks
- Supplying sustainable energy
- Using automation and integrated management systems in all operational processes
- Developing domestic technology with the means to improve and protect national production

Some of the measures taken by Jam steel co to build the necessary infrastructure in setting up and completing its supply chain are as follows:

- Construction of two high-voltage double-circuit electrical power transmission line with a length of 6km and 32 towers with a total length of 12km
- Construction of RO water treatment and storage unit by using the most advanced technologies and highest quality materials
- Construction of warehouses to be used for products, waste, fuel, raw materials and equipment
- Construction and operation of a natural gas line to be used as a source of clean fuel
- Development of a 400 kV power station in Nakhlestan
- Construction of a 400 kV to 33 kV power station





Head office


www.semtco.com

 **office** Nikan building, in front of the historical building of Manar janban, Isfahan, Iran

 **POST CODE** 8185814897

 **Tel** +983137738755


 + 989120380048

 **fax** +983137738754

E-mail: steelexport@semtco.com

Sales office of the Balkan region of Jam Trading Group

Address: PALL RAFAE, RRUGA ASTRIT LOSHA 2002SHK 1 ALBANIA/TIRANE

 **Tel**+355696706917

 +355696706917

E-mail: ErdemDirek@semtco.com

