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ELITE STEEL SUPER POWER



TESTED BY









ENLISTED



IF IT'S ABOUT YOUR FAMILY, MAKE THEM FEEL SECURE ELITE STEEL IS BUILT TO LAST

UNBREAKABLE TRUST

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COMPANY PROFILE

Elite Iron & Steel Industries Limited (Elite Steel) is a unit of the Elite Group family and The Pioneer of Quality Steel. It was established in **1983** as the first integrated steel company in Bangladesh. In 1987, it became the first company in the country to install an **Electric Induction Furnace** from RADYNE (United Kingdom), to further expand its production capabilities, Elite Steel added the second unit in **2023** and is perfectly positioned to meet the rising demand for superior steel products in the fast-growing construction industry.

The business strategy at Elite Steel is focused on providing customers with trusted and proven products.

Our chosen manufacturing process and our continuous research and development has resulted in a new **ELITE STEEL SUPER POWER B500DWR**, which fully aligns with the specifications outlined in **BDS ISO 6935-2:2016**. The product is in accordance with the **Bangladesh National Building Code (BNBC)**.

The state-of-the-art production facilities are located in the industrial heart of the capital - Gazipur and Ghorashal.



OUR FAMILY



Ramzul Seraj Group Managing Director



Elite Iron & Steel Industries Limited has a long history of providing high-quality steel products and services. We have built a reputation for excellence by exceeding our customers' expectations.

We are committed to providing our customers with the highest quality Deformed Bars that meet the highest international standards. We also strive to develop mutually beneficial partnerships with our customers and maintain our stance as good corporate citizens, by maintaining our production in an environment friendly process.

As a premier player in the region's steel industry, we are constantly striving to improve our products and services. We are committed to continuous improvement in every area of our operations.

We value the support of our existing and potential customers. We appreciate their business and look forward to continuing to grow and participate in the development of the steel industry.

Sajedur Seraj Group Deputy Managing Director



Elite Steel understands the importance of delivering products that exceed customers' expectations. That is why we continuously strive to provide the highest quality Deformed Bars, adhering to the most rigorous international standards. Our commitment goes beyond the products themselves; we aim to foster strong and mutually beneficial partnerships with our customers, ensuring their success aligns with ours.

We have a culture of innovation and always looking for new ways to improve our operations. We are confident that our dedication to excellence will allow us to continue to grow.

Shayaan Seraj Group Director



Our foundations are built on the primary strength of our business: our people and I would like to share that members of our team demonstrate high levels of dedication and commitment to remain focused on the execution of strategies that support our agile and resilient operations and most importantly, our clients.

With regards to product, Elite Steel provides the highest quality rebar. Through recent expansion and modernization, the brand can cater its prestigious clients' sites exclusively.

Our commitment remains to conduct and grow business in ways that contribute positively to society and the environment. We are always exploring new technologies, digitization and data analytics to assess and understand how to improve efficiencies in energy usage and emissions. Elite Steel aspires to become a high growth company that contributes to the society around us.

Lastly, we thank all government bodies, real estate developers, contractors, infrastructure consultants, engineers, architects, procurement managers, financing institutions and supporting partners for their trust in us. We appreciate their business and look forward to continuing to grow and participate in the development of the steel and wider construction industry in Bangladesh.

Engr. MD. Rokonuzzaman Jomadder Executive Director



Elite Steel takes immense pride in being the pioneer of quality steel in Bangladesh. Our journey began in 1983 when we introduced the country's first induction melting furnace, revolutionizing steel manufacturing. Today, we continue to lead the industry as the only green factory, committed to sustainable practices.

At Elite Steel, we combine modern technology with our rich expertise. Our state-of-the-art technology and PLC-controlled production facilities ensure that our steel products are not only the best in quality but also conform to international standards.

Our commitment to excellence is evident in every stage of production, from the utilization of cutting-edge equipment to rigorous EMF testing and 5 million cycle loading fatigue tests.

Our steel products are engineered to perfection, boasting attributes such as earthquake resistance, super ductility, high strength, corrosion and deformation resistance. We prioritize consistent quality through advanced technology, making us the preferred choice for discerning customers who value excellence.

Choose Elite Steel for superior steel products that exceed client's expectations.

VISION

To be the leading provider of high-quality steel products, services and solutions in Bangladesh by leveraging our rich family legacy, experienced human capital and innovative technologies.

MISSION

To produce excellent steel for Bangladesh and its people by using experience, talent and future technology. We aim to set the global standard for high quality, strictly controlled manufacturing steel.

VALUES



ACCOUNTABILITY

INITIATIVE



EXCELLENCE



RESPECT

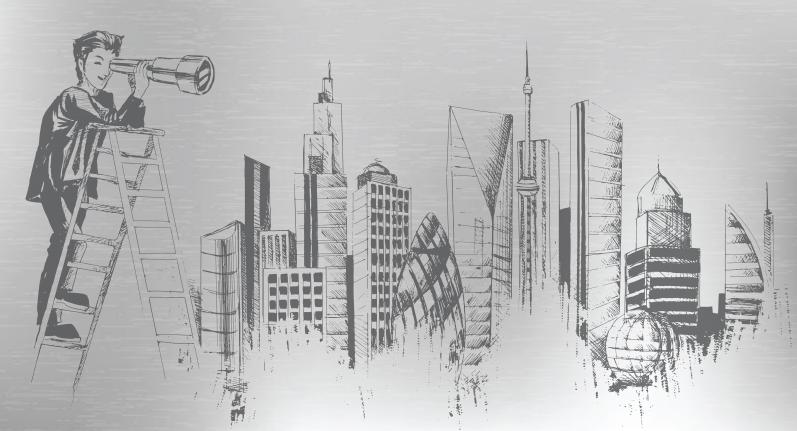


INNOVATION



COLLABORATION







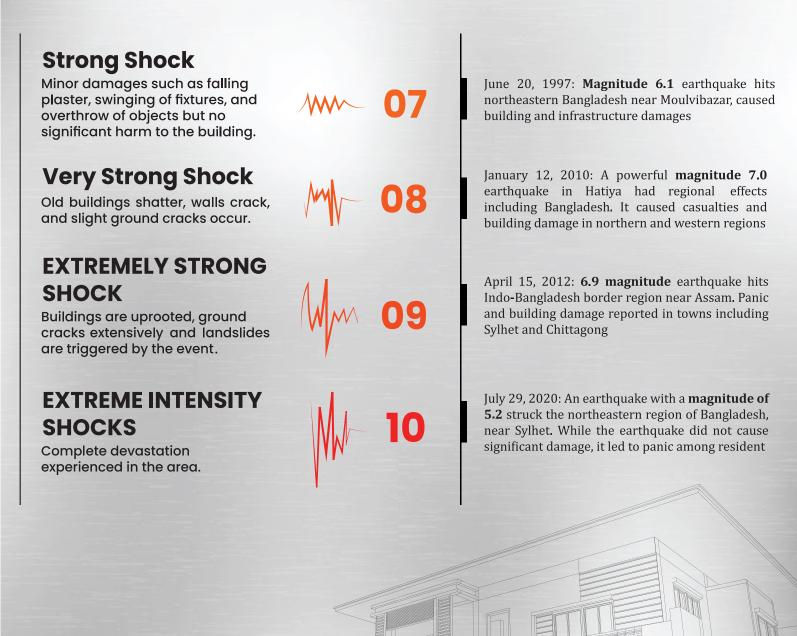
IF IT'S ABOUT YOUR FAMILY, MAKE THEM FEEL SAFE



"Bangladesh is an earthquake prone country, hence good quality DWR Deformed bar is required"

Based on the historical seismic activities observed across different parts of the country, Bangladesh has been divided into four seismic zones, ranging from Zone I with the least earthquake intensity to Zone IV with the highest intensity. Nearly half of Bangladesh is situated in Zones III and IV, where plate tectonic disturbances are more prominent.

When it comes to buildings, utility services, and critical infrastructure, it is crucial to consider earthquake intensities ranging from 7 to 10 on the Richter Scale, as they indicate the potential for significant damage during severe earthquakes.



ELITE STEEL SUPER POWER B500DWR

The initial letter **"B"** signifies steel for **Reinforcing Concrete**, followed by the three digits indicating the specified characteristic value of minimum upper yield strength. The fifth symbol **"D"** represents the **Ductility Class**, while the sixth symbol **"W"** means intended for **Welding**. Lastly, the letter **"R"** designates a **Ribbed Bar**.

Salient Features of Ductility Class "D":

- As per BDS ISO 6935-2:2016, the ductility class "D" is the highest among the four classes, offering excellent performance in earthquake-prone areas. This class has an Elongation at Maximum Force (EMF) of 8% (minimum), making it highly effective in withstanding seismic activities.
- In accordance with the American Concrete Institute (ACI) and the Bangladesh National Building Code (BNBC), particularly in earthquake-prone zones, the minimum requirement for the ratio of tensile strength to yield strength (TS/YS) is 1.25. This criterion helps for the structural integrity and safety of buildings in such areas.
- On the reason of wider ranges in yield strength the structural designers avail the opportunity for providing of a great flexibility on their designs in yield point (fy).
- The key criterion of **Ductility Class "D"** adheres to the widely accepted Low Alloy Steel Standard: ASTM A706/A706M, accepted by the structural engineers.



REFINED BILLET MAKING IN ELITE STEEL MELTING PLANT

The production of billets relies on the use of steel scrap and sponge iron as essential raw materials, which are sourced through international imports and ship breaking scrap.

In a precise proportion, steel scrap and sponge iron are charged into the induction furnace. Once the charge is fully melted, samples of the molten metal are extracted for chemical analysis to determine the presence of various ingredients like carbon, manganese, silicon, phosphorus, sulfur, and more. During the furnace process, oxides are generated, which are lighter than molten steel and rise to the surface as slag. This slag mainly consists of impurities, which can be separated by tilting the furnace at required degrees.

The Ladle Furnace represents the pivotal second phase in the process of refining steel, playing a crucial role in achieving the desired quality and composition of the metal. In the Ladle Furnace, after purifying the steel, samples are analyzed in the lab to determine its chemical composition. Based on the results, precise quantities of refining additives are incorporated. The molten steel is further heated through graphite electrode arcing in the LRF. A secondary sample is evaluated to assess the need for additional ferro-alloy for specific steel grades. The final refining step involves argon gas treatment to eliminate impurities and ensure composition uniformity.

With precision and efficiency, the liquid metal is carefully heated to an optimum temperature of 1,600+ degrees centigrade, primed for the advanced casting process. Then it is swiftly transported to the ultra-modern PLC controlled Continuous Casting Machine (CCM) for seamless required sizes billet casting.





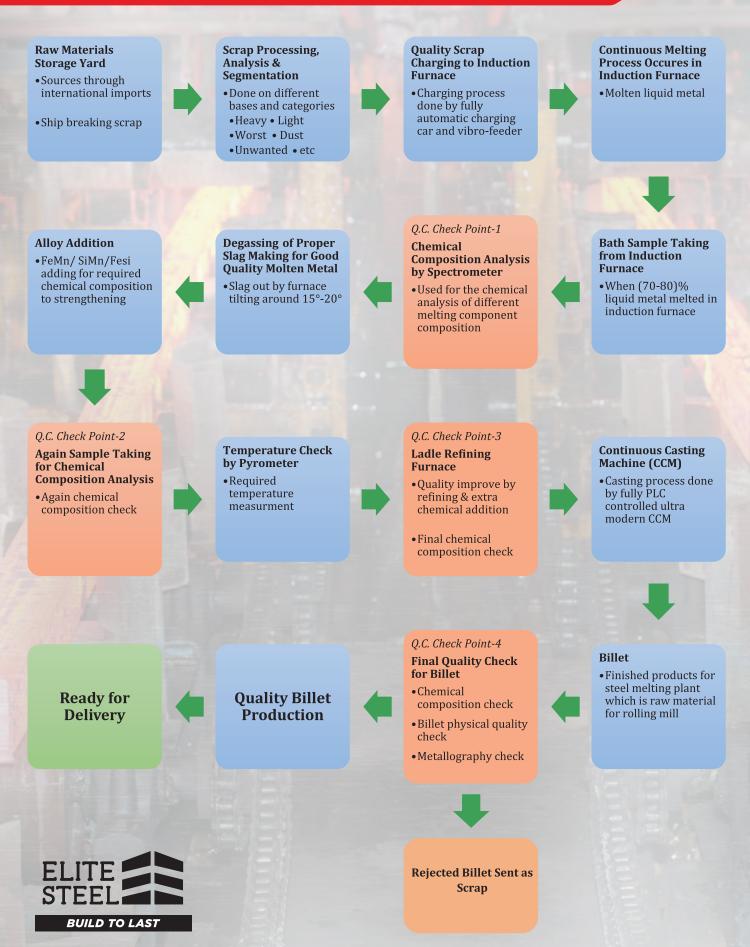








BILLET PRODUCTION FLOW CHART OF ELITE STEEL MELTING PLANT



DEFORMED BAR MAKING IN ELITE STEEL ROLLING MILL

- This procedure begins with the re-heating furnace
- Required sizes billets are stacked on the reheating furnace charging area using an overhead crane
- The continuous pressing of billets parallel to one other is then followed by a hydraulic or mechanical pusher
- For temperature regulation, several zones are split in the furnace based on the capacity of hourly heating
- Using powerful burners and air, the billets are heated in the furnace until they reach their designated discharge temperature
- Once the billet reaches the "Discharged Door" and the computer system confirms its successful heating, ejectors are employed to pull out the material

Following this, descaling is performed. This is accomplished by running the billet through the descaling machine from start to finish. During the reheat furnace step, pressurized water is utilized to remove the heavy layer of oxidized iron that has accumulated on the surface of the billet. Following successful descaling, the billet must pass through cross-sectional area reduction mechanisms. These are mostly used to allow the rolling of rebars in various stands.

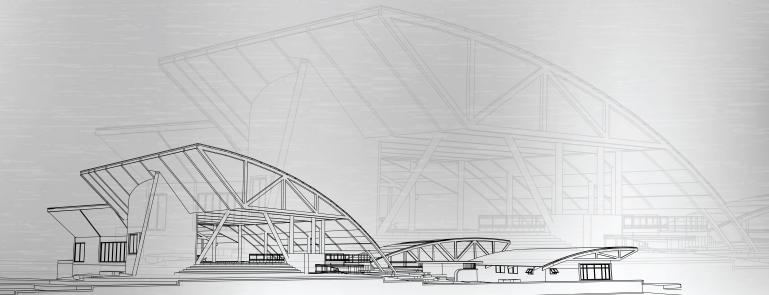
The process continues with roughing, which is carried out using a roughing mill consisting of various separate rolling stands. Heated billets passed through the roughing mill, where they are rapidly shaped and reduced in size using a series of rolling stands. Roughing mill's primary goal is to prepare the material for further processing in the intermediate mill by significantly reducing its size and shaping it closer to the desired profile.

After leaving the roughing mill, the partially reduced material moves to the intermediate mill. Here, it undergoes more rolling passes, further reducing into its size and shaping. The intermediate mill plays a crucial role in achieving the desired dimensions and surface quality.

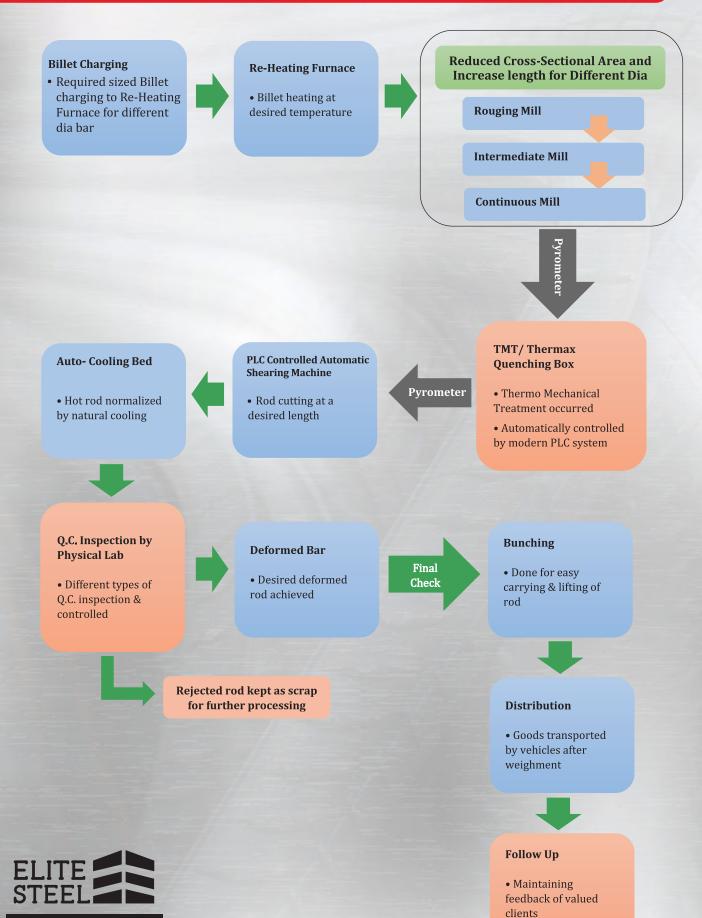
After passing through the intermediate mill, the material reaches the finishing mill. In this stage, the deformed bars undergo additional rolling passes to achieve the final dimensions and smooth surface finish.







DEFORMED BAR PRODUCTION FLOW CHART OF ELITE STEEL ROLLING MILL

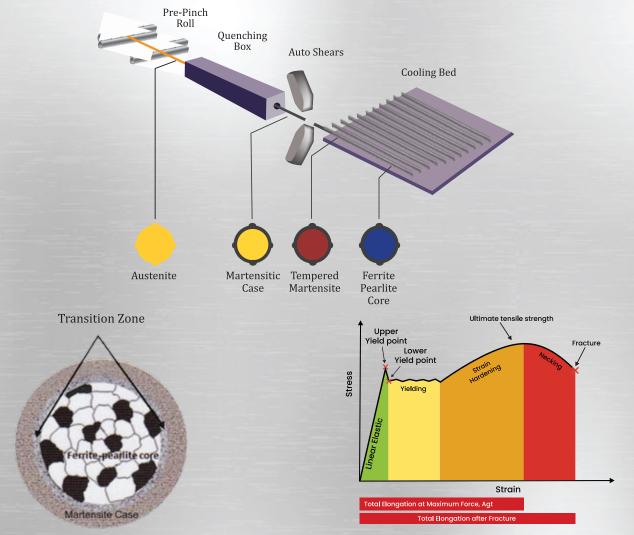


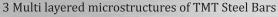
BUILD TO LAST

THERMO-MECHANICAL TREATMENT (TMT) PROCESS

Elite Steel employs world class TMT technology to produce high-quality Thermo Mechanically Treated (TMT) rebars. The production of deformed bars takes place in state-of-the-art facility, under the supervision of highly skilled metallurgists and engineers. The EIS B500DWR rebars undergo a hot rolling process, starting from steel billets, and then proceed to undergo a PLC-controlled online thermo-mechanical treatment in three consecutive stages :-

- **Quenching:** The last rolling station rapidly cools the hot bar using intense treated water pressure in specialized venturi tubes. This technique achieves an ideal depth of hardened exterior called Martensitic Case, creating an even Martensite Rings as boundary, while the core remains hot and austenitic.
- **Self-Tempering:** The bar exits the quenching tube remains hot at its core compared to the surface. This thermal gradient facilitates the transfer of heat from the core to the surface, resulting in the transformation of the outer martensitic layer into a desirable structure known as Tempered Martensite. The core of the bar remains austenitic throughout this process.
- Atmospheric Cooling: This final stage takes place on the cooling bed where the austenitic core undergoes a transformation into a ductile ferrite-pearlite structure. This process ensures that the final structure of Elite Steel rebars comprises a perfect balance between a durable outer layer (tempered martensite) and a flexible core (ferrite-pearlite). The resulting combination offers exceptional strength and ductile properties.





Typical Stress-Strain Curve of Low Carbon Steel

After cooling, the bars are cut and bundled into 12-meter length or in customized size through cold shearing. Deformed Bars then stored in the Finished Goods-Yard categorized by Grade, Size, Lot Number and other relevant factors for dispatch.

MARTENSITE RING & MICROSTRUCTURE OF DIFFERENT ZONE



Martensite Ring



Fine Ferrite & Pearlite



Composite Structure



Tempered Martensite

ELITE STEEL SUPER POWER B500DWR

Mechanical Property

Steel	Standard	Eno g Moulz	Yield Strength (MPa)		TS/YS Ratio	Elongation% (G.L = 5D)	EMF %
Grade	Stalluaru	Frog Mark	Min	Max	Min	Min	Min
EIS B500DWR	BDS ISO 6935-2:2016	EIS // B500DWR //	500	1.3xYS(min)	1.25	13	8

Chemical Property

Steel Grade	Standard	Frog Mark	C% (Max)	Mn% (Max)	Si% (Max)	S% (Max)	P% (Max)	CEV% (Max)
EIS B500DWR	BDS ISO 6935-2:2016	EIS // B500DWR //	0.32	1.80	0.55	0.05	0.05	0.61

Chemical composition of product analysis as per international standard (B500DWR)				
Element	Unit	BDS ISO 6935-2: 2016 (Max)		
С	%	0.32		
Mn	%	1.80		
Si	%	0.55		
Р	%	0.05		
S	%	0.05		
N	%	0.012		
CEV	%	0.61		

Carbon Equivalent Value [BDS ISO 6935 2: 2016], CEV will be calculated using below equation,

$$CEV = \%C + \frac{\%Mn}{6} + \frac{\%(Cr + V + Mo)}{5} + \frac{\%(Cu + Ni)}{15}$$

APPLICATIONS

Elite Steel's exceptional bendability and seismic resistance make it ideal for RCC constructions in



Power plants











Long-span bridges

Flyovers



and more, ensuring reliable and durable structures.

SALIENT FEATURES OF ELITE STEEL SUPER POWER B500DWR

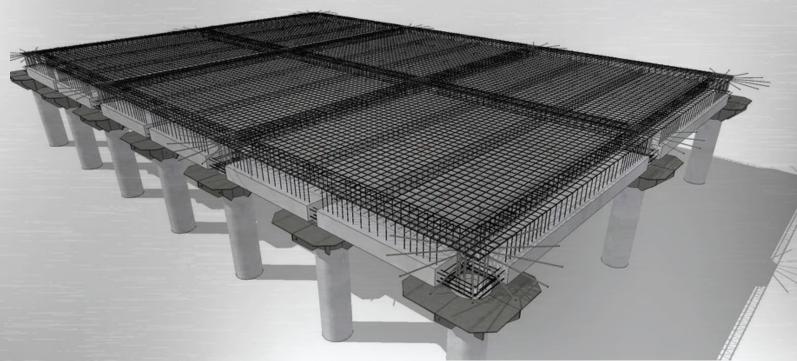
- Yield Strength : 500 MPa (Min) 72,500 psi
- Ultimate (Tensile) Strength : 625 MPa (Min) 90,625 psi
- Elongation : 13%-17% (after fracture), according to BDS ISO 6935-2:2016
- De-scaled bars offer improved concrete bonding and reduced on-site wastage
- Physical properties and chemical composition are consistent
- Comparatively corrosion resistance bar
- Resistant in thermal and earthquake situations
- Excellent ductility and malleability
- Enhanced durability
- Refined grain structure and free from slag and inclusion
- 20% reduction in steel consumption, resulting in significant cost savings

BAR MARKS & SIZES

To ensure high quality and prevent counterfeit, all ELITE STEEL rebar products have a unique bar mark, EIS // B500DWR // Size on the entire length of the bar at metre intervals.



Bar Length: 12 Metres/39+ Feet (regular)



BSTI MENTIONS

BDS ISO 6935-2:2016 On May 22, 2016, the Bangladesh Standards and Testing Institution (BSTI) adopted the BDS ISO 6935-2:2016 standard. This standard, which is identical to the International Standard ISO 6935-2:2015, pertains to steel for the reinforcement of concrete, specifically ribbed bars.

Symbol	Unit	Description	
A	%	Percentage elongation after fracture	
Agt	%	Percentage total elongation at maximum force	
ReH	MPa ^ª	Upper yield strength	
Rm	MPa ^a	Tensile strength	
Rp0,2	MPa ^a	0,2 % proof strength, non-proportional extension	

		Tab	le: Tensile Prope	erties			
			racteristic value	Ductility	y properties		
Ductility class	Steel grade	of upper yield strength <i>ReH</i> Mpa		Specified characteristic value of <i>Rm/ReH</i>	value of	pecified characteristic value of elongation %	
		Minimum	Maximum	Minimum	<i>A</i> Minimum	<i>Agt</i> Minimum	
	B300A-R	300	-		16		
	B400A-R B400AWR	400	-	1.02	14	2	
А	B500A-R B500AWR	500	-	1.02	14	2	
	B600A-R	600	-		10		
	B450AWR	450	1.25 X <i>ReH</i> (min.)	1.05	-	2.5	
	300B-R	300	-		16		
В	B400B-R B400BWR	400	-	1.08	14	5	
В	B500B-R B500BWR	500	-	1.08	14	5	
	B600B-R	600			10		
	B300C-R	300	-		16		
	B400C-R B400CWR	400	-		14	7	
С	B500C-R B500CWR	500		1.15	14	,	
	B600C-R	600	-		10		
	B450CWR	450	1.25 X <i>ReH</i> (min.)		-	7.5	
	B300D-R	300	-				
	B300DWR	500			17		
D	B350DWR	350		1 25	1/	8	
U	B400DWR	400	1.3 X <i>ReH</i> (min.)	1.25		0	
	B420DWR	420			16		
	B500DWR	500			13		

* In the case of the bars with diameter 32 mm or more in ductility class D, the minimum specified characteristic value for *A* may be decreased by 2 % for each 3 mm increase in diameter. However, the maximum diminution from the minimum specified characteristic value stated in above Table is limited to 4 %.

* By agreement between the manufacturer and purchaser, the values shown in above table may be used as specified minimum and/or maximum values.

*If a yield phenomenon is not present, the 0,2 % proof strength (Rp0,2) shall be determined.

*1 MPa = 1 N/mm2

BEND & REBEND TEST

The Bend & Rebend test shall be carried out in accordance with ISO 15630-1

Table: Mandrel diameter to be	e used for the Bend Test
Nominal Bar Diameter d	Mandrel Diameter (max)a,b
≤16	3 <i>d</i>
16 <d≤32< td=""><td>6<i>d</i></td></d≤32<>	6 <i>d</i>
32 <d≤50< td=""><td>7<i>d</i></td></d≤50<>	7 <i>d</i>

Table: Mandrel diameter to be	used for the Rebend Test
Nominal Bar Diameter d	Mandrel Diameter (max)a,b
≤16	5d
16 <d≤25< td=""><td>8d</td></d≤25<>	8d
25 <d≤50< td=""><td>10d</td></d≤50<>	10d

a) For nominal diameters larger than 50mm, the mandrel diameter in bend & rebend tests shall be agreed between the manufacturer and purchaser

b) By agreement between the manufacturer and purchaser, larger mandrel diameters may be used

DEFORMED BAR RECKONER

Nominal Diameter	Nominal Weight	Permissible Tolerance	Cross-Sectional Area	Appx. Length Per MT	
mm	Kg/m	%	mm ²	Metre	Feet
8	0.395	± 6	50.27	2,540	8,332
10	0.616	± 6	78.54	1,625	5,330
12	0.888	± 6	113.10	1,130	3,706
16	1.578	± 5	201.06	635	2,082
20	2.466	± 5	314.16	410	1,345
22	2.984	± 4	380.13	340	1,100
25	3.853	± 4	490.87	260	855
28	4.834	± 4	615.75	207	680
32	6.313	± 4	804.25	160	520

a) Permissible tolerance refers to a single bar

b) The delivery length is subject to agreement between the manufacturer and purchaser

WHY ELITE STEEL?

- The Pioneer of Quality Steel in Bangladesh: Elite Steel in Bangladesh stands out as one of the best steel producers, offering precise control over various options and parameters in steel production. With the introduction of advanced technology, we ensure precise control over the all parameters, making it a reliable choice for high-quality steel products.
- Chemical Mixture Uniformly Homogenized for Optimal Quality: With the aid of Argon bottom purging, our steel attains a meticulously homogenized chemical composition. Oxygen lancing effectively eliminates detrimental impurities, including Phosphorus. In Elite Steel, the desired ferro-alloys are precisely blended in the LRF through automated alloy addition, ensuring consistent chemical properties throughout our all rebars. This results in exceptional strength uniformity, making constructions stronger and safer.
- Engineered for Exceptional Ductility and Superior Bonding Strength: Elite Steel's superior chemical composition enhances ductility. Utilizing of super quality rolls and CNC machines guarantees uniform diameter, precise weight tolerances, and surface geometry. This increases fatigue resistance and strengthens the bond between concrete and rebar, securing constructions with confidence.
- **Consistent Strength Throughout and Exceptional Resistance to Corrosion:** Our rebar features a homogeneous martensite ring obtained through computerized quenching. Crafted from 100% refined liquid steel, it ensures consistent strength and enhanced corrosion resistance with a protective scale coating.
- **Proper Flexibility:** The perfect blend of precise chemical composition and uniform structures, including tempered martensite, mixed bainite and ferrite-pearlite, makes the rebar more flexible.





- Enhanced Durability: Elite Steel's deformed bars are made with the highest quality materials and are subjected to rigorous quality control standards. As a result, our deformed bars offer enhanced durability and can withstand even the most demanding applications.
- **Shiny Surface:** Elite Steel's rebar achieves an alluring sheen through the utilization of multiple finishing stands with super quality rolls in the rolling process.
- **Regular Length and Straight Bars:** Regular international length of 12 mtrs are produced which are on straight form, suitable for easy fabrication and construction.
- Weldable: Perfectly weldable bars and does not become brittle at its welding joints or during the welding process.
- **Quality Consistency:** Our cutting-edge quality control includes digital testing machines, hardness measurement tools, spectrometers, and advanced lab equipment, ensuring meticulous quality checks at every production stage for the impeccable Elite Steel rebar.





Elite Steel rebar production excels through integrated and uninterrupted processes, from scrap processing to rolling, employing world-class technology. This ensures balanced chemical properties, uniform strength, and remarkable ductility and bendability, guaranteeing a robust and resilient structures.

OUR PEOPLE

Our success lies in the dedication and expertise of our exceptional workforce. From skilled engineers and metallurgists to the dedicated personnel, each individual plays a vital role in delivering excellence. Together, we forge a culture of teamwork, innovation, and unwavering commitment to quality and customer satisfaction.



SUSTAINABLE PRODUCTION

At Elite Steel, we are committed to sustainable steel production. Through innovative technologies and responsible practices, we prioritize environmental stewardship, resource efficiency, and minimizing our carbon footprint for a greener and more sustainable future for the society.





HEALTH & SAFETY

At Elite Steel, we prioritize the protection and welfare of our people, visitors, and customers across all our plants. Upholding stringent health and safety standards is an unwavering commitment throughout our operations.

Elite Steel's HSE policy include

- **Safety Culture:** We cultivate a culture of safety awareness, where every individual actively participates in promoting and maintaining a secure work environment. Our commitment to safety starts from the top and permeates throughout the organization.
- **Compliance and Best Practices:** We comply with all relevant health, safety, and environmental regulations, as well as industry best practices. By staying abreast of evolving standards, we ensure that our operations consistently meet or exceed the required benchmarks.
- **Continuous Improvement:** We are committed to continual improvement in our HSE performance. Through regular audits, inspections, and risk assessments, we identify areas for enhancement and take prompt action to address them. We embrace feedback from our workforce and encourage open communication channels to foster a proactive safety culture.
- **Training and Education:** We provide comprehensive safety training programs to our employees, enabling them to acquire the necessary skills and knowledge to carry out their duties safely. Our training initiatives encompass not only initial onboarding but also ongoing development to keep our workforce up to date with the latest safety practices.
- Hazard Identification and Risk Mitigation: We systematically identify hazards and assess associated risks across our operations. By implementing effective control measures and preventative strategies, we mitigate risks to protect the health and safety of our people, visitors, and customers.
- **Emergency Preparedness:** We maintain robust emergency response plans and conduct regular drills to ensure preparedness in the face of unforeseen events. Our teams are trained to respond swiftly and effectively to emergencies, minimizing potential harm and disruptions.
- **Communication and Collaboration:** We foster a collaborative environment that encourages active participation in HSE initiatives. We promote open lines of communication, allowing employees to report safety concerns, suggest improvements, and share knowledge to strengthen our collective commitment to safety.



SAFE CONSTRUCTION GUARANTEED THROUGHOUT BANGLADESH



OUR PROJECTS



Aarong Flagship Tower Uttara



Foreign Ministry Building Dhaka



PG Hospital Burn Unit Dhaka



Rooppur Residential Village Pabna



Asset Developments HQ Gulshan



Grameenphone Head Office Bashundhara



Rajarbag Police Lines Dhaka



Samson H. Chowdhury Building Dhaka Club



Bangladesh Secretariat Segunbagicha



Jahangirnagar University Dhaka



Metropolitan Police Headquarter Rajshahi



Bay's Galleria Gulshan



Mohakhali Flyover Dhaka



Rajuk Uttara Apartment Project



Shaheed M. Monsur Ali Medical College, Sirajganj



Uttara Adhunik Medical College Hospital (BMSRI)

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Factory Unit - 2 Bagdi, Ghorashal Palash, Narsingdi

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