Production Process of GPH TMT 500W Rebar: GPH TMT 500W bar is produced by fully automatic, computerized machine based on sophisticated and accurate advanced technology and design. The thoroughly tested billets are subjected to under controlled temperature in automatic reheating furnace at 1100-1200°C and are subsequently rolled through a sequence of rolling stands progressively reducing to the required size.

With the help of rolling conveyors, the billets are made to pass through Roughing Stand. This begins the process of gradual size reduction of billets. Following Roughing, the size is further reduced in Intermediate and Finished Mills. This gradual reduction is an important factor to ensure fine grain structure of the bar. The rolling continues till the required size is achieved.

As the bar leaves the last rolling mill stand, it is cooled by forced air cooling. In this section, a rapid and controlled water quenching is performed in order to reduce the temperature of surface drastically from around 950°C to 600°C. Due to higher speed, only outer portion of bar gets quenched. The inner portions not only, the Core due to rapid quenching gets converted in Martensite across. The Microstructure is a fine-grained Ferrite-Pearlite structure at the Core and Martensite at the Case. Then the bar is cut with automatic flying shear and fed into the cooling bed.

At cooling bed the Core that’s still hot transfers heat outside to the Case thereby tempering it. Due to this self-tempering, the Martensite Case becomes Tempered Martensite that has more strength and very high Corrosion Resistance. Both quenching and self-tempering, lead to typical micro-structure of TMT Bar i.e. Fine grained Ferrite-Pearlite structure at the Core (soft) and Tempered Martensite at the Case (hard). After thisnormalizing process starts where the bar cools down in atmospheric temperature and gradually attaining the same.

Once the bars are cooled, they are cut into desired length by means of cold shearing and bundled. These bundles are stored in Finished Goods Yard. The bundles are loaded into the bundles and transported to the finished goods yard. These are then stored in such a way that they can be easily handled and moved.

At the point of purchase, this ensures a deep-rooted trust in the brand, which is its core value.

Chemical Composition of GPH Rebar:

<table>
<thead>
<tr>
<th>Name of Elements</th>
<th>Grade-wise percent constituents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe</td>
<td>Balance 99.5%</td>
</tr>
<tr>
<td>Mn</td>
<td>0.75 to 1.00</td>
</tr>
<tr>
<td>Si</td>
<td>0.25 to 0.65</td>
</tr>
<tr>
<td>Cr</td>
<td>0.50 to 1.25</td>
</tr>
<tr>
<td>Ni</td>
<td>0.40 to 0.80</td>
</tr>
<tr>
<td>Cu</td>
<td>0.20 to 0.35</td>
</tr>
<tr>
<td>P</td>
<td>0.04 to 0.05</td>
</tr>
<tr>
<td>S</td>
<td>0.03 to 0.05</td>
</tr>
<tr>
<td>Ni</td>
<td>Up to 0.4</td>
</tr>
<tr>
<td>Cr</td>
<td>Up to 0.4</td>
</tr>
<tr>
<td>Mo</td>
<td>Up to 0.4</td>
</tr>
<tr>
<td>Cu</td>
<td>Up to 0.4</td>
</tr>
<tr>
<td>P</td>
<td>Up to 0.05</td>
</tr>
<tr>
<td>S</td>
<td>Up to 0.05</td>
</tr>
</tbody>
</table>

Mechanical Properties of GPH Rebar:

- Grade G 60-400:
  - Yield Strength (MPa): 480
  - Tensile Strength (MPa): 600

Standard Specification of GPH TMT 500W Rebar:
- GPH G 60-400 Rebar:
  - Yield Strength (MPa): 500
  - Tensile Strength (MPa): 680

Bend Test Requirements of GPH Rebar:
- Bar Size: 12 mm
- Number of Tests: 10
- Bend Angle: 180°
- Bend Test Equipment: Testing Machine (UTM)
- Normalized Bend Testing at 600°C
- Test includes: Reversal bend test and continuous bend test
- Rolling tolerances on nominal mass: All sizes +Not specified ±5.0%

Features of GPH TMT 500W Rebar:
- GPH TMT 500W bar can be described as new generation high strength steel having superior properties such as the resistance, corrosion resistance, weldability, strength, ductility and toughness, meeting the highest international level.

Chemical Composition of GPH G 60-400:

- Carbon (C): 0.15-0.25%
- Manganese (Mn): 0.75-1.00%
- Silicon (Si): 0.25-0.65%
- Chromium (Cr): 0.50-1.25%
- Nickel (Ni): 0.50-1.25%
- Copper (Cu): 0.20-0.35%
- Phosphorus (P): 0.04-0.05%
- Sulfur (S): 0.03-0.05%
- All other tramp elements are kept near traces.

- Mechanical Properties:
  - Yield Strength: 500 MPa
  - Tensile Strength: 680 MPa
  - Ductility: 14% Elongation

- Chemical Composition:
  - Carbon (C): 0.15-0.25%
  - Manganese (Mn): 0.75-1.00%
  - Silicon (Si): 0.25-0.65%
  - Chromium (Cr): 0.50-1.25%
  - Nickel (Ni): 0.50-1.25%
  - Copper (Cu): 0.20-0.35%
  - Phosphorus (P): 0.04-0.05%
  - Sulfur (S): 0.03-0.05%
  - All other tramp elements are kept near traces.

- Production Process:
  - The billets are reheated under controlled conditions in automatic reheating furnaces.
  - The billets are then passed through the roughing stand, intermediate stands, and finally the finishing stands.
  - The final products are cut into desired lengths and hardened by quenching.

- Quality Assurance:
  - The company adheres to the highest standards of quality assurance and quality control.
  - The products are tested for strength, ductility, and other properties to ensure compliance with international standards.

GPH Bars

- High Thinking
- Plain Living
- God Fearing
- Dispatch.

In the beginning, God created man - In the beginning, God created man with a purpose, a mission, a vision, and a thousand pair of intelligent procreations, hard work and innovation, man created steel – one of the greatest inventions of all time. This super-strong, corrosion and allium free iron is an element without which modern life is literally unimaginable. From skyscrapers and planned to springs and forks, steel is an essential part of our everyday life.

GPH Ltd., one of the leaders of Bangladesh in manufacturing steel, promises a super strong, ductility, very high Corrosion Resistance Properties. Both quenching and self-tempering, lead to typical micro-structure of TMT Bar i.e. Fine grained Ferrite-Pearlite structure at the Core and Tempered Martensite at the Case. After this normalizing process starts where the bar cools down in atmospheric temperature and gradually attaining the same.

Once the bars are cooled, they are cut into desired length by means of cold shearing and tied. These bars are then sold in Finished Goods Yard. The bars are loaded into the bundles and transported to the finished goods yard. These are then stored in such a way that they can be easily handled and moved.

At the point of purchase, this ensures a deep-rooted trust in the brand, which is its core value.

GPH TMT 500W Bar can be described as new generation high strength steel having superior properties such as the resistance, corrosion resistance, weldability, strength, ductility and toughness, meeting the highest international level.

1. Fire Resistance: Withstands temperatures up to 1200°C for 60 minutes.
2. Corrosion Resistance: The TMT process gives the bar superior strength and good anti-corrosive property.
3. Earthquake Resistance: The soft ferrite-pearlite core enables the bar to bear dynamic and seismic loading.
4. Superior Malleability: TMT bars are made of selected because of its flexible nature.
5. Better Weldability: They have fine welding features.
6. Excellent Bonding Strength: External ribs running the entire length of TMT bar give superior bonding strength between the bar and the concrete.
7. Cost-effective: A high tensile strength and better elongation value gives great savings.