



METCORE ALLOYS

An ISO 9001:2015 Certified Company



LEADING INNOVATION IN CORTEN STEEL



INTRODUCTION

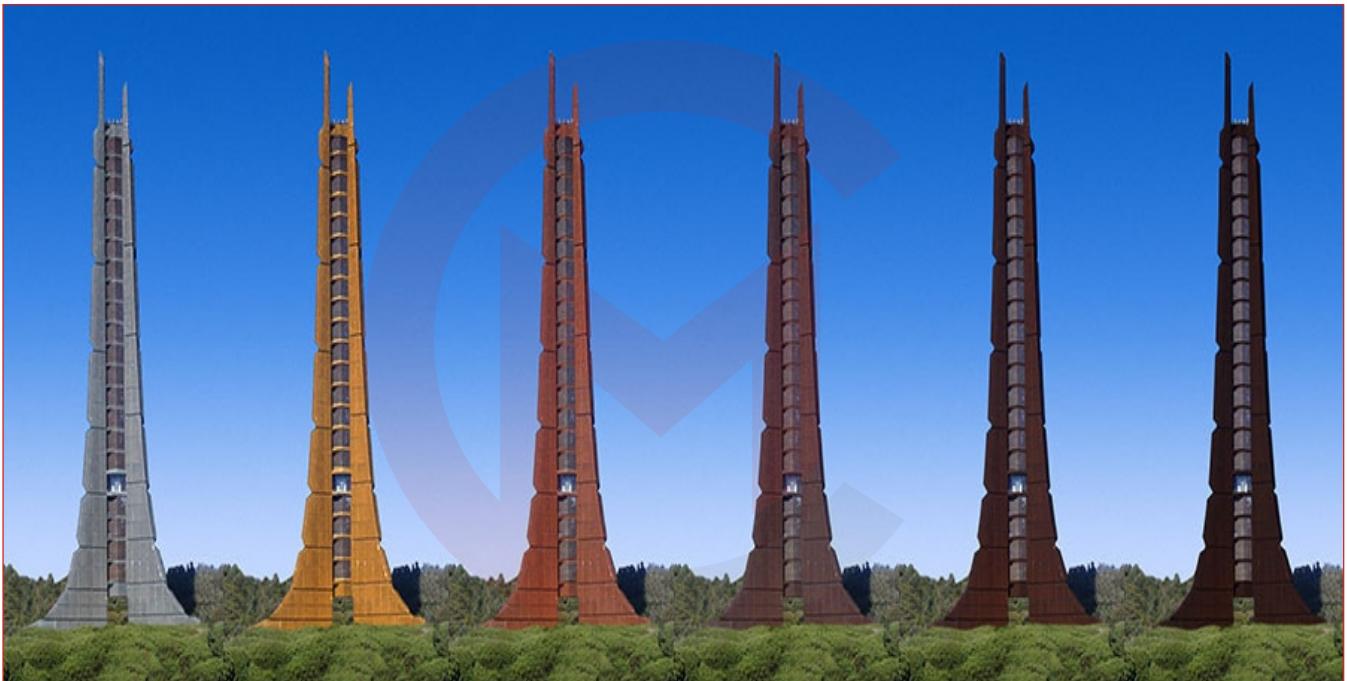
Corten steel, also known as weathering steel, is a unique material widely used in architecture for its distinct aesthetic appeal and practical advantages. It is composed of steel alloys, primarily containing copper and chromium, which come together to form a natural rust layer. This rust layer develops over time, giving Corten steel its characteristic reddish-brown, rusty appearance that has captured the attention of architects and designers worldwide. From an architectural standpoint, Corten steel offers numerous benefits. Firstly, its weathering properties create a protective patina that makes it highly resistant to corrosion and eliminates the need for regular maintenance, reducing costs and time. Additionally, Corten steel offers design versatility, as it can be used for large building exteriors.

- ✓ ISO 9001:2015 Certified
- ✓ High Quality Products
- ✓ Delivery On Time
- ✓ Products in Stock
- ✓ Accuracy Decision Making
- ✓ Teamwork



SECULAR CHANGES IN RUST APPEARANCE

In the initial stage of application, COR-Ten shows a yellowish appearance. This is followed by a gradual change in the colour of the protective rust from a brown to a stable dark brown after one or two years in general application environments. Afterwards, the coloration shows no clear change except perhaps to a deeper dark brown.



0 Years

2 Years

5 Years

25 Years

40 Years

50 Years

CORTEN STEEL GRADES



ASTM A242 Type I Corten A :

Corten A is a weathering steel alloy with a unique ability to form a stable rust-like appearance after exposure to the elements. This patina acts as a protective layer, reducing the need for painting and maintenance. Corten A is widely used in architectural and structural applications, offering both aesthetic appeal and long-lasting performance.



ASTM A588 Corten B :

Corten B shares the weathering characteristics of Corten A but has a higher phosphorus content, enhancing its resistance to atmospheric corrosion. This grade is often used in heavy-duty applications like bridges, railway wagons, and other industrial structures. Its mechanical properties and ability to withstand harsh weather conditions make it a preferred choice for long-term outdoor exposure.



IRSM 41/97 :

IRSM 41/97 is specified under the Indian Railway Standards (IRS) as a weather-resistant steel grade developed by Indian Railways for use in wagons and other railway components. It offers excellent corrosion resistance, similar to Corten steels, and is specifically designed to endure the rigors of the Indian climate. With its high yield strength and durability, IRSM 41/97 is a reliable material for demanding structural applications.



EN 10025-5 S355J2W+N :

S355J2W+N is a high-strength, low-alloy structural steel with improved atmospheric corrosion resistance, often referred to as weathering steel. It is ideal for heavy-duty structures exposed to the elements, such as bridges and buildings. The addition of alloying elements like copper and chromium helps form a protective patina, ensuring longevity and minimal maintenance.

CHEMICAL PROPERTIES OF WEATHERING STEEL IN VARIOUS SPECIFICATIONS

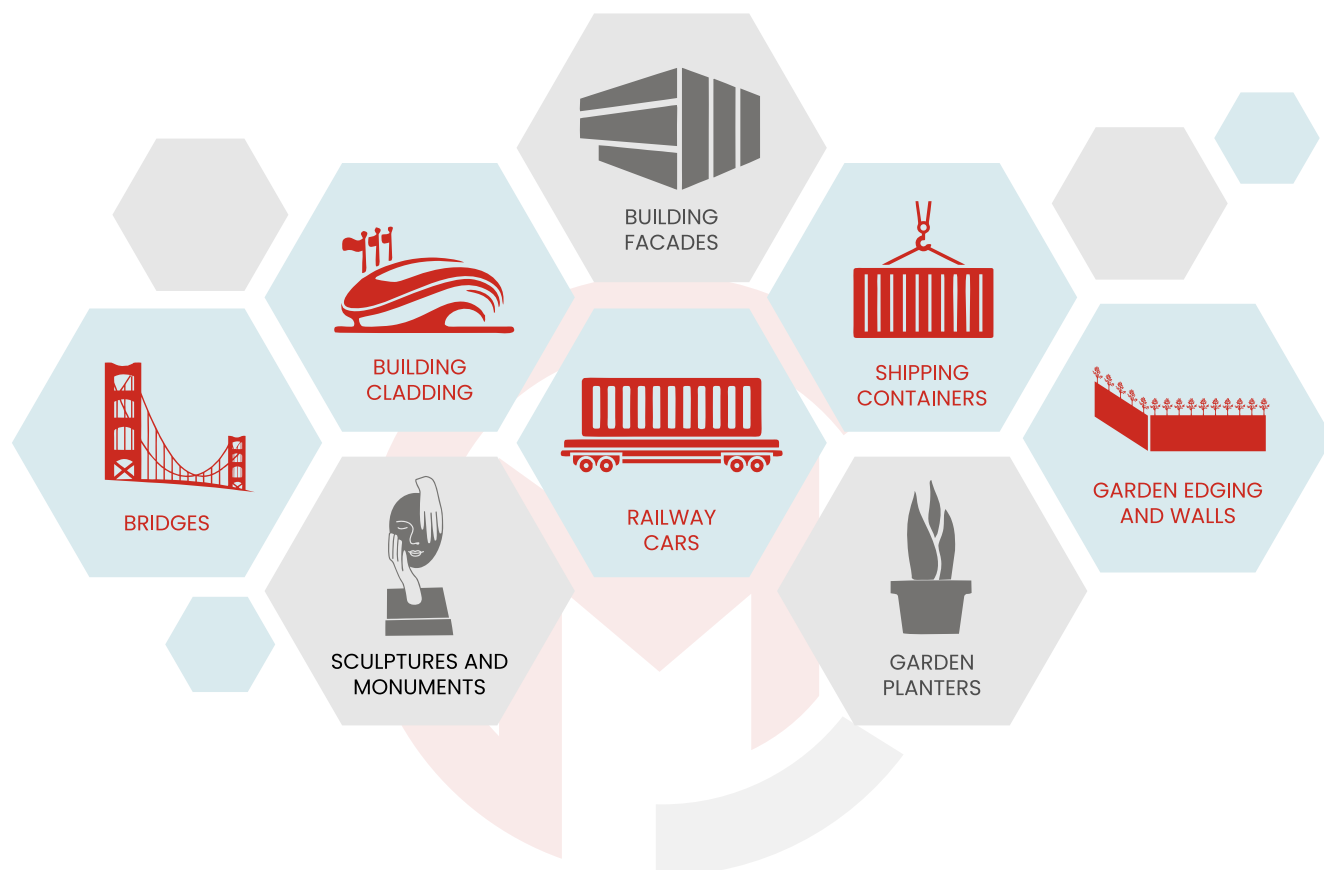
GRADE	C	Mn	SI	S	P	Al	Cr	Ni	Cu	V
IRSM-41	0.10 max	0.25-0.45	0.28-0.72	0.030 max	0.075-0.14	0.08 max	0.35-0.60	0.20-0.47	0.30-0.60	-
SAILCOR	0.10 max	0.25-0.45	0.28-0.72	0.030 max	0.075-0.14	0.08 max	0.35-0.60	0.20-0.47	0.30-0.60	-
CORTEN-A	0.12 max	0.20-0.50	0.25-0.75	0.030 max	0.070-0.15	-	0.50-1.25	0.65 max	0.25-0.55	-
CORTEN-B	0.16 max	0.80-1.25	0.30-0.50	0.030 max	0.030 max	-	0.40-0.65	0.40 max	0.25-0.40	0.02-0.10
S355J2W	0.16 max	0.50-1.50	0.50 max	0.030 max	0.030 max	0.02 max	0.40-0.80	0.65 max	0.25-0.55	0.02-0.12
S355J0WP	0.12 max	1.00 max	0.75 max	0.035 max	0.06-0.15	-	0.30-1.25	-	0.25-0.55	-
ASTM A242 TYPE-I	0.12 max	1.00 max	0.75 max	0.030 max	0.06-0.15	-	0.30-1.25	-	0.25-0.55	-
ASTM A588 GRADE-A	0.19 max	0.80-1.25 max	0.30-0.65	0.040 max	0.050 max	-	0.40-0.65	0.40 max	0.25-0.40	-
ASTM A588 GRADE-B	0.20 max	0.75-1.25 max	0.15-0.50	0.050 max	0.040 max	-	0.40-0.70	0.50 max	0.25-0.40	0.01-0.10
ASTM A588 GRADE-C	0.15 max	0.80-1.35 max	0.15-0.30	0.050 max	0.040 max	-	0.30-0.50	0.25-0.50	0.20-0.50	0.001-0.1
S355J2W+N	0.16 max	0.50 max	0.50 max	0.03 max	0.03 max	-	0.40-0.80	0.65 max	0.25-0.55	-

N : 0.010% max is applicable for ASTM A588 grade-A & GRADE -C
 0.009% MAX IS AAPLICABLE FOR S355J0WP

MECHANICAL PROPERTIES OF WEATHERING STEEL IN VARIOUS SPECIFICATIONS

GRADE	Yield (Mpa)	UTS (Mpa)	Minimum Elongation%
IRSM-41	340 min.	480 min.	22
SAILCOR	340 min.	480 min.	22
CORTEN-A	355 min.	470-630	20
CORTEN-B	up to 16mm-355 min. Above 16mm-345 min.	470-630	20
S355J2W	355 Min.	480 min.	22
S355J0WP	up tp 16mm-355 min. above 16mm-345 min.	Up to 3mm-510-680 Above 3mm-470-630	
ASTM A242 TYPE-I	Up to 16mm-355 min. above 16mm-345 min.	Up to 3mm-510-680 above 3mm-170-630	20
ASTM A588 GRADE-A	Up to 100 mm-340 min. 100mm to 200mm-290 min.	Up to 100mm-480 min. 100mm to 200mm-460 min.	20
ASTM A588 GRADE-B	345 min.	485 min.	Up to 50mm-18 above 50mm-21
ASTM A588 GRADE-C	290-345	435-485	20
S355J2W+N	355 Mpa	510-680 Mpa	20

CORTEN STEEL APPLICATION INDUSTRY



Corten Steel is widely used in various industries due to its enhanced atmospheric corrosion resistance and high durability. Corten A and Corten B are commonly employed in architectural and structural applications, including building facades, sculptures, planters, and cargo containers, valued for their unique aesthetic and minimal maintenance requirements. IRSM 41/97, developed for Indian Railways, is predominantly used in railway wagons and infrastructure, ensuring a long service life under harsh climatic conditions.

S355J2W+N is frequently utilized in heavy-duty structural components like bridges and load-bearing frameworks in the construction industry, providing robustness and longevity. These steel grades are favoured in industries where both structural integrity and weather resistance are critical.

PROS AND CONS OF CORTEN STEEL

Pros



- Enhanced Corrosion Resistance** Corten steel forms a stable rust-like patina that protects the steel from further corrosion, significantly reducing the need for additional coatings, making it a superior choice for outdoor applications.
- Aesthetic Appeal** The unique appearance of the patina provides a visually striking, rustic look, making Corten steel popular in architectural applications and public art installations, adding a distinctive charm to projects.
- Environmental Benefits** Using Corten steel reduces the need for paints and coatings, which can contain volatile organic compounds (VOCs), thus contributing to a more environmentally friendly solution and sustainability in construction.
- Weldability** Corten steel can be welded using standard practices, but care must be taken to use appropriate welding consumables to ensure the corrosion resistance of the welded joints, making it versatile for various construction needs.
- Bending and Forming** Corten steel can be bent and formed using standard processes; however, its higher strength compared to mild steel might require more force or specialized equipment, ensuring robustness in structural designs.

Cons



- Initial cost** Corten steel can be more expensive initially compared to regular carbon steel, though this is often offset by lower maintenance costs over time, making it a worthwhile investment for long-term projects.
- Appearance Variability** The formation of the patina can be uneven, particularly in environments with inconsistent exposure to weather, which might not be desirable for some aesthetic applications, requiring careful consideration in design.
- Runoff Staining** During the patina formation, runoff from Corten steel surfaces can stain adjacent materials such as concrete or stone, which might necessitate additional planning and design considerations to manage potential staining.
- Specific Environmental Suitability** While highly effective in many environments, Corten steel may not perform as well in highly polluted or marine environments, where the protective patina might not form as effectively, requiring careful site assessment.

LEADING EXPERTS IN CORTEN STEEL EXCELLENCE – METCORE ALLOYS

As one of the largest stockists of Corten steel in India, Metcore Alloys is dedicated to providing high-quality products and specialized services to meet diverse industrial and architectural needs. Our extensive inventory includes a wide range of Corten steel grades, ensuring you have access to top-tier materials for your projects.



LASER CUTTING SERVICES

We offer precision laser cutting services tailored to your design specifications. Whether you need intricate patterns or large-scale components, our state-of-the-art laser cutting technology ensures accuracy and a high-quality finish. Metcore Alloys provides laser cutting as per client design, delivering exceptional results every time.



RUSTIC FINISH FOR ARCHITECTURAL PROJECTS

Our expertise extends to enhancing the aesthetic appeal of Corten steel. We offer services to create a rustic look for architectural projects, ensuring that the final appearance aligns with your design vision. This service is particularly valuable for public art installations, building facades, and other projects where visual impact is paramount.

PROFILE CUTTING WITH PLASMA CUTTER

For projects requiring heavy thickness materials, our plasma cutting services provide robust and efficient profile cutting solutions. This technique is ideal for creating complex shapes and profiles from Corten steel, making it suitable for various structural and decorative applications.



CORTEN STEEL SPECIFICATIONS & SERVICES BY METCORE ALLOYS

Metcore Alloys is a leading stockist of Corten steel in India, offering premium materials and specialized services with the following specifications:

- ✓ Thickness: 1 mm to 50 mm
- ✓ Width: Standard 1250 mm, with custom widths available
- ✓ Length: Standard 2500 mm, with cut-to-length (CTL) options

Our products meet international standards, ensuring superior quality and reliability. We provide precision laser cutting, plasma profile cutting, and rustic finishing for architectural applications. With extensive export capabilities and nationwide service, Metcore Alloys delivers exceptional quality and tailored solutions for all your Corten steel needs.





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For more information
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