

 Ranipet	Technical Delivery Condition(TDC) For Cold rolled corrosion resistant Coils/ sheets/ Plates	Doc Ref:	TDC:RTA:404
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		Date:	10 01 2020
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1. Scope

- 1.1 This TDC specifies the requirement of Cold rolled coils, sheets of CORTEN A/ASTM A 606 Type 4 and equivalent material specification & Plates of CORTEN A/ASTM A242 CORTEN B/ASTM A 588 GR A and equivalent material specification used in APH. Steel shall be in fully killed condition.

2. Chemical & Mechanical properties:

2.1 Chemical Properties (melt wise)

Specification	C	Mn	Si	P	S	Cu	Cr	Ni	V
CORTEN A/ ASTM A 242 & EQUIVALENT	0.12 Max	0.20- 0.50	0.25- 0.75	0.07- 0.15	0.05 Max	0.25- 0.55	0.35- 1.25	0.65 Max	--
CORTEN B / ASTM A588 GR A & EQUIVALENT	0.19 Max	0.80- 1.25	0.30- 0.65	0.04 Max	0.05 Max	0.25- 0.40	0.40- 0.65	0.40 Max	0.02- 0.10
ASTM A606 Type 4	0.12 Max	0.20- 0.50	0.25- 0.75	0.07- 0.15	0.04 Max	0.25- 0.55	0.35- 1.25	0.65 Max	--

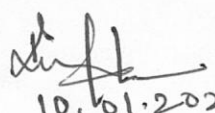
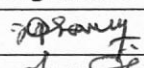
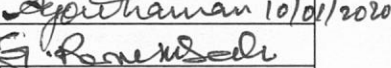
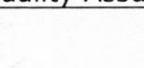
2.2 Mechanical Properties (melt wise/ HT batch wise)

Specification	Yield point (Mpa) Min.	T S (MPA)	% Elongation (Min) 5.65√ So
CORTEN A/ ASTM A 242 & EQUIVALENT	310	445	20
CORTEN B / ASTM A588 GR A & EQUIVALENT	≤16 thick 355 > 16 thick 345	490 – 630	20
ASTM A606 Type 4	310	450	22

- 2.3 Bend test shall be conducted for coils as per JIS 3125 SPA – C.

3. Supply Condition (Coils)

- 3.1 The coils shall be free from slit edges, scales and rust etc.
- 3.2 The tolerance thickness and width shall be as follows:
On width: Plus 0.00 to Minus 1.5 mm.
On Thickness: Plus 0.07mm to minus 0.00mm
- 3.3 The camber, out of flatness, bend shall be permitted only to the extent specified in the applicable standard.

Prepared by  10.01.2020	Reviewed by	Signature	Approved by  (Head/QA)
	Engineering (APH)		
	Purchase	 10/01/2020	
	MPL		
	QC/proc.		
Issued by : Quality Assurance			

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- 3.4 The ID of the coil shall be 500 mm $\pm$ 20mm, OD of the coil shall be 1500 mm (Max). Coil weight: 2 to 5 MT for coil width of $\leq$ 503 mm and 5-to10 MT for coil width > 503 mm.
- 3.5 Surface condition shall be cold rolled with matt finish with an oil coat to protect from rusting.

4. Supply conditions (Plates and Sheets)

- 4.1 Tolerance for the plates is as per ASTM A6.
- 4.2 Tolerance for thickness of sheets is plus 0.15mm to minus 0.00mm.
- 4.3 The plates / sheets shall be free from scales and rust.
- 4.4 Plates thickness 12 mm and above shall be ultrasonically tested and accepted as per ASTM A435.

5. Packing and preservation (for coils)

- 5.1 Before packing, the coils shall be given a sufficient coat as rust preventing fluid on the outer part to prevent rusting.
- 5.2 Three binding strips through eye of the coils at equal spacing shall tightly be secured.
- 5.3 Polythene sheet (thickness more than 20 microns) shall be wrapped over the coil.
- 5.4 Subsequently coil shall be wrapped with Hessian cloth.
- 5.5 ID rings shall be provided at both the sides of the coils to protect the coil edges.
- 5.6 Entire circumference of the coil shall be covered with GI sheet / painted sheet. Subsequently, both the faces shall be protected with metal sheets i.e. full coil is to be covered.
- 5.7 Three cross strapping shall be tightly secured through the ID of the coil at equal spacing.
- 5.8 Two more strapping along the periphery shall be provided ensuring tight strapping. The outer label containing details as in 7.1 shall be pasted on the packed OD of the coil.
- 5.9 A metal label containing the details as in 7.1 shall be secured at one of the outer cross strapping.

6 Packing and preservation (for sheets / plates)

- 6.1 The sheets shall be coated with a coat of rust preventive fluid on both sides and polythene sheets (thickness more than 20 microns) shall be wrapped over the sheet bundle, subsequently sheets shall be wrapped with Hessian cloth and suitable metal belt.
- 6.2 The plates shall be suitably bundled for withstanding the handling during loading and unloading.




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7. Identification

7.1 **For coils** the following details shall be stenciled with paint / pasted with sticker on the ID of the coils and **for sheets** on the bundle.

- Vendor's Name
- P.O. No.
- Coil No. / Sheet No. / Plate No.
- Specification & Grade.
- Net Weight.

For Plates, the details a, c, d, in clause 7.1 are to be hard stamped and bordered with paint and b & e are to be painted.

7.2 For coils two more labels containing all the details as in 7.1 shall be pasted, one on the eye and another on the outer surface of the packed coil.

8. Test certificate

8.1 The TC shall be in English and containing the following details.

- PO No.
- Specification and Grade
- Coil No..
- Nominal thickness and width.
- Chemical composition – melt wise.
- Mechanical properties – melt wise / HT batch wise.
- Gross and Net weight.

8.2 BHEL reserves the right to carry out test and reject the items wherever nonconformance to the contract is noticed.

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Rev. No.	Date	Changes made
00	20 05 96	TDC RTA 004 / 00 is revised and re-numbered as RTA 404 Rev. 00
01	18 07 96	i. Cl.2.3. table and sketch modified ii. Cl. 6.2, Cl.7.9.1 modified iii. Cl.9.5 deleted.
02	27 11 96	i. Cl. 8.0 deleted ii. Cl. 9.0 re-numbered as 8.0
03	28 03 98	i. Cl. 2.2 min yield strength changed to 310 MPA in line with corten coil specification.
04	22 06 98	Scope of sheets taken out of the purview of the TDC. Please see TDC: RTA: 425/001 dt 22 06 98 for corten sheets.
05	10 05 02	TDC totally reviewed and revised. Requirements of TDC RTA 405 (Corrosion resistant plate) TDC RTA 425 (Corrosion resistant sheets) are merged to form this, TDC: RTA: 405,425 deleted.
06	07 02 03	Class 2.1 chemistry details revised. In addition, Cl. 3.2 modified. Clause 2.2-gauge length specified for %age of elongation. Cl. 3.4 revised based on supplied feedback. Cl. 7.1 modified for better clarity.
07	26 11 11	Cl. 1.1, 2.1 and 2.2: ASTM A 242 and ASTM A 588 GR A included.
08	09012020	ASTM A606 added based on Engineering feedback(Email dated:16.12.2019 and supplier confirmation through purchase email dated:08.01.2020)

[Handwritten signatures]