	PLANT PURCHASING SPECIFICATION HYDERABAD	HY10780 REV. NO. 02 PAGE 1 OF 4
<u>STAINLESS STEEL SHEETS AND STRIPS</u> Grade X10Cr13 KG (for strips) and TP 410 or 410S (for sheets)		
<p>1.0 <u>GENERAL:</u></p> <p>This specification governs the requirements of cold rolled/hot rolled stainless steel sheets in annealed condition and cold rolled strips in heat treated and stress relieved condition.</p> <p>2.0 <u>APPLICATION:</u></p> <p>a) Sheets: For manufacture of shims in ST and GT.</p> <p>b) Strips: For manufacture of steam turbine components such as strainers.</p> <p>3.0 <u>CONDITION OF DELIVERY:</u></p> <p>a) Strips: The strips shall be heat-treated, cold rolled and finally stresses relieved. The material shall be supplied in bright and smooth finished condition. The edges shall be trimmed and smoothened. The strips shall be coiled on reels weighing approximately 5 kgs each, with a minimum coil diameter of 300 mm. Open coils are not acceptable.</p> <p>b) Sheets: The sheets shall be supplied in cold/hot rolled and annealed condition (Finish No. 1 or 2 B / 2D)</p> <p>4.0 <u>COMPLIANCE WITH STANDARDS:</u></p> <p>This specification in general complies with specification for chromium and Cr-Ni stainless steel plates, sheets and strips for pressure vessel and general applications.</p> <p>a) Sheets: Based on ASTM A240, TP 410 or 410 S; Specification for chromium and chromium nickel stainless steel plates, sheets and strips for pressure vessel and general purpose applications.</p> <p>b) Strips: Based on DIN 17440-1985, Gr. X10Cr13 KG; Stainless steels, quality specification.</p> <p>5.0 <u>DIMENSIONS AND TOLERANCES:</u></p> <p>5.1 Dimensions: As specified in the order.</p> <p>5.2 Tolerances:</p>		
Revisions: As per MOM dt. 5.9.05 with AGM (T&C Engg.)		Issued : STANDARDS ENGINEERING DEPARTMENT
Rev.No. 02	Amd. No.	Reaffirmed:
Dt. SEP. 2005	Dt.	Year:
Prepared: MATLS. ENGG., STDS. ENGG.		Approved: SR.MGR. (QA&TS)
Date of 1st Issue:		JUL., 1981

HY10780	PLANT PURCHASING SPECIFICATION HYDERABAD	
Rev. No.02		
PAGE 2 OF 4		

5.2.1 Sheets: The Tolerances on thickness, and width of sheets shall be as per ASTM A 480.

5.2.2 Strips: The tolerance on thickness and width of strips shall conform to DIN: 1544, the relevant values are reproduced below:

Thickness, mm		Tolerance on thickness mm
From	Upto and including	
0.10	0.15	± 0.010
0.15	0.25	± 0.020
0.25	0.40	± 0.020
0.40	0.60	± 0.030
0.60	1.00	± 0.030
1.00	1.50	± 0.040
1.50	2.50	± 0.050
2.50	4.00	± 0.060
4.00	6.00	± 0.080

Thickness, mm		Positive tolerance on width, mm			
Over & including	Upto	<125	≥125 <250	≥250 <400	≥400 ≤650
0.30	6.00	3.0	3.5	4.0	4.5

6.0 MANUFACTURE:

The steel shall be manufactured by basic electric furnace and shall be fully killed.

7.0 FREEDOM FROM DEFECTS:

The material shall be free from cracks, laps and rough non-metallic inclusions. Surface shall be clean and smooth.

8.0 HEAT TREATMENT:

The sheets and strips shall be suitably heat treated to achieve the specified mechanical properties. The actual heat treatment cycle followed shall be reported.



**PLANT PURCHASING
SPECIFICATION
HYDERABAD**

HY10780

Rev. No.02

PAGE 3 OF 4

9.0 CHEMICAL COMPOSITION:

Sheets (TP 410 or TP 410S)

Grade	Element (%)	C	Mn	P	S	Si	Cr	Ni
410	Min.	0.08	--	--	--	--	11.50	--
	Max.	0.15	1.00	0.04	0.03	1.00	13.50	0.75
410 S	Min.	-	-	-	-	-	11.50	-
	Max.	0.08	1.00	0.04	0.03	1.00	13.50	0.60

Strips (X10Cr13 KG)

Element (%)	C	Mn	P	S	Si	Cr	Ni
Min.	0.08	--	--	--	--	12.00	--
Max.	0.15	1.00	0.045	0.030	1.00	14.00	--

10.0 TEST SAMPLES:

10.1 For Chemical Analysis: One test sample shall be taken from each melt for chemical analysis.


10.2 For Mechanical Tests: One tensile test shall be done per melt and heat-treatment batch of the material or part thereof.

11.0 MECHANICAL PROPERTIES:

The material shall comply with the following mechanical properties when tested in accordance with IS:1608 or any reputed National Standard.

Sheets (TP 410 or TP 410S)

Type of material	Yield Stress or 0.2% P.S. N/mm ² min.	Tensile strength N/mm ² min.	% Elongation, Min	Hardness BHN, max
410	205	450	20	217
410S	205	415	22	183

HY10780	PLANT PURCHASING				
Rev. No.02	SPECIFICATION				
PAGE 4 OF 4	HYDERABAD				

Strips:

Thickness (mm)	Yield Stress or 0.2% P.S N/mm ² , min.	Tensile strength N/mm ² , min.	% Elongation L = 5d, min	
			L	T
≤ 3 mm	420	600 - 800	-	-
> 3 mm			16	12

12.0 INSPECTION AT SUPPLIER’S WORKS:

The representative of BHEL shall have free access to the suppliers works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.

13.0 TEST CERTIFICATE:

Five copies of the certificate shall be furnished with the following details.

a) BHEL Order No.

b) BHEL Specification No: HY 10780 / Rev.02

c) Manufacturer’s Name:

d) Melt No. & Heat treatment batch No.

e) Heat treatment condition and details.

f) Size and dimensional check.

g) Results of chemical analysis and mechanical tests.

14.0 PACKING AND MARKING:

14.1 Marking: Each coil shall be provided with metal label bearing the following punch details.

a) Material Specification No. HY 10780

b) Melt No. & Heat treatment Batch No.

c) Size & weight.

d) Manufacturer’s Trade Mark.

15.0 REJECTION:

In the event of any material proving defective during the course of further processing or testing, such materials shall be rejected and the supplier shall make immediate arrangements to replace the same free of cost.