HASTELLOY® HYBRID-BC1®

Principal Features

High Resistance to Hydrochloric Acid, Sulfuric Acid, Pitting, and Crevice Corrosion

HASTELLOY® HYBRID-BC1® (UNS N10362) alloy possesses much higher resistance to hydrochloric and sulfuric acids than the nickel-chromium-molybdenum (C-type) alloys, and can tolerate the presence of oxidizing species. The alloy also exhibits extremely high resistance to pitting and crevice corrosion.

Applications

HYBRID-BC1® alloy is suitable for the following applications in the chemical processing, pharmaceutical, agricultural, food, petrochemical, and power industries:

- Reaction vessels
- Heat exchangers
- Valves
- Pumps
- Piping
- Storage tanks
- The alloy is suitable for use at temperatures up to approximately 427°C (800°F). HYBRID-BC1 alloy excels in reducing acids and acid mixtures (with or without halides) open to oxygen and other oxidizing residuals/contaminants.

Field Test Program

Plain and welded samples of HYBRID-BC1® alloy are available for fi eld trials. If required, these samples can be weighed and measured prior to shipping, so that corrosion rates can be determined after fi eld exposure (if the samples are returned to Haynes International). Be aware that plain samples are better for determination of corrosion rates, whereas welded samples are useful in comparing base metal, weld metal, and heat-affected zone properties.

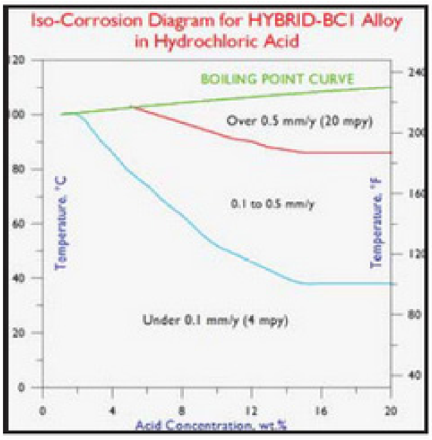
Nominal Composition

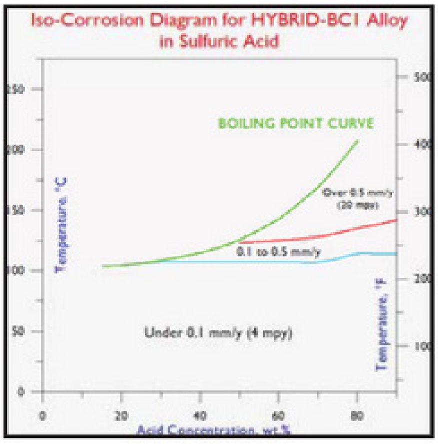
Weight %

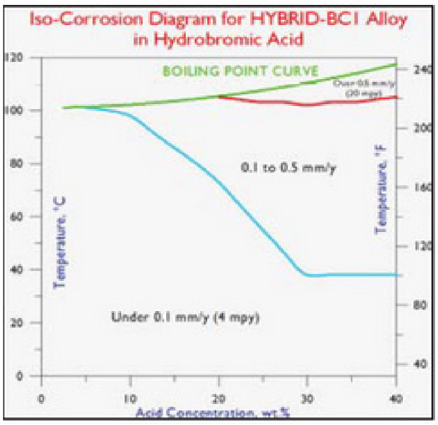
Nickel:	62 Balance
Cobalt:	1 max.
Molybdenum:	22
Chromium:	15
Iron:	2 max.
Aluminum:	0.5 max
Manganese:	0.25
Silicon:	0.08 max.
Carbon:	0.01 max.

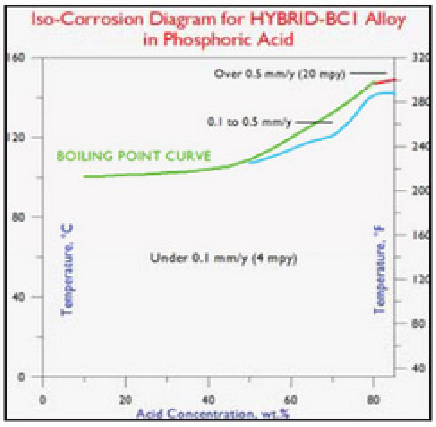
Iso-Corrosion Diagrams

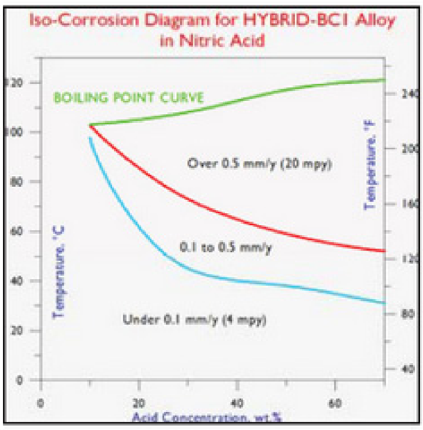
Each of these iso-corrosion diagrams was constructed using numerous corrosion rate values, generated at different acid concentrations and temperatures. The blue line represents those combinations of acid concentration and temperature at which a corrosion rate of 0.1 mm/y (4 mils per year) is expected, based on laboratory results. Below the line, rates under 0.1 mm/y are expected. Similarly, the red line indicates the combinations of acid concentration and temperature at which a corrosion rate of 0.5 mm/y (20 mils per year) is expected. Above the red line, rates of over 0.5 mm/y are expected. Between the blue and red lines, corrosion rates are expected to fall between 0.1 and 0.5 mm/y. The iso-corrosion diagram for hydrofluoric acid should be used with caution. Internal attack of nickel alloys is common in this acid; thus field tests prior to industrial use are even more important. Also, while HYBRID-BC1® alloy possesses useful resistance to nitric acid, stainless steels are generally preferred to nickel alloys in pure nitric.

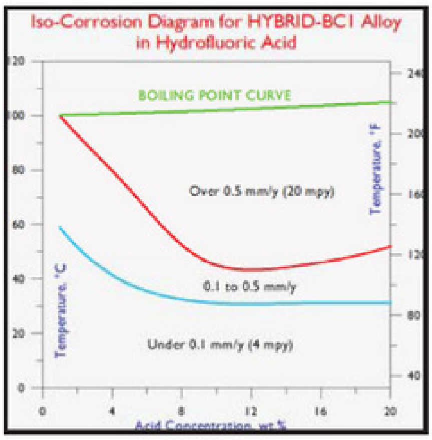












Uniform Corrosion Data

British Units

Chemical	Concentration	Temperature	HYBRID-BC1®	C-22®	C-276	C-2000®	B-3®
-	wt %	°F	mpy	mpy	mpy	mpy	mpy
HCl	1	Boiling	**<1**	2	13	<1	<1
	5	200	**12**	119	49	54	12
	5	Boiling	**18**	354	143	167	3
	10	150	**11**	39	18	26	9
	10	175	**15**	78	46	61	11
	15	150	**11**	39	21	28	9
	15	175	**17**	75	48	67	11
	20	150	**11**	35	22	27	8
	20	175	**18**	68	43	57	10
H_2SO_4	10	Boiling	**1**	11	7	4	<1
	20	Boiling	**2**	33	19	7	1
	30	200	**3**	27	17	2	4
	30	Boiling	**4**	74	33	17	1
	50	200	**2**	30	24	6	2
	50	Boiling	**9**	393	143	132	1
	70	200	**1**	37	20	17	<1
	90	200	**1**	71	18	15	1
HBr	10	200	**2**	59	35	13	11
	30	200	**15**	44	30	36	11
	40	200	**13**	26	21	24	10
H_3PO_4	70	250	**4**	5	3	3	3
	80	250	**1**	5	4	3	4

Uniform Corrosion Data Continued

Metric Units

Chemical	Concentration	Temperature	HYBRID-BC1®	C-22®	C-276	C-2000®	B-3®
-	wt %	°C	mm/y	mm/y	mm/y	mm/y	mm/y
HCl	1	Boiling	**0.01**	0.06	0.33	0.01	0.01
	5	93	**0.31**	3.02	1.25	1.37	0.3
	5	Boiling	**0.45**	8.9	3.63	4.23	0.08
	10	66	**0.27**	0.98	0.46	0.65	0.24
	10	79	**0.38**	1.99	1.18	1.54	0.28
	15	66	**0.28**	0.98	0.54	0.7	0.23
	15	79	**0.44**	1.91	1.21	1.69	0.29
	20	66	**0.29**	0.9	0.55	0.69	0.21
	20	79	**0.45**	1.72	1.1	1.46	0.26
H_2SO_4	10	Boiling	**0.03**	0.29	0.18	0.09	0.01
	20	Boiling	**0.06**	0.83	0.49	0.18	0.02
	30	93	**0.08**	0.68	0.42	0.04	0.09
	30	Boiling	**0.09**	1.89	0.83	0.42	0.02
	50	93	**0.06**	0.77	0.62	0.16	0.04
	50	Boiling	**0.24**	9.98	3.64	3.35	0.03
	70	93	**0.03**	0.94	0.5	0.42	0.01
	90	93	**0.03**	1.8	0.46	0.37	0.02
HBr	10	93	**0.05**	1.5	0.89	0.34	0.28
	30	93	**0.37**	1.12	0.75	0.91	0.29
	40	93	**0.34**	0.66	0.53	0.6	0.25
H_3PO_4	70	121	**0.11**	0.13	0.08	0.07	0.08
	80	121	**0.02**	0.12	0.09	0.08	0.09

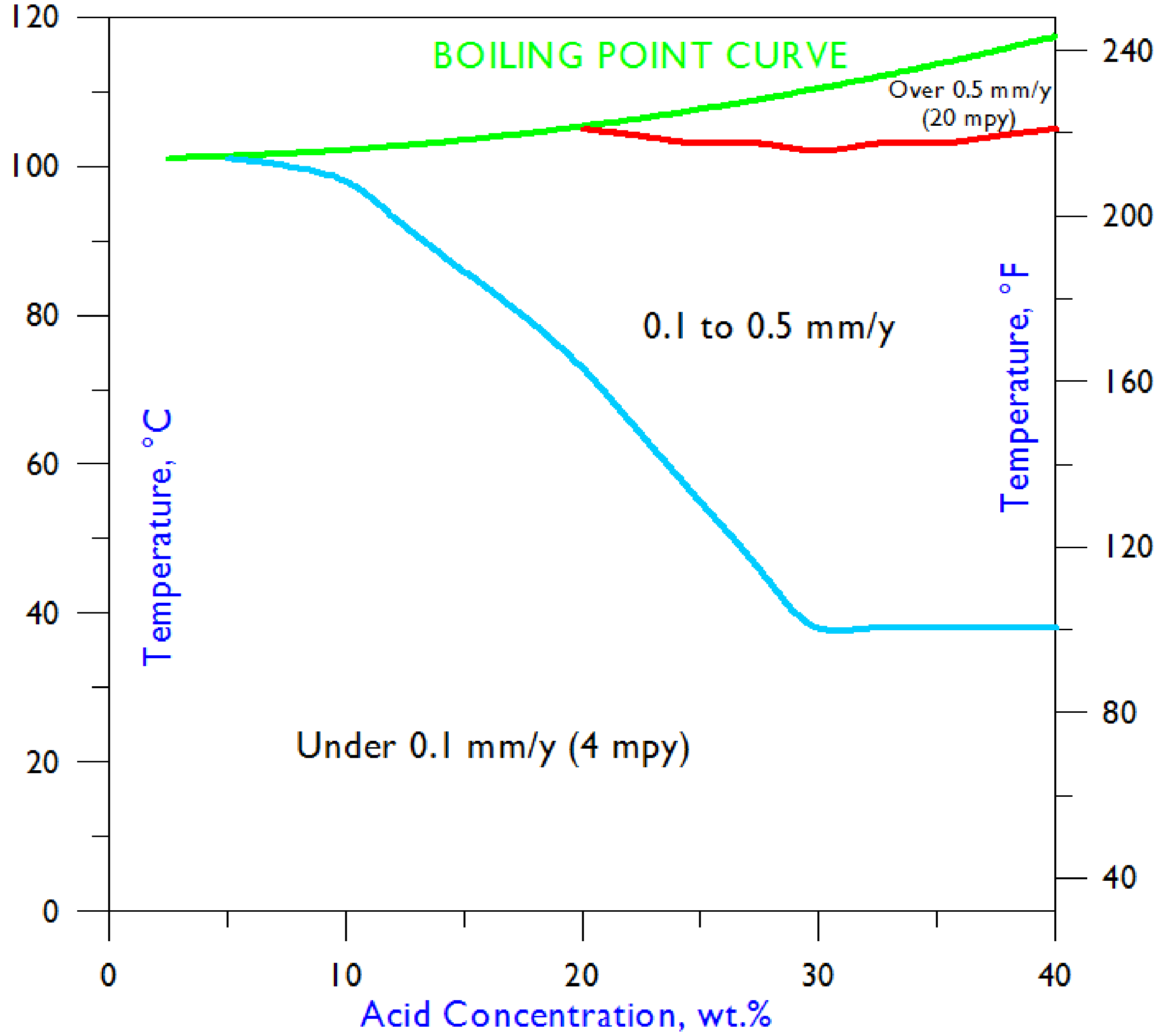
Selected Corrosion Data

Hydrobromic Acid

Conc. Wt.%	50°F 10°C	75°F 24°C	100°F 38°C	125°F 52°C	150°F 66°C	175°F 79°C	200°F 93°C	225°F 107°C	Boiling
2.5	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	0.08
7.5	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	0.01	0.05	-	0.21
15	-	-	-	-	-	-	-	-	-
20	-	-	-	-	0.04	0.31	0.37	-	0.47
25	-	-	-	-	-	-	-	-	-
30	-	-	0.11	0.17	0.24	0.31	0.37	-	0.68
40	-	-	0.09	0.14	0.2	0.28	0.34	-	0.85

All corrosion rates are in millimeters per year (mm/y); to convert to mils (thousandths of an inch) per year, divide by 0.0254.
Data are from Corrosion Laboratory Jobs 23-07 and 5-08.
All tests were performed in reagent grade acids under laboratory conditions; field tests are encouraged prior to industrial use.

Iso-Corrosion Diagram for HYBRID-BC1 Alloy in Hydrobromic Acid



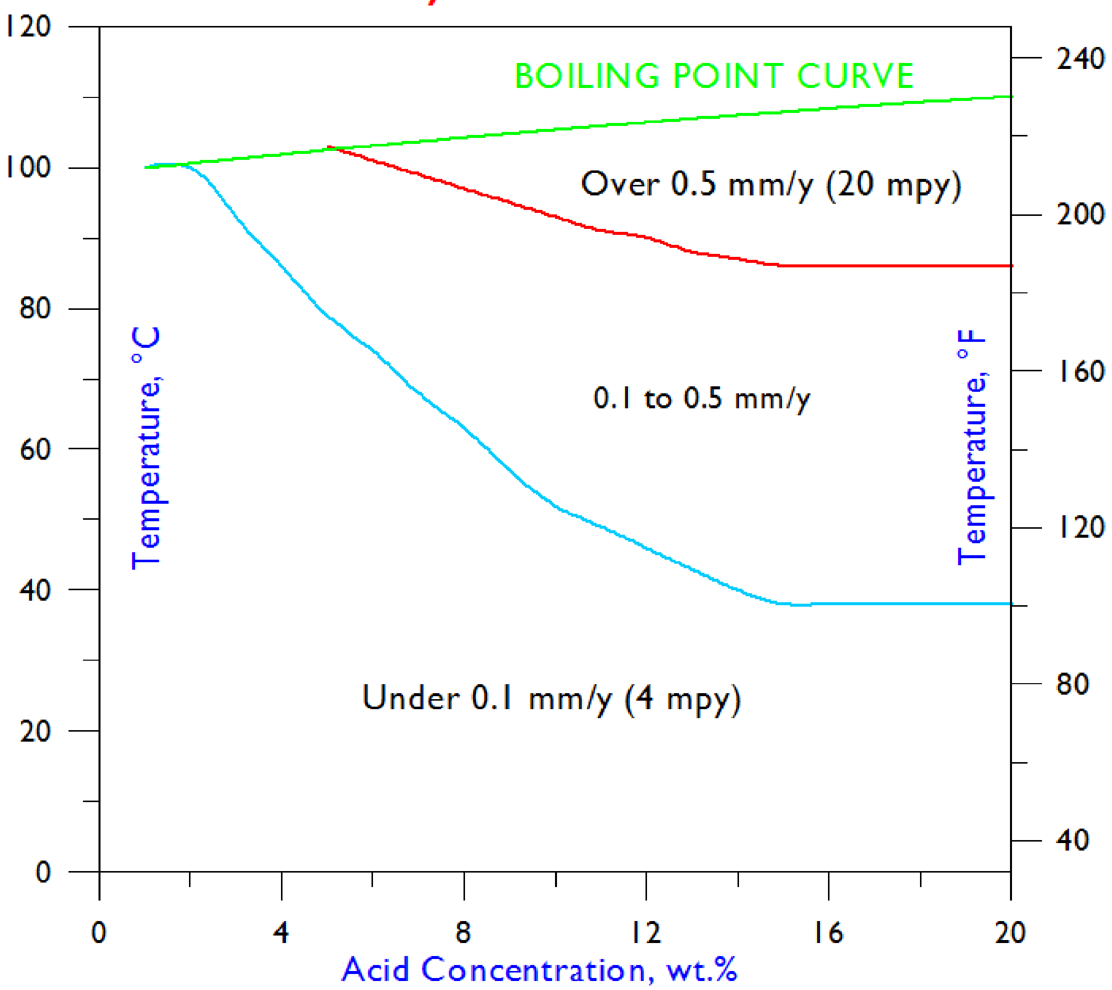
Selected Corrosion Data Continued

Hydrochloric Acid

Conc. Wt.%	50°F 10°C	75°F 24°C	100°F 38°C	125°F 52°C	150°F 66°C	175°F 79°C	200°F 93°C	225°F 107°C	Boiling
1	-	-	-	-	-	-	0.01	-	0.01
1.5	-	-	-	-	-	-	0.01	-	0.06
2	-	-	-	-	-	-	0.02	-	0.10
2.5	-	-	-	-	-	-	0.04	-	0.15
3	-	-	-	-	-	-	0.08	-	0.21
3.5	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-
4.5	-	-	-	-	-	-	-	-	-
5	-	-	-	<0.01	0.02	0.08	0.31	-	0.45
7.5	-	-	-	-	-	-	-	-	-
10	-	-	0.02	0.13	0.27	0.38	0.53	-	-
15	-	-	0.12	0.21	0.28	0.44	0.57	-	-
20	-	-	0.12	0.18	0.29	0.45	0.68	-	-

All corrosion rates are in millimeters per year (mm/y); to convert to mils (thousandths of an inch) per year, divide by 0.0254.
Data are from Corrosion Laboratory Jobs 23-07 and 3-08.
All tests were performed in reagent grade acids under laboratory conditions; field tests are encouraged prior to industrial use.

Iso-Corrosion Diagram for HYBRID-BC1 Alloy in Hydrochloric Acid



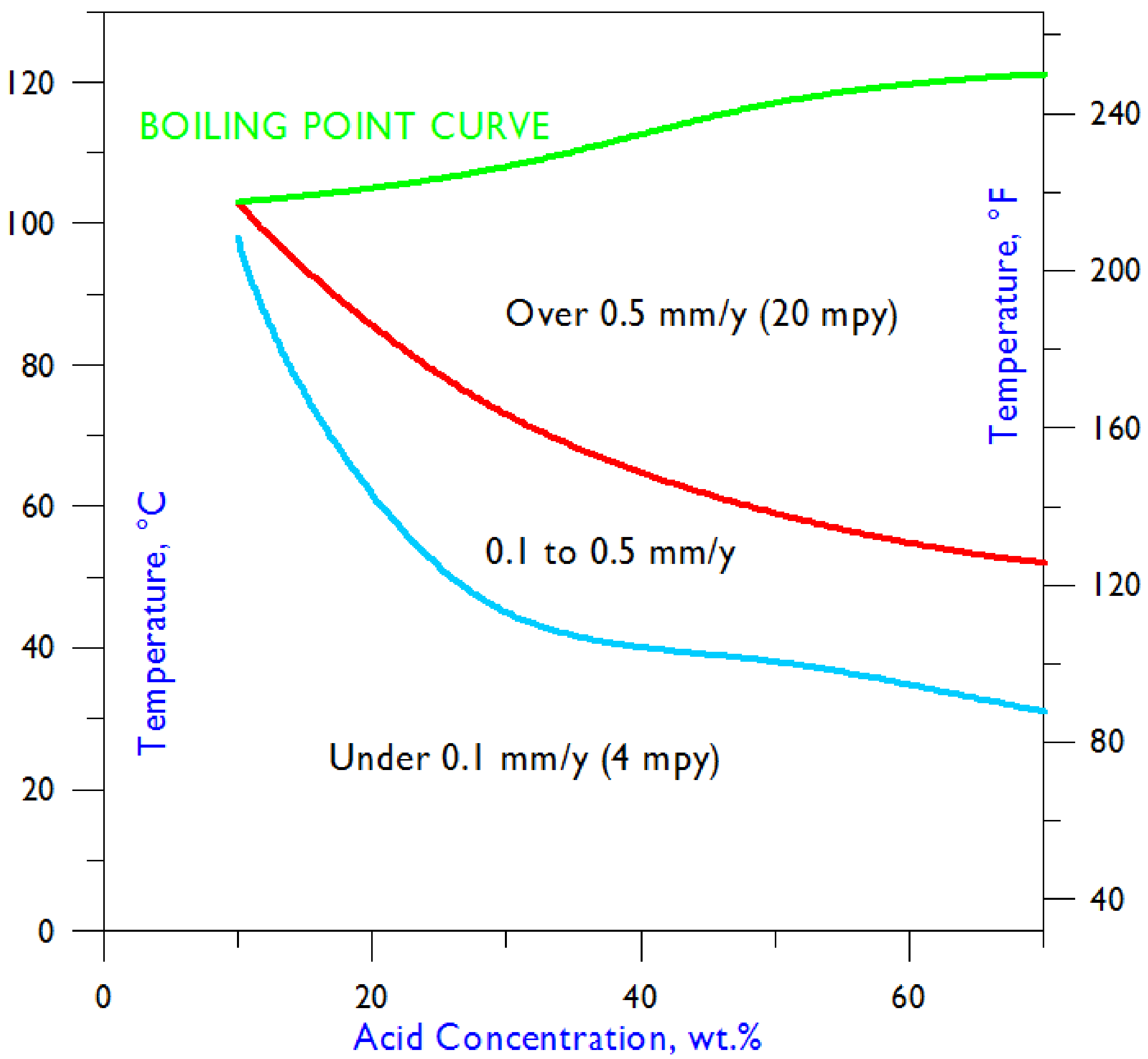
Selected Corrosion Data Continued

Nitric Acid

Conc. Wt.%	50°F 10°C	75°F 24°C	100°F 38°C	125°F 52°C	150°F 66°C	175°F 79°C	200°F 93°C	225°F 107°C	Boiling
10	-	-	-	-	-	0.04	0.07	-	0.13
20	-	-	-	0.05	0.15	-	-	-	-
30	-	-	0.07	0.13	0.28	0.74	4.72	-	-
40	-	-	0.1	0.2	-	-	-	-	-
50	-	-	0.11	0.29	0.98	4.45	17.4	-	-
60	-	-	0.14	0.4	-	-	-	-	-
70	-	0.08	0.19	0.54	2.62	9.54	20.52	-	-

All corrosion rates are in millimeters per year (mm/y); to convert to mils (thousandths of an inch) per year, divide by 0.0254.
Data are from Corrosion Laboratory Jobs 24-07, 7-08 and 17-12.
All tests were performed in reagent grade acids under laboratory conditions; field tests are encouraged prior to industrial use.

Iso-Corrosion Diagram for HYBRID-BC1 Alloy in Nitric Acid

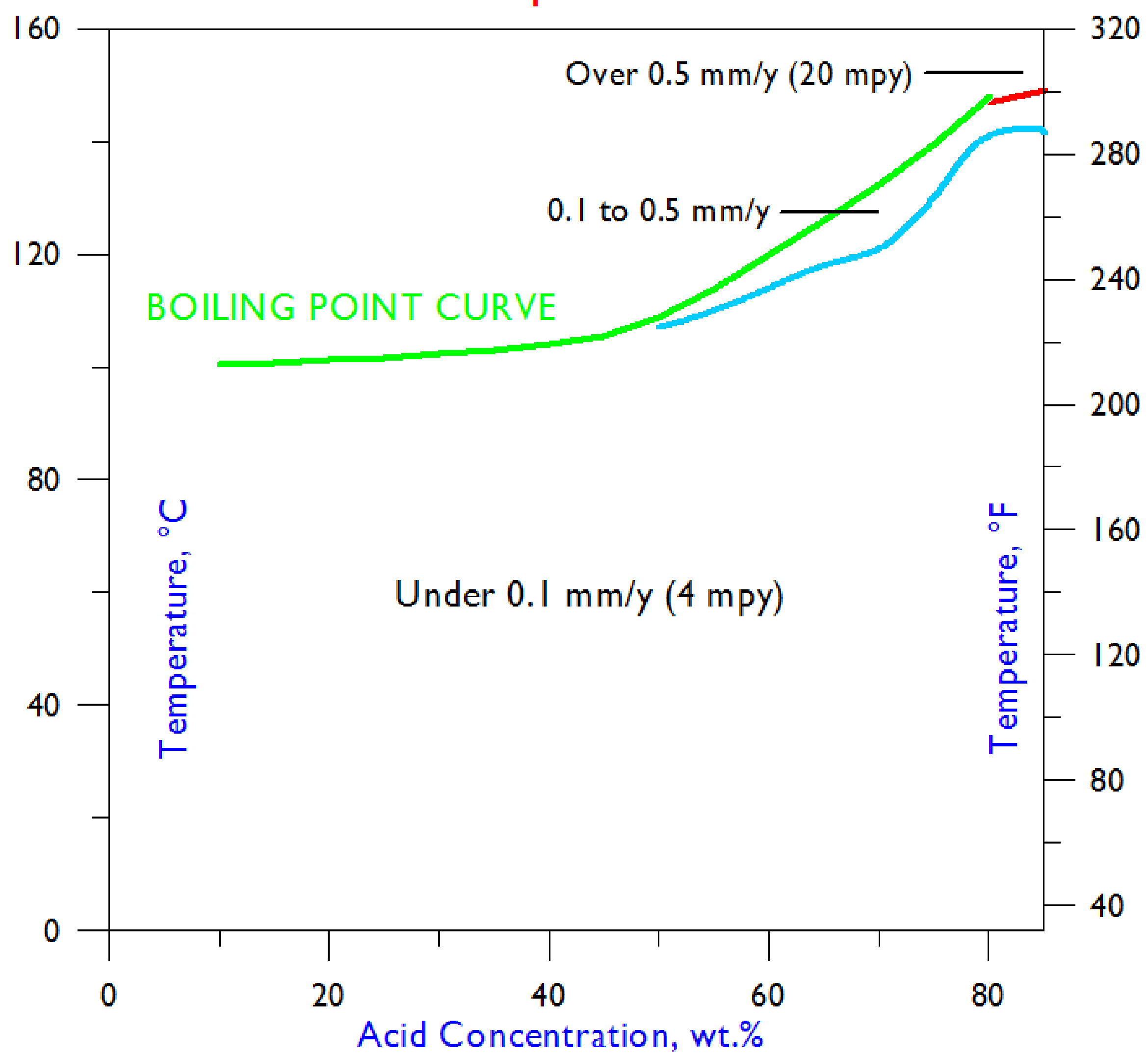


Selected Corrosion Data Continued

Phosphoric Acid									
Conc. Wt.%	125°F 52°C	150°F 66°C	175°F 79°C	200°F 93°C	225°F 107°C	250°F 121°C	275°F 135°C	300°F 149°C	Boiling
50	-	-	-	-	-	-	-	-	0.12
60	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	0.11	-	-	0.19
75	-	-	-	-	-	0.02	-	-	0.2
80	-	-	-	-	-	0.02	0.02	-	0.33
85	-	-	-	-	-	0.01	0.02	0.46	0.67

All corrosion rates are in millimeters per year (mm/y); to convert to mils (thousandths of an inch) per year, divide by 0.0254.
Data are from Corrosion Laboratory Job 8-08.
All tests were performed in reagent grade acids under laboratory conditions; field tests are encouraged prior to industrial use.

Iso-Corrosion Diagram for HYBRID-BC1 Alloy in Phosphoric Acid



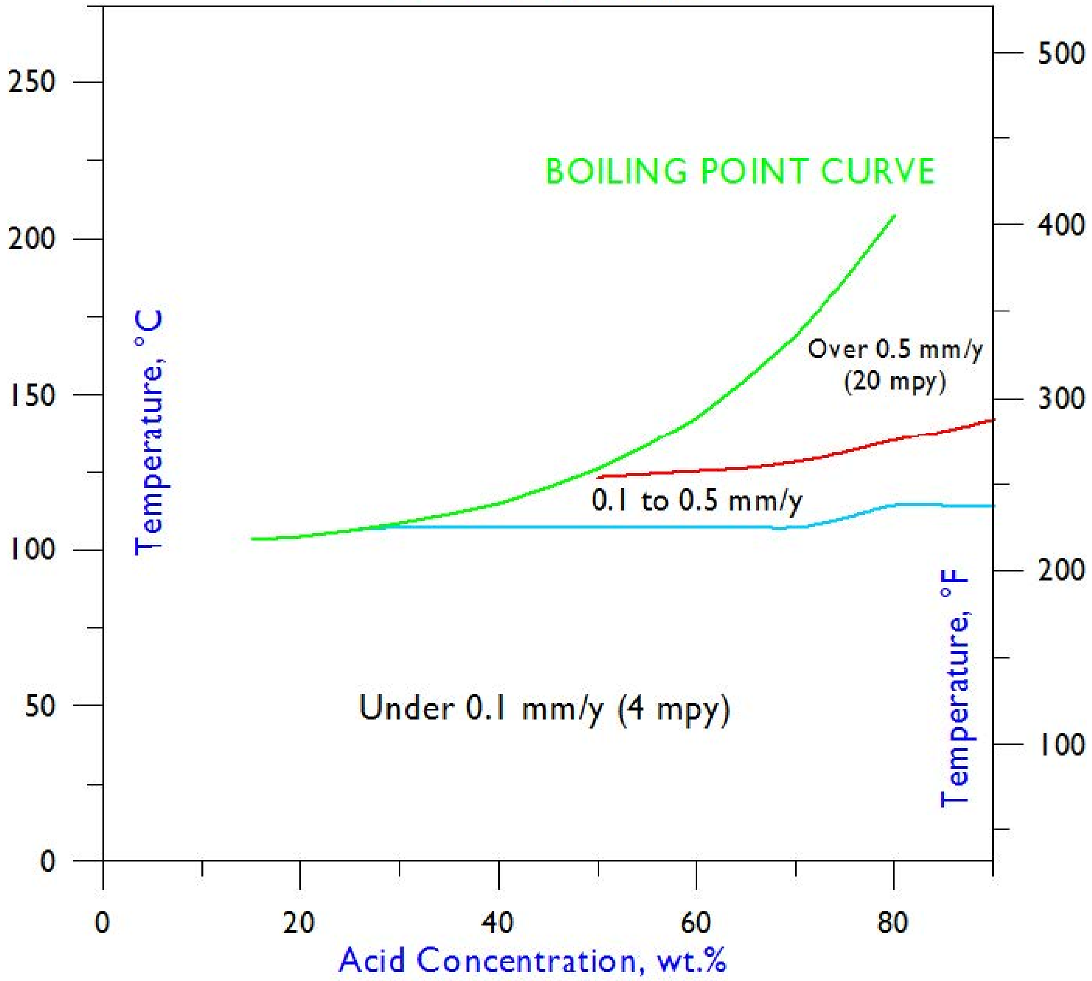
Selected Corrosion Data Continued

Sulfuric Acid

Conc. Wt.%	75°F 24°C	100°F 38°C	125°F 52°C	150°F 66°C	175°F 79°C	200°F 93°C	225°F 107°C	250°F 121°C	275°F 135°C	300°F 149°C	350°F 177°C	Boiling
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	0.07	-	-	-	-	-	0.03
20	-	-	-	-	-	-	-	-	-	-	-	0.06
30	-	-	-	-	-	0.08	-	-	-	-	-	0.09
40	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	0.06	0.11	-	-	-	-	0.24
60	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	0.03	0.11	0.22	1.71	-	-	-
80	-	-	-	-	-	-	0.05	0.24	0.52	-	-	-
90	-	-	-	-	-	0.03	0.06	0.14	0.38	0.94	-	-
96	-	-	-	-	-	-	0.11	0.21	0.45	1.11	-	-

All corrosion rates are in millimeters per year (mm/y); to convert to mils (thousandths of an inch) per year, divide by 0.0254.
Data are from Corrosion Laboratory Job 24-07 and 4-08.
All tests were performed in reagent grade acids under laboratory conditions; field tests are encouraged prior to industrial use.

Iso-Corrosion Diagram for HYBRID-BC1 Alloy in Sulfuric Acid



Localized Corrosion Data

Critical Pitting Temperature (CPT) and Critical Crevice Temperature (CCT)

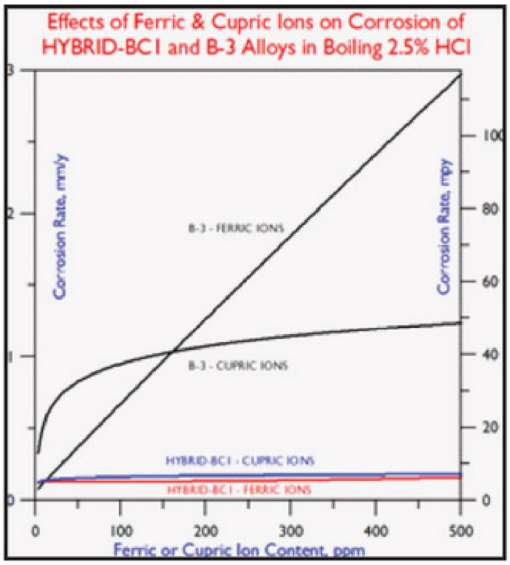
HYBRID-BC1® alloy exhibits exceptional resistance to pitting and crevice corrosion, as evident from the table below. To assess the resistance of nickel alloys and stainless steels to chloride-induced pitting and crevice attack, it is customary to measure their CPT and CCT in acidifi ed 6 wt.% ferric chloride, in accordance with the procedures defi ned in ASTM Standard G 48.

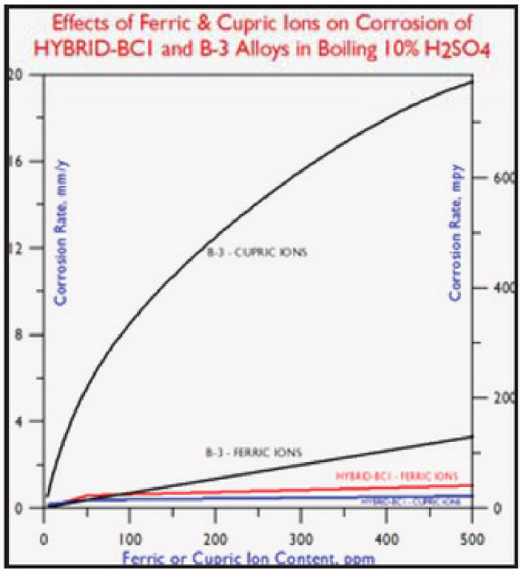
These values represent the lowest temperatures at which pitting attack and crevice attack are encountered in this solution, within 72 hours. It should be noted that HYBRID-BC1 alloy exhibits a respectable uniform corrosion rate of approximately 0.5 mm/y (20 mpy) at 120°C in this solution, whereas B-3 corrodes at 47.69 mm/y (1,878 mpy) under the same conditions. While 120°C is the maximum temperature of HYBRID-BC1® alloy in acidifi ed 6% $FeCl_3$, the fact that the material can withstand such a strongly oxidizing medium to the 120°C, yet provide such high resistance to the key reducing acids, is remarkable.

Alloy	Critical Crevice Temperature		Critical Pitting Temperature	
-	°F	°C	°F	°C
HYBRID-BC1®	**257**	**125**	**>284**	**>140**
C-4	122	50	212	100
C-22®	176	80	>284	>140
C-276	131	55	>284	>140
C-2000®	176	80	>284	>140
316L	32	0	59	15
254SMO®	86	30	140	60
625	104	40	212	100

Effect of Oxidizing Species

HYBRID-BC1 alloy can tolerate the presence of oxidizing species in many acid solutions. This is a major advantage over the nickel-molybdenum (B-type) alloys. Such species include dissolved oxygen, ferric ions, and cupric ions. In the following graphs, the effects of ferric ions and cupric ions upon the corrosion properties of B-3® and HYBRID-BC1® alloys, in 2.5% hydrochloric acid and 10% sulfuric acid, are compared. At higher concentrations, these effects are diminished, but nevertheless represent a remarkable achievement.





Resistance to Stress Corrosion Cracking

A common solution for assessing the resistance to chloride-induced stress corrosion cracking of a material is boiling 45 wt.% magnesium chloride. This table indicates the times required to induce cracking in U-bend samples. The tests were stopped after six weeks (1,008 hours).

Alloy	Time to Cracking
HYBRID-BC1®	**No cracking in 1,008 h**
C-4	No cracking in 1,008 h
C-22®	No cracking in 1,008 h
C-276	No cracking in 1,008 h
C-2000®	No cracking in 1,008 h
316L	2 h
254SMO®	24 h
625	No cracking in 1,008 h

Physical Properties

Physical Property	British Units		Metric Units	
Density	RT	0.319 lb/in.^{3}	RT	8.83 g/cm.^{3}
Electrical Resistivity	RT	49.5 µohm.in	RT	1.26 µohm.m
	200°F	49.9 µohm.in	100°C	1.2 µohm.m
	400°F	50.3 µohm.in	200°C	1.27 µohm.m
	600°F	50.3 µohm.in	300°C	1.28 µohm.m
	800°F	50.7 µohm.in	400°C	1.28 µohm.m
	1000°F	51.4 µohm.in	500°C	1.29 µohm.m
	1100°F	51.9 µohm.in	600°C	1.31 µohm.m
Thermal Conductivity	RT	64 Btu.in/h.ft^2.°F	RT	9.30 W/m.°C
	200°F	72 Btu.in/h.ft^2.°F	100°C	10.5 W/m.°C
	400°F	84 Btu.in/h.ft^2.°F	200°C	11.9 W/m.°C
	600°F	95 Btu.in/h.ft^2.°F	300°C	13.5 W/m.°C
	800°F	106 Btu.in/h.ft^2.°F	400°C	14.9 W/m.°C
	1000°F	117 Btu.in/h.ft^2.°F	500°C	16.4 W/m.°C
	1100°F	121 Btu.in/h.ft^2.°F	600°C	17.5 W/m.°C
Mean Coefficient of Thermal Expansion	70-200°F	6.4 µin/in.°F	25-100°C	11.5 µm/m.°C
	70-400°F	6.6 µin/in.°F	25-200°C	11.9 µm/m.°C
	70-600°F	6.8 µin/in.°F	25-300°C	12.2 µm/m.°C
	70-800°F	7.0 µin/in.°F	25-400°C	12.5 µm/m.°C
	70-1000°F	7.1 µin/in.°F	25-500°C	12.7 µm/m.°C
	70-1100°F	7.0 µin/in.°F	25-600°C	12.7 µm/m.°C
Thermal Diffusivity	RT	0.102 ft^2/h	RT	0.0264 cm^2/s
	200°F	0.111 ft^2/h	100°C	0.0291cm^2/s
	400°F	0.124 ft^2/h	200°C	0.0319 cm^2/s
	600°F	0.138 ft^2/h	300°C	0.0352 cm^2/s
	800°F	0.151 ft^2/h	400°C	0.0382 cm^2/s
	1000°F	0.163 ft^2/h	500°C	0.0412 cm^2/s
	1100°F	0.168 ft^2/h	600°C	0.0435 cm^2/s

RT= Room Temperature

Physical Properties Continued

Phyical Property	British Units		Metric Units	
Specific Heat	RT	0.096 Btu/lb.°F	RT	403 J/kg.°C
	200°F	0.099 Btu/lb.°F	100°C	416 J/kg.°C
	400°F	0.102 Btu/lb.°F	200°C	429 J/kg.°C
	600°F	0.105 Btu/lb.°F	300°C	439 J/kg.°C
	800°F	0.108 Btu/lb.°F	400°C	449 J/kg.°C
	1000°F	0.110 Btu/lb.°F	500°C	461 J/kg.°C
	1100°F	0.109 Btu/lb.°F	600°C	457 J/kg.°C
Dynamice Modulus of Elasticity	RT	31.5×10^6 psi	RT	217 GPa
	200°F	30.7×10^6 psi	100°C	211 GPa
	400°F	29.8×10^6 psi	200°C	205 GPa
	600°F	28.9×10^6 psi	300°C	200 GPa
	800°F	28.3×10^6 psi	400°C	197 GPa
	1000°F	27.5×10^6 psi	500°C	191 GPa
	1200°F	27.0×10^6 psi	600°C	188 GPa
Poisson’s Ratio	-	-	RT	0.33

RT= Room Temperature

Impact Strength

Charpy V-Notch Samples from 12.7 mm (0.5 in) Plate

Test Temperature		Condition	Impact Strength	
°F	°C	-	ft.lbf	J
RT	RT	Solution Annealed	>246	>358
-320	-196	Solution Annealed	>246	>358
RT	RT	Solution Annealed + 2000 h at 427°C (800°F)	>246	>358
-320	-196	Solution Annealed + 2000 h at 427°C (800°F)	256	347

RT= Room Temperature

Tensile Data

Form	Thickness	Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	in/mm	°F	°C	ksi	MPa	ksi	MPa	%
Sheet, Cold Rolled & Solution Annealed	0.125/3.2	RT	RT	58.7	405	122	841	61.6
		200	93	52.2	360	117.6	811	66.1
		300	149	48.3	333	114.4	789	64.5
		400	204	45	310	110.6	763	63.3
		500	260	42.4	292	109.4	754	67.9
		600	316	41.1	283	108	745	68.5
		700	371	40	276	108.3	747	76.9
		800	427	40.6	280	112.8	778	75.3
Plate, Hot Rolled & Solution Annealed	0.75/19.1	RT	RT	52.5	362	117.4	809	70.5
		200	93	47.4	327	112.9	778	74.8
		300	149	42.7	294	108.7	749	74.8
		400	204	38.8	268	104.8	723	74.6
		500	260	35.7	246	102.4	706	74.7
		600	316	35.6	245	100.4	692	71.1
		700	371	34.8	240	99.8	688	74
		800	427	32.7	225	99	683	76.3
Bar, Hot Rolled & Solution Annealed	1.0/25.4	RT	RT	55.9	385	120.6	832	63
		200	93	50.4	347	115.8	798	73.6
		300	149	45.1	311	111.5	769	72.8
		400	204	41.9	289	107.8	743	72.1
		500	260	39.6	273	105.2	725	72.7
		600	316	37.1	256	103.5	714	72
		700	371	36.6	252	103.3	712	72
		800	427	37.2	256	102.3	705	74.1

RT= Room Temperature

Tensile Data Continued

Tensile Data for Weldments

- Transverse samples from welded plates of thickness 12.7 mm (0.5 in).
- Welding products made from same heat of HYBRID-BC1® alloy.

Welding Process	Consumable Diameter	Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
-	in/mm	°F	°C	ksi	MPa	ksi	MPa	%
Gas Tungsten Arc GTAW (TIG)	0.125/3.2	RT	RT	69.4	478	122	841	40.9
		200	93	60.7	419	114.4	789	37
		300	149	58	400	109.7	756	40.1
		400	204	56.7	391	104.8	723	36.2
		500	260	51.4	354	103.9	716	40.2
		600	316	50.9	351	100.9	696	39
		700	371	47	324	99.3	685	41.3
		800	427	51.5	355	100.3	692	41.1
Synergic Gas Metal Arc GMAW (MIG)	0.75/19.1	RT	RT	72.6	501	121.1	835	37.2
		200	93	66.4	458	115.3	795	39.7
		300	149	63.5	438	109.7	756	37.6
		400	204	58.3	402	104.3	719	39.3
		500	260	59.2	408	98.8	681	33.7
		600	316	59.9	413	102.8	709	42.5
		700	371	58.7	405	99.7	687	37.2
		800	427	60.3	416	99.2	684	38.8
Shielded Metal Arc (SMAW)	1.0/25.4	RT	RT	75	517	121.5	838	30.2
		200	93	67.2	463	114.3	788	28.6
		300	149	57	393	108.8	750	32
		400	204	58.8	405	103.7	715	30.1
		500	260	60.2	415	103.3	712	32.3
		600	316	57.5	396	101.4	699	31.2
		700	371	54.7	377	97.4	672	31.3
		800	427	54.6	376	97.6	673	30.8

RT= Room Temperature

Tensile Data Continued

All Weld Tensile Metal Data

• Bar Samples of Diameter 12.7 mm (0.5 in) from GMAW (MIG) Cruciforms

Welding Process	Consumable Diameter	Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
-	in/mm	°F	°C	ksi	MPa	ksi	MPa	%
Synergic Gas Metal Arc GMAW (MIG	0.045/1.1	RT	RT	73.8	509	110.8	764	47.7
		200	93	68.9	475	104.8	723	46.1
		300	149	64.8	447	101.6	701	50.8
		400	204	62.3	430	96.8	667	47.2
		500	260	62.6	432	93.8	647	46
		600	316	61.2	422	94.4	651	51.3
		700	371	59.8	412	91.6	632	49.5
		800	427	58.8	405	88.9	613	50.9

RT= Room Temperature

Heat-treatment

Wrought forms of HYBRID-BC1® alloy are furnished in the solution annealed condition, unless otherwise specified. The standard solution annealing treatment consists of heating to 1149°C (2100°F) followed by rapid air-cooling or (preferably) water quenching. Parts which have been hot formed should be solution annealed prior to final fabrication or installation. The minimum hot forming temperature of the alloy is 954°C (1750°F).

Forming

HYBRID-BC1® alloy has excellent forming characteristics, and cold forming is the preferred method of shaping. The alloy can be easily cold worked due to its high ductility; however, the alloy is stronger than the austenitic stainless steels and therefore requires more energy during cold forming. Please consult the “Welding and Fabrication” brochure for information on cold working of the HASTELLOY® alloys, and recommendations regarding the needs for subsequent solution annealing.

Specifications & Codes

Specifications

HYBRID-BC1® alloy (N10362)	
Sheet, Plate & Strip	B575 P= 43
Billet, Rod & Bar	B574 B472 P= 43
Coated Electrodes	-
Bare Welding Rods & Wire	ASME Code Case No. 2653
Seamless Pipe & Tube	B622 P= 43
Welded Pipe & Tube	B619 B626 P= 43
Fittings	B366
Forgings	B462 B564 P= 43
DIN	No. 2.4708 NiMo22Cr15
TÜV	-
Others	-

Codes

HYBRID-BC1® alloy (N10362)			
ASME	**Section I**		-
	Section III	**Class 1**	-
		Class 2	-
		Class 3	-
	Section VIII	**Div. 1**	800°F (427°C)[1] Code Case 2648
		Div. 2	-
	Section XII		-
	B16.5		-
	B16.34		-
	B31.1		-
	B31.3		-
VdTÜV (doc #)			-

[1]Approved material forms: Plate, Sheet, Bar, Forgins, fittings, welded pipe/tube, seamless pipe/tube

Disclaimer: