AMERICAN PIPING PRODUCTS

CARBON GRADE COMPARISON CHART: ASTM A106 VS ASTM A53

CHEMICAL

	ASTM A106		ASTM A106		ASME SA106		ASME SA106		ASTM A53		API 5L-44	
	Gr. B		Gr. C		Gr. B		Gr. C		Gr. B		B PSL1	
	Heat Analysis		Heat Analysis		Heat Analysis		Heat Analysis		Heat Analysis		Heat Analysis	
Product check	Product Analysis per request, matches heat specification		Product Analysis per request, matches heat specification		Product Analysis per request, matches heat specification		Product Analysis per request, matches heat specification		Product Analysis per request, matches heat specification		Product Analysis required, matches heat specification	
Chemistry	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**
Carbon (C)		0.300		0.300		0.300		0.350		0.300		0.280
Manganese (MN)	0.290	1.06*	0.290	1.06*	0.290	1.06*	0.290	1.20*	0.290	1.20**		0.90***
Phosphorus (P)		0.035		0.035		0.025		0.050		0.050		0.030
Sulfur (S)		0.035		0.035		0.025		0.045		0.045		0.030
Silicon (SI)	0.100		0.100		0.100		0.100					
Copper (CU)		0.400		0.400		0.400		0.400		0.400		
Nickel (NI)		0.400		0.400		0.400		0.400		0.400		
Chrome (CR)		0.400		0.400		0.300		0.400		0.400		
Molybdenum (MO)		0.150		0.150		0.120		0.150		0.150		
Vanadium (V)		0.080		0.080		0.080		0.080		0.080		
Columbium (CB)						0.020						
CB+V+TI												0.150%
Cr+Cu+Mo+Ni+V		1.0%		1.0%		1.0%		1.0%		1.0%		
Flattening test	Capable statement		Capable statement		Capable statement		Capable statement		Capable statement			
Carbon Equivalent (CE)												
Heat Analysis		0.50		0.50		0.50		0.50		0.50		0.43
Product Analysis											Test Required	
Hydro	60% of P=2St/D		60% of P=2St/D		60% of P=2St/D		60% of P=2St/D		60% of P=2St/D		60% of P=2St/D	
NDE -Mtl Marked NDE		optional		optional		optional		optional		optional		optional
Temperature (Deg. F)												optional
Heat Treat Options												
As Rolled	Yes		Yes		Yes		Yes		Yes		Yes	
Normalizing or Normalizing Rolled	Yes		Yes		Yes		Yes		Yes		Yes	
Quenched & Tempering	Yes		Yes		Yes		Yes		Yes		Yes	

MECHANICAL

	Gr. B		Gr. C		Gr. B		Gr. C		Gr. B		B PSL1	
	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
TENSILE	60,000		70,000		60,000		70,000		60,000		60,000	
YIELD	35,000		40,000		35,000		40,000		35,000		35,000	
ELOG. (2"strip)	30%		30%		30%		30%		30%		35%	
Elongation Formula	e=625 000 [1940] A0.2/U 0.9		e=625 000 [1940] A0.2/U 0.9		e=625 000 [1940] A0.2/U 0.9		e=625 000 [1940] A0.2/U 0.9		e=625 000 [1940] A0.2/U 0.9		e=625 000 [1940] A0.2/U 0.9	
ELOG.(50mm Round sample)	22%		20%		22%		20%					
Hardness (HRB)		241		241		241		241		241		

For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.50% grades X42 – X52, 1.65% above X52 – X70.

For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.35%.

AMERICA'S LARGEST DISTRIBUTOR OF SEAMLESS STEEL PIPE