

This page is mainly introduced the ASTM A36 Datasheet, including chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of ASTM A36, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

Datasheet for Steel Grades Carbon Steel ASTM A36

ASTM A36 Standard Number:

ITEM	Standard Number	Descriptions
------	-----------------	--------------

ASTM A36 Chemical composition (mass fraction) (wt.%)

Chemical			Min.(%)				Max.(%)		
C	Si	Mn	P	S	Cr	Ni	Mo	V	Ta
W	N	Cu	Co	Pb	B	Nb	Al	Ti	Other

ASTM A36, >8 to 15 in. thick, as-rolled steel plate

Categories: Metal; Ferrous Metal; ASTM Steel; Carbon Steel; Low Carbon steel

Material Notes: A popular "workhorse" grade, it is used widely for various applications.

Physical	Metric	English	Comments
----------	--------	---------	----------

Properties			
Density	7.85 g/cc	0.284 lb/in ³	Typical of ASTM steel
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	119 - 159	119 - 159	based on conversion from tensile strength
Hardness, Rockwell B	67.0 - 83.0	67.0 - 83.0	based on conversion from tensile strength
Tensile Strength at Break	400 - 552 MPa	58000 - 80000 psi	
Tensile Strength, Yield	>= 221 MPa	>= 32000 psi	
Elongation at Break	>= 18.0 %	>= 18.0 %	in 8"
	>= 21.0 %	>= 21.0 %	in 2", > 24" W
Bend Radius, Minimum	0.500 t	0.500 t	≤3/4" W; ASTM A6 PARA. S14
	1.00 t	1.00 t	>3/4 to 1" W; ASTM A6 PARA. S14
	1.50 t	1.50 t	>1 to 1-1/2" W; ASTM A6 PARA. S14
	2.50 t	2.50 t	>1-1/2 to 2" W; ASTM A6 PARA. S14
	3.00 t	3.00 t	>2" W; ASTM A6 PARA. S14
Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.290 %	<= 0.290 %	
Copper, Cu	>= 0.020 %	>= 0.020 %	

Iron, Fe	$\geq 98.0 \%$	$\geq 98.0 \%$
Manganese, Mn	0.85 - 1.20 %	0.85 - 1.20 %
Phosphorous, P	$\leq 0.040 \%$	$\leq 0.040 \%$
Silicon, Si	0.15 - 0.40 %	0.15 - 0.40 %
Sulfur, S	$\leq 0.050 \%$	$\leq 0.050 \%$

ASTM A36 Physical Properties

Tensile strength	115-234	σ_b /MPa
Yield Strength	23	$\sigma_{0.2} \geq$ /MPa
Elongation	65	$\delta_{5\geq}$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv \geq /J
HBS	123-321	-
HRC	30	-

ASTM A36 Mechanical Properties

Tensile strength	231-231	σ_b /MPa
Yield Strength	154	$\sigma_{0.2} \geq$ /MPa
Elongation	56	$\delta_{5\geq}$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv \geq /J
HBS	235-268	-
HRC	30	-

ASTM A36 Heat Treatment Regime

Annealing	Quenching	Tempering	Normalizing	Q & T
√	√	√	√	√

ASTM A36 Range of products

Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and cold rolling	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar,	Φ8-1200mm*L	Forging, hot rolling and	Black, Rough Turning,

	Square Bar		cold rolling, Cast	Shot Blasting,
Coil / Strip	Steel Coil /Steel Strip	0.03-16.0x1200mm	Cold-Rolled & Hot-Rolled	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Pipes / Tubes	Seamless Pipes/Tubes, Welded Pipes/Tubes	OD:6-219mm x WT:0.5-20.0mm	Hot extrusion, Cold Drawn, Welded	Annealed, Solution and Aging, Q+T, ACID-WASHED

We can produce Carbon Steel the specifications follows: