TECHNICAL DATA SHEET (TDS)

PRODUCT: 3003 ALUMINUM ALLOY COIL / SHEET

3003 aluminum alloy is an alloy in the wrought aluminum-manganese family (3000 or 3xxx series). It can be cold worked (but not, unlike some other types of aluminum alloys, heat-treated) to produce tempers with a higher strength but a lower ductility. Like most other aluminum-manganese alloys, 3003 is a general-purpose alloy with moderate strength, good workability, and good corrosion resistance. It is commonly rolled and extruded, but typically not forged. As a wrought alloy, it is not used in casting. It is also commonly used in sheet metal applications such as gutters, downspouts, roofing, and siding.

PRODUCT BASIC INFORMATION:

Alloy:	**3003**	
Form:	Sheet, Coil	
Temper:	O, H14, H24, H18	
Dimension:	Thickness:	0.20mm to 6.0mm
	Width:	20.0mm to 2,600mm
	Length:	1,000mm to 4,000mm, or Coil
Surface Finish:	Mill Finish	
Standard Specification:	GB/T 3880, ASTM B209, EN 485	
Application:	General Use	

CHEMICAL COMPOSITION:

Element		**Percentage (%)**
Aluminum	**(Al)**	Remainder
Silicon	**(Si)**	0.6 max
Iron	**(Fe)**	0.7 max
Copper	**(Cu)**	0.05~0.20
Manganese	**(Mn)**	1.0~1.5
Magnesium	**(Mg)**	-
Chromium	**(Cr)**	-
Zinc	**(Zn)**	0.1 max
Titanium	**(Ti)**	-
Remainder Each		0.05 max
Remainder Total		0.15 max

MECHANICAL PROPERTIES:

		O	H14	H24	H18
Ultimate Strength Rm/MPa		95~135	145~185	145~185	≥ 190
Yield Strength Rp0.2/MPa		≥ 35	≥ 125	≥ 125	≥ 170
Elongation Min. %	≥ 0.2~0.5mm	≥ 15%	≥ 2%	≥ 4%	≥ 1%
	≥ 0.5~1.5mm	≥ 17%	≥ 2%	≥ 4%	≥ 2%
	≥ 1.5~3.0mm	≥ 20%	≥ 3%	≥ 5%	≥ 2%
	≥ 3.0~6.0mm	≥ 23%	≥ 4%	≥ 6%	-
Bend Radius (90º)	≥ 0.2~0.5mm	0t	0.5t	0.5t	1.5t
	≥ 0.5~1.5mm	0t	1.0t	1.0t	2.5t
	≥ 1.5~3.0mm	0t	1.0t	1.0t	3.0t
	≥ 3.0~6.0mm	1t	2.0t	2.0t	-

PHYSICAL DATA :

Density (20°C):	2,730	kg/m^3
Melting Point:	643°C	
Thermal Expansion (20°C ~100°C):	23.2 x10^{-6}	/K
Modulus of Elasticity:	70	GPa
Thermal conductivity (Temper O):	193	W·m-1·K-1
Electrical Resistivity (Temper O):	0.034 x10^{-6}	Ω .m
Conductivity (Temper O):	50	%IACS
Magnetic performance:	No	
Color:	Silver	
Odour:	No	

TOLERANCE ON FORMS AND DIMENSIONS :

Thickness Tolerance:	**Thickness**	**Width**			
		≤1000mm	>1000~1250mm	>1250~1600mm	>1600~2000mm
	≥ 0.2~0.4mm	± 0.02mm	± 0.04mm	± 0.05mm	-
	> 0.4~0.5mm	± 0.03mm	± 0.04mm	± 0.05mm	± 0.06mm
	> 0.5~0.6mm	± 0.03mm	± 0.05mm	± 0.06mm	± 0.07mm
	> 0.6~0.8mm	± 0.03mm	± 0.06mm	± 0.07mm	± 0.08mm
	> 0.8~1.0mm	± 0.04mm	± 0.06mm	± 0.08mm	± 0.09mm
	> 1.0~1.2mm	± 0.04mm	± 0.07mm	± 0.09mm	± 0.10mm
	> 1.2~1.5mm	± 0.05mm	± 0.09mm	± 0.10mm	± 0.11mm
	> 1.5~1.8mm	± 0.06mm	± 0.10mm	± 0.11mm	± 0.12mm
	> 1.8~2.0mm	± 0.06mm	± 0.11mm	± 0.12mm	± 0.14mm
	> 2.0~3.0mm	± 0.07mm	± 0.12mm	± 0.13mm	± 0.15mm
	> 3.0~4.0mm	± 0.10mm	± 0.15mm	± 0.17mm	± 0.18mm
	> 4.0~6.0mm	± 0.18mm	± 0.22mm	± 0.24mm	± 0.25mm

Width Tolerance:	Thickness	Width				
		≤300mm	>300~500mm	>500~1250mm	>1250~1650mm	>1650mm
	≥ 0.2~0.6mm	+ 0.4mm	+ 0.6mm	+ 1.5mm	+ 2.5mm	+ 3.0mm
	> 0.6~1.0mm	+ 0.5mm	+ 1.0mm	+ 1.5mm	+ 2.5mm	+ 3.0mm
	> 1.0~2.0mm	+ 0.7mm	+ 1.2mm	+ 2.0mm	+ 2.5mm	+ 3.0mm
	> 2.0~3.0mm	+ 1.0mm	+ 1.5mm	+ 2.0mm	+ 2.5mm	+ 4.0mm
	> 3.0~6.0mm	+ 1.5mm	+ 2.0mm	+ 3.0mm	+ 3.0mm	+ 5.0mm

Length Tolerance:	Thickness	Length			
		≤1000mm	>1000~2000mm	>2000~3000mm	>3000mm
	≥ 0.2~3.0mm	+ 3mm	+ 4mm	+ 6mm	+ 8mm
	> 3.0~6.0mm	+ 4mm	+ 6mm	+ 8mm	+ 10mm

Flatness Tolerance:	Thickness	Total Deviation		
		On Length	On Width	Partial Deviation
	≥ 0.2~0.5mm	By agreement	By agreement	By agreement
	> 0.5~3.0mm	≤ 0.4%	≤ 0.5%	≤ 0.5%
	> 3.0~6.0mm	≤ 0.3%	≤ 0.4%	≤ 0.4%

Lateral Curvature Tolerance:	Width	Lateral Curvature for Specified Length			
		≤1000mm	>1000~2000mm	>2000~3500mm	>3500mm
	≤300mm	≤ 2.0mm	≤ 4.0mm	≤ 8.0mm	-
	>300~600mm	≤ 1.5mm	≤ 3.0mm	≤ 5.0mm	-
	>600~1000mm	≤ 1.0mm	≤ 2.0mm	≤ 4.0mm	≤ 5.0mm
	>1000~2000mm	-	≤ 2.0mm	≤ 4.0mm	≤ 5.0mm
	>2000mm	-	-	≤ 4.0mm	≤ 5.0mm

Squareness Tolerance:	Length	Squareness Tolerance for Specified Width			
		≤1000mm	>1000~1500mm	>1500~2000mm	>2000mm
	≤1000mm	≤ 4.0mm	-	-	-
	>1000~2000mm	≤ 4.0mm	≤ 5.0mm	≤ 6.0mm	-
	>2000~3000mm	≤ 5.0mm	≤ 5.0mm	≤ 7.0mm	≤ 8.0mm
	>3000~5000mm	≤ 6.0mm	≤ 8.0mm	≤ 8.0mm	≤ 10.0mm

OTHER PROPERTIES:

Principal Design Features	This is an alloy with very good corrosion resistance and moderate strength. It is not heat treatable and develops strengthening from cold working only.
Machinability	This alloy is readily machined and is considered as having good machinability for the aluminum alloys.
Forming	This alloy is readily formed by either conventional cold working or hot working.

Welding	Welding is readily accomplished by means of conventional welding methods. Filler rod is generally AL 1100 alloy. When welding AL 3003 to other aluminum alloys, such as 5052, 6061 or 6062 the filler rod should be AL 4043. Gas: Very Good Arc: Very Good Resistance: Good
Heat Treatment	A non-heat treatable alloy.
Hot Working	The hot working range (as for forging) is 420°C to 475°C. In that range the alloy is easily hot worked.
Cold Working	This alloy is readily cold worked by all conventional methods.
Annealing	Annealing, during or following cold working, is done at 415°C, allowing adequate time for thorough heating, followed by air cooling.
Aging	Not applicable to this alloy.
Hardening	Hardens as a result of cold working only.

APPLICATIONS

Typical Applications	Commonly used in chemical equipment, ductwork, and in general sheet metal work. 3003 is also used in the manufacture of cooking utensils, pressure vessels, builder's hardware, eyelet stock, ice cube trays, garage doors, awning slats, refrigerator panels, gas lines, gasoline tanks, heat exchangers, drawn and spun parts, and storage tanks.

PACKAGING, HANDING & STORAGE:

Package:	Packed in waterproof Kraft, fastened by steel straps on wood pallets, suitable for handling, loading and unloading from the trunks or containers, suitable for export ocean forwarding.
Handling:	Prevent the goods hurting the people who are moving, loading, unloading, especially pay attention to the rolling and dropping for the coils.
Storage:	Stored in indoor area on plain floor, free away from moisture, water, snow, animal oils and dye wastes, avoid storing with acid or basic chemical goods.

The above mentioned aluminum product is produced according to national standard specifications, and has no poison, no pollution, and no cauterization. It is common industry metal material.

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