Aluminium / Aluminium 5154 Alloy

Introduction

Aluminium / Aluminium Alloys have strong corrosion resistance. These alloys are sensitive to high temperature ranging between 200 and 250°C (392 and 482°F), and tend to lose some of their strength. However, the strength of aluminium / aluminium alloys can be enhanced at subzero, making them ideal low – temperature alloys.

The aluminium / aluminium 5154 alloy is a wrought alloy. The following datasheet will more details about the aluminium / aluminium 5154 alloy.

Product Features

Bright color and excellent electrical conductivity can bear being blended, good tenstile strength, light density and so on.

Chemical Composition

The following table shows the chemical composition of the Aluminium / Aluminium 5154 alloys:-

									OTHERS		
Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Each	Total	Al(Min)
0.25	0.40	0.10	0.10	3.1–3.6	0.15 –0.25	-	0.20	0.20	0.05	0.15	Balance

Physical Properties

The physical Properties of the aluminium / aluminum 5154 are outlined in the following table:-

PROPERTIES	METRIC	IMPERIAL
Density	2.66 g / cm^3	0.3489 lb/in^3

Mechanical Properties

The mechanical properties of the aluminium / aluminum 5154 alloy are tabulated below:-

PROPERTIES	PROPERTIES	CONDITIONS T (°C)
Density (×1000 kg/m^3)	**2.66**	**25**
Poisson's Ratio	**0.33**	**25**
Elastic Modulus (GPa)	**70-80**	**25**

Tensile Strength (Mpa)	**240**	
Yield Strength (Mpa)	**115**	**25**
Elongation (%)	**25**	
Reduction in Area (%)		
Hardness (HB500)	**63**	**25**
Shear Strength (MPa)	**150**	**25**
Fatigue Strength (MPa)	**115**	**25**

Thermal Properties

The thermal properties of the aluminium / aluminum 5154 alloy are tabulated below:-

PROPERTIES	METRIC	IMPERIAL
Thermal conductivity (@25°C/77°F)	**127 W/mK**	**881 BTU in/hr.ft².°F**
Thermal expansion (@20-100°C/68-212°F)	**23.9 x 10^{-6}/°C**	**75x 10^{-6}/°F**

Types of Finishes

- Lustrous Finish – This type of Finish is usually used for cold heading process which provides the smooth & uniform metal flow. It will provide enhanced & shiny appearance & will anodize well.
- Bright Finish – This type of finish is absolutely clean & chrome like finish improving appearance of the Aluminium Wire.
- Anodizing Finish – This type of finish is clear or colored finish & improves resistance to corrosion. This finish not only provides protection to the surface but also adds strength to the part.

Applications

The aluminium / aluminum 5154 alloy is widely used in the manufacture of Welded Structures, Storage Tanks, Aluminium Pads, Electrical & Telecommunication Cables, Flexible Cables, Coaxial Cables and Pressure Vessels. It is also used in salt water service, Insect Screening, Shielding Wire For Co- Axial Cable & various round wire products, Metal Network – nets, mesh, filter etc.

Al-Mg Alloy Wire 5154

(PARAMETER TABLE)

Nominal Diameter Ø/mm	Diameter Difference ±mm	Resistivity (20℃) ≤ .km／mm2	Measured Resistance (20 ℃) ／km	Density (20 ℃) g／cm3	Conductivity (20 ℃) ≥%
0.1	0.003	48	6111	2.78	36
0.11	0.003	48	5050	2.78	36
0.115	0.003	48	5024	2.78	36
0.12	0.003	48	4244	2.78	36
0.13	0.003	48	3616	2.78	36
0.14	0.003	48	3118	2.78	36
0.15	0.003	48	2716	2.78	36
0.16	0.003	48	2387	2.78	36
0.17	0.003	48	2114	2.78	36
0.18	0.003	48	1886	2.78	36
0.19	0.003	48	1692	2.78	36
0.2	0.004	48	1527	2.78	36
0.25	0.004	48	977	2.78	36
0.3	0.004	48	679	2.78	36
0.35	0.004	48	498	2.78	36
0.4	0.005	48	381	2.78	36
0.45	0.005	48	301	2.78	36
0.5	0.005	48	244	2.78	36
0.64	0.006	48	149	2.78	36
0.7	0.007	48	124	2.78	36
0.81	0.008	48	93.1	2.78	36
0.9	0.009	48	75.4	2.78	36
1.02	0.01	48	58.7	2.78	36
1.13	0.011	48	47.8	2.78	36
1.38	0.013	48	32	2.78	36
1.63	0.016	48	23	2.78	36
1.78	0.017	48	19.2	2.78	36
1.96	0.019	48	15.9	2.78	36

Intensity Test Of The Soft State ≥N	Tensile Strength Of Soft-State ≥N／Mm2	Soft-State Elongation ≥%	Hard Measured Intensity ≥N	Tensile Strength Of Hard-State ≥N／Mm2	Hard Elongation ≥%
1.6	210	8	2.6	340	1
1.9	210	8	3.2	340	1
2.3	210	8	3.8	340	1
2.7	210	8	4.5	340	1
3.2	210	8	5.23	340	1
3.7	210	10	6	340	1
4.2	210	10	6.8	340	1
4.7	210	10	7.7	340	1
5.3	210	10	8.6	340	1
5.9	210	10	9.6	340	1
6.5	210	10	10	340	1
10	210	12	16	340	1
14	210	12	24	340	1
20	210	12	32	340	1
26	210	12	42	340	1
33	210	12	54	340	1
41	210	12	66	340	1
67	210	12	109	340	1
80	210	12	130	340	1
108	210	12	175	340	1
133	210	12	216	340	1
171	210	12	277	340	1
210	210	12	340	340	1
314	210	12	508	340	1
438	210	12	709	340	1
522	210	12	846	340	1
633	210	12	1025	340	1