Technical Data & Characteristics
Aluminium & Aluminium Alloy

Introduction:

All our aluminium materials are produced to the following Standards: -

Aluminium & Alloy Sheet: BS EN 485/515/573

Aluminium Alloy Extrusions: BS EN 755/515/573

There are many alternative types of aluminium & aluminium alloy available.

Please see below, for a description of the aluminium & alloy grades normally used by GA to produce fabricated products. Also detailed, are the available surface finishes (subject to product type).

Material grades:

- 1050A (Sheet): Good formability and corrosion resistance. Widely used for fabrication and metal working.
- 5005 (Sheet): Normally selected for its anodising, corrosion resistance and general forming qualities.
- 6063 (Extrusions): This is a versatile extruded alloy, suitable for a vast range of general and architectural applications. A reasonable surface finish and favourable alloy mix, combine in providing suitable anodising and corrosion resistance qualities.

Surface Finishes:

- Mill (untreated): (Grade 1050A sheet or 6063 extrusion)
- Natural anodising: (Grade 5005 sheet or 6063 extrusion)
- Powder Coating: (Grade 1050A sheet or 6063 extrusion)
- Satin brushing: (Grade 1050A sheet)

BS & European Standards and Specifications:

Aluminium Sheet: BS EN BS EN 485/515/573

BS EN 485: Aluminium & Aluminium Alloy Sheet, strip, plate. Mechanical properties.

BS EN 515: Wrought products, temper designations.

BS EN 573: Chemical composition, form of wrought products.

Aluminium & Aluminium Alloy Extrusions: BS EN 755/515/573

BS EN 755: Extruded bar, rod, tube and profiles. Conditions for delivery, properties, and tolerances.

BS EN 515: Wrought products, temper designations.

BS EN 573: Chemical composition, form of wrought products.

For additional technical and related information, please refer to the next page >

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Anodising: BS EN ISO 7599 2

Anodising of aluminium and its alloys. General specifications for anodic oxidation coatings on aluminium.

Paint & Powder Coating: BS 6496 (1984)

Specification for powder organic coatings for application and stoving to aluminium alloy extrusions, sheet and pre-formed sections for external architectural purposes, and for the finish on aluminium alloy extrusions, sheet and preformed sections coated with powder organic coatings.

Characteristics of Aluminium & Aluminium Alloy:

Bi-metallic Corrosion:

In the presence of moisture, direct contact between aluminium and other metals should be avoided, otherwise bi-metallic corrosion may occur. Where there is such potential for bi-metallic corrosion then the different metals must be isolated from each other by means of a suitable gasket or by coating or painting the contact area. There is no risk of bi-metallic corrosion in dry conditions.

Corrosion Resistance:

Aluminium is highly resistant to weathering, even in polluted industrial atmospheres and resists attack from many acids.

The excellent corrosion resistance of aluminium is due to the permanent presence on the surface of an invisible oxide film, making the material environmentally passive. If the surface is cut or scratched the protective film immediately reforms. Unless some substance or condition destroys this oxide coating, the metal remains resistant to corrosion.

Fire:

Under normal atmospheric conditions aluminium and its alloys, do not burn in the form of sheets, extrusions, castings, foil, etc. Even the thinnest gauge material will not burn, support combustion or contribute to flame spread.

The thermal conductivity of aluminium is around four times that of steel, and its specific heat twice that of steel. Heat is therefore conducted away faster, and a greater heat input necessary to bring aluminium to a given temperature than with steel. Aluminium melts at approximately 655°C and begins to lose strength around 100°C, and starts deforming at approximately 500°C.

As defined by BS476: Part 4 aluminium alloys are non-combustible.

Temperature (effects of):

Temperatures typically encountered within normal living environments, do not affect the performance of aluminium or aluminium alloys.

There is more information on the next page >

Food:

Due to its natural oxide surface-coating aluminium can safely be used in areas of food preparation and service. Please contact our technical department for information on aluminium's reaction to specific foodstuffs.

Lightness:

Aluminium is the lightest of all common metals with a specific gravity of 2.7, being approximately one third that of steel.

The excellent strength to weight ratio of aluminium delivers substantial weight saving benefits of up to 50% when compared with equivalent steel assemblies. Significant cost savings are also achieved in terms of transportation (fuel economy) and easier / faster handling and fixing (fewer personnel).

Non-Magnetic Properties:

The non-magnetic properties of aluminium make it very suitable for use in computer rooms and similar applications involving electronic equipment. Aluminium is also used for electrostatic screening purposes.

Reflection of Radiant Energy:

Aluminium is an excellent reflector of light and heat. About 75% of light and 90% of heat are reflected, making it widely used for lighting fixtures, decorative trims, and insulating applications.

Recycling:

Aluminium has the advantage of a high scrap value and is therefore economic to recycle into reusable high-grade metal.

Recycling aluminium needs only 5% of the energy required to extract from bauxite ore.

Today the use of reprocessed aluminium accounts for 30% of the production of the primary metal. This process can be continually repeated.

Aluminium is therefore a permanently stored energy resource available for future generations.