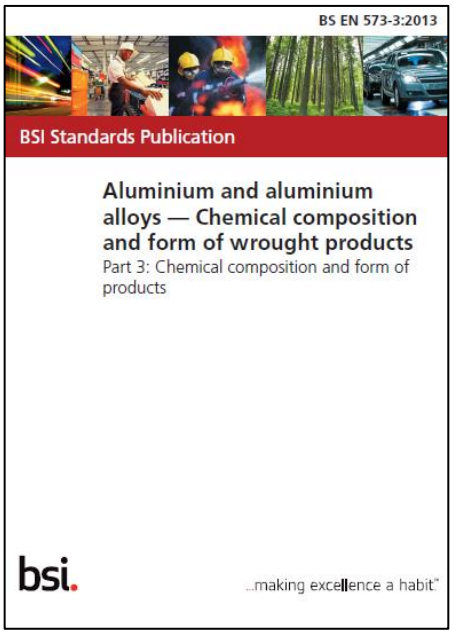
ALUMINIUM GUIDE TO BRITISH STANDARDS

Introduction

The Aluminum Association, based in Washington DC, in 1954, introduced a four-digit system register for all aluminium wrought alloys.

Most international aluminium committees including Euronorm and British Standards and companies have adopted the Aluminum Association and follow the system.

The system is described by BS EN 573 "Aluminium and aluminium alloys. Chemical composition and form of wrought products".



Manufacturers can propose new alloys which are then vetted by other Aluminum Association member companies or representative bodies such as the Aluminium Federation.

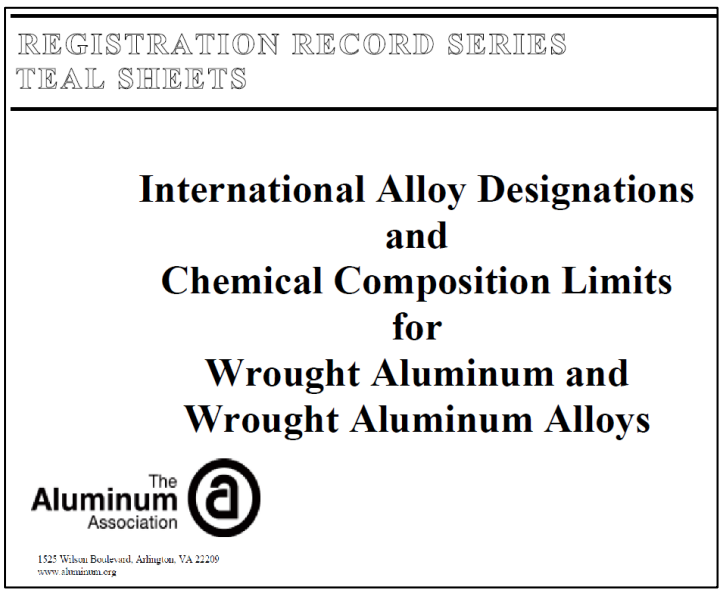
New alloys

- Significantly different to existing ones, (there must be more than 10% change in any alloying element)
- Properties must not be deemed deleterious to their use in service

Exceptions

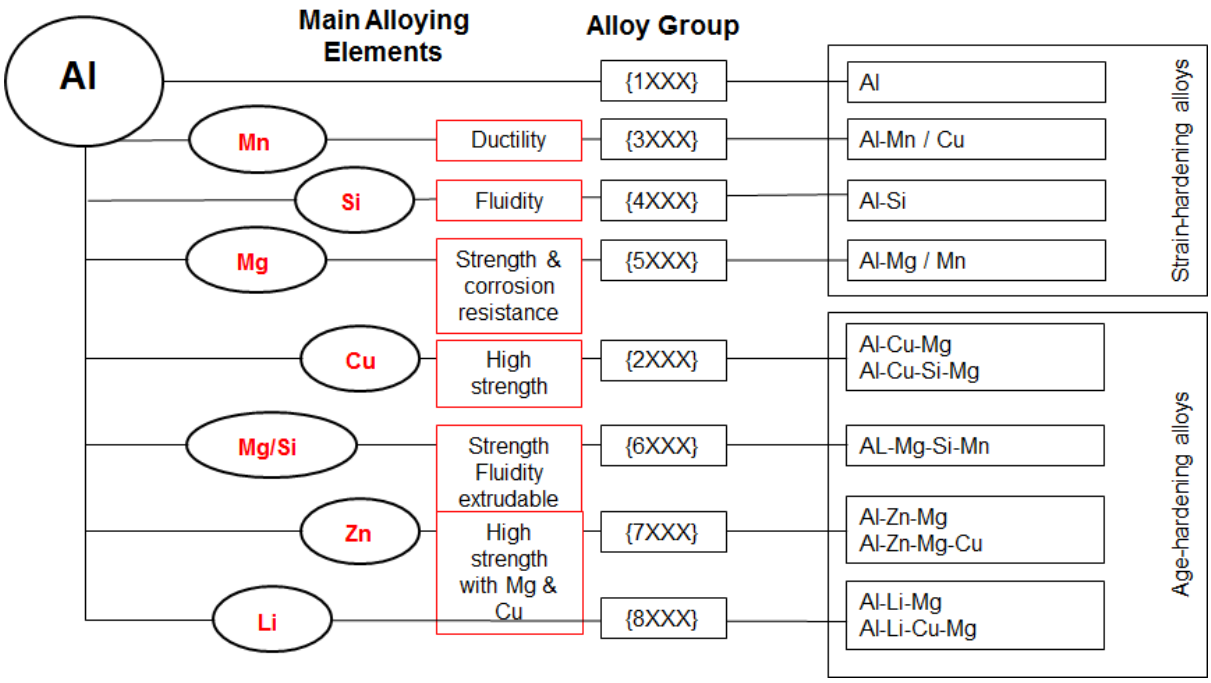
- Minor chemical composition differences are allowed only on an international basis
- Indicated by a fifth digit, usually "A", e.g. American 2014 alloy is very similar to, but not identical with the European 2014A

The Aluminum Association register, 'International Alloy Designation and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys', commonly known as "Teal Sheets" contains over 350 alloys.



Aluminium and its alloys are divided into two broad classes:

- Wrought Aluminium alloys, "those worked by rolling, extrusion, forming or forging into the desired shape."
- Wrought Aluminium is sub-divided into non-heat treatable and heat treatable alloys.
- Aluminium casting alloys, "those which are poured in a molten state into a mould producing a cast shape."
- Some casting alloys are also strengthened by heat treatment, but in this case the distinction is not used as a sub-division.



Guide to Aluminium British Standards and Their Applications
The most used aluminium related British Standards are.

BS EN 485 Aluminium and aluminium alloys. Sheet, strip, and plate. Mechanical properties

- EN 485 – 1 technical conditions for inspection and delivery
- EN 485 – 2 mechanical properties
- EN 485 – 3 tolerances on shape and dimensions for hot rolled products
- EN 485 – 4 tolerances on shape and dimensions for cold rolled products

BS EN 515 Aluminium and aluminium alloys. Wrought products. Temper designations

BS EN 573 Aluminium and aluminium alloys. Chemical composition and form of wrought products.

- BS EN 573-1 Numerical designation system
- BS EN 573-2 Chemical symbol-based designation system
- BS EN 573-3 Chemical composition and form of products
- BS EN 573-5 Codification of standardised wrought products

BS EN 546 - Specification for aluminium and aluminium alloys. Foil

- BS EN 546 – 1 technical conditions for inspection and delivery
- BS EN 546 – 2 mechanical properties
- BS EN 546 – 3 tolerances on dimensions and form
- BS EN 546 – 4 special property requirements

BS EN 541 Rolled products for cans, closures, and lids

BS EN 586 - Aluminium and aluminium alloys. Forgings

- EN 586 – 1 forging – technical conditions for inspection and delivery
- EN 586 – 2 forgings – mechanical properties and additional property requirements
- EN 586 – 3 forgings – tolerances on dimensions and form

BS EN 603 - Aluminium and aluminium alloys. Wrought forging stock

- EN 603 – 1 wrought forging stock – technical conditions for inspection and delivery
- EN 603 – 2 wrought forging stock – mechanical properties
- EN 603 – 3 wrought forging stock – tolerances on dimensions and form
- EN 603 – 4 wrought forging stock – forms of products

BS EN 601 chemical composition of castings for use in contact with food

BS EN 602 chemical composition of semi-products for use in contact with food

BS EN 604 Aluminium and aluminium alloys. Cast forging stock. Technical conditions for inspection and delivery

- EN 604 – 1 cast forging stock – technical conditions for inspection and delivery
- EN 604 – 2 cast forging stock – tolerances on dimensions and form

BS EN 754- Aluminium and aluminium alloys. Cold drawn rod/bar and tube. Mechanical properties

- EN 754 – 1 technical conditions for inspection and delivery
- EN 754 – 2 mechanical properties
- EN 754 – 3 tolerances on dimensions and form, round bars
- EN 754 – 4 tolerances on dimensions and form, square bars
- EN 754 – 5 tolerances on dimensions and form, rectangular bars
- EN 754 – 6 tolerances on dimensions and form, hexagonal bars
- EN 754 – 7 tolerances on dimensions and form, seamless tubes
- EN 754 – 8 tolerances on dimensions and form, porthole tubes

BS EN 755 - Aluminium and aluminium alloys. Extruded rod/bar, tube, and profiles

- EN 755 – 1 technical conditions for inspection and delivery
- EN 755 – 2 mechanical properties
- EN 755 – 3 round bars, tolerances on dimensions and form
- EN 755 – 4 square bars, tolerances on dimensions and form.
- EN 755 – 5 rectangular bars, tolerances on dimensions and form
- EN 755 – 6 hexagonal bars, tolerances on dimensions and form
- EN 755 – 7 seamless tubes, tolerances on dimensions and form
- EN 755 – 8 porthole tubes, tolerances on dimensions and form
- EN 755 – 9 profiles, tolerances on dimensions and form

BS EN 851 -Circle and circle stock for the production of culinary utensils

BS EN 941 - Circle and circle stock for general applications

BS EN 1301 - Aluminium and aluminium alloys. Drawn wire.

- EN 1301 – 1 technical condition for inspection and delivery
- EN 1301 – 2 mechanical properties
- EN 1301 – 3 tolerances on dimensions

BS EN 1386 - Tread plate specifications

BS EN 1396 Aluminium and aluminium alloys. Coil coated sheet and strip for general applications. Specifications

BS EN 14286 - weldable rolled products for tanks for storage/transportation of dangerous goods

BS EN 14287 - Specific requirements on the chemical composition of products intended to be used for the manufacture of packaging and packaging components

BS EN 1592 - Aluminium and aluminium alloys. HF seam welded tubes.

- EN 1592 – 1 HF seam welded tubes: technical conditions for inspection and delivery
- EN 1592 – 2 HF seam welded tubes: mechanical properties
- EN 1592 – 3 HF seam welded tubes: tolerances on dimensions and form for circular tube
- EN 1592 – 4 HF seam welded tubes: tolerances on dimensions and form for square, rectangular and shaped tubes

EN 12020 -1 Precision profiles in EN AW 6060/6063: technical conditions for inspection and delivery

EN 12020 -2 Precision profiles in EN AW 6060/6063: tolerances on dimensions and form

BS EN 15530 Aluminium and aluminium alloys Environmental aspects of aluminium products

BS EN 16914 Armour plates

Further information about aluminium and aluminium alloys, their production, fabrication and end use can be obtained from:

- Aluminium Federation www.alfed.org.uk
- European Aluminium Association in Brussels www.european-aluminium.eu
- International Aluminium Institute in London www.world-aluminium.org

Copies of British Standards can be purchased from https://shop.bsigroup.com/

Information on 'International Alloy Designation and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys' can be accessed from

https://www.aluminum.org/sites/default/files/Teal%20Sheets.pdf