

## Temper Designation Systems

The temper designation system is used for all forms of wrought and cast aluminum alloys except ingot. It is based on the sequence of basic treatments used to produce the various tempers. The temper designation follows the alloy designation, the two being separated by hyphen. Basic temper designations consist of letters. Subdivisions of the basic tempers, where required, are indicated by one or more digits following the letter. These designate specific sequences of various treatments, but only operations recognized as significantly influencing the characteristics of the product are indicated. Should some other variation of the same sequence of basic operations be applied to the same alloy, resulting in different characteristics, then additional digits are added to the designation.

### Basic Temper Designations:

**F**     **As Fabricated**

Applies to the products of shaping processes in which no special control over thermal conditions or strain-hardening is employed. For wrought products, there are no mechanical property limits.

**O**     **Annealed**

Applies to wrought products that are annealed to obtain the lowest strength temper, and to cast products that are annealed to improve ductility and dimensional stability. The O may be followed by a digit other than zero.

**H**     **Strain-hardened (wrought products only)**

Applies to products that have their strength increased by strain-hardening, with or without supplementary thermal treatments to produce some reduction in strength. The H is always followed by two or more digits.

**W**     **Solution heat-treated**

An unstable temper applicable only to alloys that spontaneously age at room temperature after solution heat-treatment. This designation is specific only when the period of natural aging is indicated; for example, W 1/2 hr.

**T**     **Thermally treated to produce stable tempers other than F, O or H**

Applies to products that are thermally treated, with or without supplementary strain-hardening, to produce stable tempers. The T is always followed by one or more digits.