

ROD & BAR ALLOY 6033

ALLOY DESCRIPTION

Alloy 6033 is a higher strength version of alloy 6061, approaching properties typically obtainable with 2000 series alloys. The alloy was developed to also offer improved machinability over 6061. The improved machinability allows the user to increase speeds and feeds thus producing more parts in less time. The alloy also has shown very good corrosion resistance and excellent anodize response.

TYPICAL MECHANICAL PROPERTIES

| Temper | Tensile (.500" Dia. Specimen) | | | | | Hardness Brinell 500kg 10 mm | Shear | | Modulus | |
|----------|-------------------------------|-----|-------|-----|--------------------|---------------------------------------|----------------------------|-----|-----------------------|-----|
| | Ultimate | | Yield | | Elongation/4D % | | Ultimate Shearing Strength | | Modulus of Elasticity | |
| | KSI | MPa | KSI | MPa | | | KSI | MPa | KSI x 10 ³ | Gpa |
| T6, T651 | 60 | 414 | 57 | 393 | 13 | 120 | 39 | 269 | 9.7 | 67 |
| T8 | 58 | 400 | 56 | 386 | 12 | 115 | 38 | 262 | 9.7 | 67 |

COMPARATIVE CHARACTERISTICS

| Temper | Corrosion Resistance | | Cold Workability ³ | Machinability ³ | Anodize Response ³ | Weldability ⁴ | | |
|----------|----------------------|---------------------|-------------------------------|----------------------------|-------------------------------|--------------------------|-----|------|
| | General ¹ | Stress ² | | | | Gas | Arc | Spot |
| T6, T651 | B | A | C | B | B | A | A | A |
| T8 | B | A | C | B | B | A | A | A |

- Ratings A through E are relative ratings in decreasing order of merit, based on exposures to sodium chloride solution by intermittent spraying or immersion. Alloys with A and B ratings can be used in industrial and seacoast atmospheres without protection. Alloys with C, D and E ratings generally should be protected at least on faying surfaces.
- Stress-corrosion cracking ratings are based on service experience and on laboratory tests of specimens exposed to the 3.5% sodium chloride alternate immersion test.
 A= No known instance of failure in service or in laboratory tests.
 B= No known instance of failure in service; limited failures in laboratory tests of short transverse specimens.
 C= Service failures with sustained tension stress acting in short transverse direction relative to grain structure; limited failures in laboratory tests of long transverse specimens.
 D= Limited service failures with sustained longitudinal or long transverse areas.
- Ratings A through D for Workability (cold), A through E for Machinability and A through C for Anodize Response, are relative ratings in decreasing order of merit.
- Ratings A through D for Weldability and Brazeability are relative ratings defined as follows:
 A= Generally weldable by all commercial procedures and methods.
 B= Weldable with special techniques or for specific applications that justify preliminary trials or testing to develop welding procedure and weld performance.
 C= Limited weldability because of crack sensitivity or loss in resistance to corrosion and mechanical properties.
 D= No commonly used welding methods have been developed.

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CHEMICAL COMPOSITION LIMITS

| | | | | | | | | | | Others | |
|----------|------|------|------|------|------|------|------|------|------|--------|-------|
| Weight % | Si | Fe | Cu | Mn | Mg | Cr | Bi | Zn | Ti | Each | Total |
| Minimum | 0.80 | | 0.40 | | 0.70 | | 0.30 | 0.50 | | | |
| Maximum | 1.30 | 0.50 | 1.00 | 0.05 | 1.30 | 0.10 | 1.00 | 1.00 | 0.15 | 0.05 | 0.15 |