

The Aluminum Industry Continues Support for the Marine Market New Temper Definitions Published

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As part of the ongoing effort by the aluminum industry to eliminate potential problems in the selection of aluminum alloys for the marine market, The Aluminum Association has reserved the H116 and H321 tempers for wrought products in the 5xxx series having a nominal magnesium content of 3% or greater. In addition, the definitions of both the H116 and H321 tempers have been modified to require testing for both inter-granular and exfoliation corrosion resistance. Previously the H116 temper required only exfoliation corrosion testing, and the H321 temper had no defined requirement for corrosion testing. The new definitions have been approved by American National Standards Committee H35 and are published in ANSI H35.1-2004 and ANSI H35.1 (M)-2004, which are available from The Aluminum Association Bookstore.

The new temper definitions are consistent with the requirements of the recently developed specification ASTM B 928 "High Magnesium Aluminum-Alloy Sheet & Plate for Marine Service". The new definitions are as follows:

"H116 - Applies to products manufactured from alloys in the 5xxx series, for which the magnesium content is 3% nominal or more. Products are normally strain hardened at the last operation to specified stable tensile property limits and meet specified levels of corrosion resistance in accelerated type corrosion tests. They are suitable for continuous service at temperatures no greater than 150°F (66°C). Corrosion tests include inter-granular and exfoliation;"

"H321 - Applies to products from alloys in the 5xxx series, for which the magnesium content is 3% nominal or more. Products are normally thermally stabilized at the last operation to specified stable tensile property limits and meet specified levels of corrosion resistance in accelerated type corrosion tests. They are suitable for continuous service at temperatures no greater than 150°F (66°C). Corrosion tests include inter-granular and exfoliation."

Users should be advised that changes to specification ASTM B 209-04 this year have removed all references to the high magnesium ($\geq 3\%$) alloys and tempers

for marine application service. Marine service alloys and tempers that require demonstration of inter-granular and exfoliation corrosion resistance are now included only in ASTM B928-04. The marine service alloys and tempers listed are the following:

5059-H116	5383-H116
5059-H321	5383-H321
5083-H116	5456-H116
5083-H321	5456-H321
5086-H116	

Material distributors and OEMs should be ordering and selling high magnesium aluminum-alloys for marine service in accord with specification ASTM B 928-04. Aluminum manufactures should now be producing high magnesium aluminum-alloy for marine service in accord with specification ASTM B 928-04. Ship building material specifications should be amended to reference only ASTM B 928-04 for the above mentioned alloy-temper products. For non-marine applications and for alloys and tempers not listed above, ASTM B209-04 should be referenced.

For those customers formerly using 5083-H321 and 5456-H321 in non-marine applications (per ASTM B 209), the 5083-H32 and 5456-H32 designations have been added to ASTM B 209 to replace them. For non-marine applications, the buyer can now choose between 5xxx-H321 per ASTM B 928 and 5xxx-H32 per ASTM B 209, depending on the application's need for corrosion testing. Copies of these and other ASTM specifications can be ordered from their web site at: <http://www.astm.org>.

If you have any questions regarding the temper definitions or the new specification, please contact your materials provider or contact The Aluminum Association at jweritz@aluminum.org.