

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
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### MAGNESIUM ALLOY EXTRUSIONS AZ61A

1. ACKNOWLEDGEMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Bars, rods, and shapes.

3. COMPOSITION:

|                         |            |
|-------------------------|------------|
| Aluminum                | 5.8 - 7.2  |
| Zinc                    | 0.40 - 1.5 |
| Manganese               | 0.15 min   |
| Silicon                 | 0.30 max   |
| Copper                  | 0.05 max   |
| Nickel                  | 0.005 max  |
| Iron                    | 0.005 max  |
| Other Impurities, total | 0.30 max   |
| Magnesium               | remainder  |

4. CONDITION: As extruded.

4.1 Unless otherwise specified, extrusions shall be supplied with an as-extruded surface finish.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

| Nominal Diameter<br>or Least Thickness<br>Inches     | Tensile<br>Strength<br>psi, min | Yield Strength at 0.2% Offset<br>or at Extension Indicated<br>(E = 6,500,000) |                                      | Elongation<br>% in 2 in.<br>min |
|------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------|--------------------------------------|---------------------------------|
|                                                      |                                 | psi, min                                                                      | Extension Under Load<br>in. in 2 in. |                                 |
| Under 0.250                                          | 38,000                          | 20,000                                                                        | 0.0102                               | 8                               |
| 0.250 to 2.500, incl                                 | 40,000                          | 21,000                                                                        | 0.0114                               | 9                               |
| Over 2.500 to 4.499, incl,<br>but not over 25 sq in. |                                 |                                                                               |                                      |                                 |
| Gross Sectional Area                                 | 38,000                          | 22,000                                                                        | 0.0108                               | 5                               |
| Hollow Shapes of<br>All Wall Thicknesses             | 36,000                          | 16,000                                                                        | 0.0089                               | 7                               |

5.2 Hardness: Material should have hardness not lower than Brinell 50 using 500 kg load and 10 mm ball or 1000 kg load and 9/16 in. ball, or not lower than Brinell 57 using 1000 kg load and 10 mm ball, but shall not be rejected on the basis of hardness if the tensile property requirements are met.

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