

Composition and Properties of ACuZinc and Comparative Data for Other Materials.

DIECASTING
PROPERTIES

| DESIGNATION | ALLOY GROUP | ACuZinc | ZINC | ZINC | ZINC-ALUMINUM | ALUMINUM | MAGNESIUM | PLASTIC | |
|---|---|------------|------------|------------|-----------------|-----------|-----------|---------------------------------|--------|
| | ASTM Designation | | AG40A | AC41A | ZA-8 (Die Cast) | | | | |
| | General Designation | ACuZinc 5 | Zamak 3 | Zamak 5 | ZA-8 | 380 | AZ-91D | Polypropylene Nylon (30% Glass) | |
| | General Motors Designation | GM3913M | | | | | | | |
| COMPOSITION PERCENTAGE BY WEIGHT | Al Aluminum | 2.8-3.3 | 3.5-4.3 | 3.5-4.3 | 8.0-8.8 | | | | |
| | Cu Copper | 5.0-6.0 | 0.25 Max. | 0.75-1.25 | 0.8-1.3 | | | | |
| | Mg Magnesium | 0.025-0.05 | 0.025-0.05 | 0.03-0.08 | 0.015-0.030 | | | | |
| | Fe Iron | 0.075 Max. | 0.100 Max. | 0.100 Max. | 0.075 Max. | | | | |
| | Pb Lead | 0.005 Max. | 0.005 Max. | 0.005 Max. | 0.006 Max. | | | | |
| | Cd Cadmium | 0.004 Max. | 0.004 Max. | 0.004 Max. | 0.006 Max. | | | | |
| | Sn Tin | 0.003 Max. | 0.003 Max. | 0.003 Max. | 0.003 Max. | | | | |
| | Zn Zinc (99.99%) | Remainder | Remainder | Remainder | Remainder | | | | |
| PHYSICAL PROPERTIES | Density | | | | | | | | |
| | lb/in ³ | 0.247 | 0.24 | 0.24 | 0.227 | 0.098 | 0.066 | 0.032 | 0.05 |
| | kg/m ³ | 6850 | 6600 | 6700 | 6300 | 2713 | 1827 | 900 | 1400 |
| | Melting Range | | | | | | | | |
| | °F | 755-936 | 718-728 | 717-727 | 707-759 | 1000-1100 | 875-1105 | - | - |
| | °C | 402-502 | 381-387 | 380-386 | 375-404 | 538-593 | 468-596 | - | - |
| | Coefficient of Thermal Expansion | | | | | | | | |
| | µin/in/°F | 13.3 | 15.2 | 15.2 | 12.9 | 11.8 | 14 | 44-83 | 13-22 |
| | µm/m°K | 24 | 27.4 | 27.4 | 23.3 | 21.2 | 25.2 | 80-150 | 23-40 |
| | Thermal Conductivity | | | | | | | | |
| | BTU/ft.hr°F | 61.2 | 65.3 | 62.9 | 66.3 | 55.6 | 41.8 | 0.092-0.139 | 0.29 |
| | W/m°K | 106 | 113.0 | 108.9 | 114.7 | 96.2 | 72.3 | 0.16-0.24 | 0.5 |
| Electrical Conductivity | | | | | | | | | |
| %IACS | 26.9 | 27 | 26 | 27.7 | 27 | 11.5 | 0 | 0 | |
| 10 ⁻⁹ Ω.m | 64 | 63.9 | 66.3 | 62.2 | 63.9 | 27.2 | 0 | 0 | |
| MECHANICAL PROPERTIES | Tensile Strength | | | | | | | | |
| | psi | 59,000 | 41,000 | 47,600 | 54,200 | 47,000 | 34,000 | 4,800 | 17,400 |
| | MPa | 407 | 283 | 328 | 374 | 324 | 234 | 33 | 120 |
| | Yield Strength (0.2% offset) | | | | | | | | |
| | psi | 49,000 | 32,000 | 33,000 | 42,000 | 24,000 | 23,000 | - | - |
| | MPa | 338 | 221 | 228 | 290 | 165 | 159 | - | - |
| | Elongation (% in 2") (% in 51mm) | | | | | | | | |
| | | 5 | 10 | 7 | 8 | 3 | 3 | >100 | 6 |
| | Shear Strength | | | | | | | | |
| | psi | 40,600 | 31,000 | 38,000 | 40,000 | 27,000 | 20,000 | - | - |
| | MPa | 280 | 214 | 262 | 276 | 186 | 138 | - | - |
| | Hardness | | | | | | | | |
| BHN (Brinell) | 118 | up to 82 | up to 91 | up to 103 | up to 80 | up to 63 | - | - | |

Note: Data shown is typical for the material and process used and is intended for comparison and guidance only.