

# Composition of casting alloys used by Dynacast

## Alloys

Alloy Group	Zinc				Zinc-Aluminum	Aluminum	Aluminum	Magnesium
Common Name	Zamak 3 AG40A	Zamak 5 AC41A	Zamak 7 AG40B	Zamak 2 AC43A	ZA-8 B669-84	380	B-390	AZ91D

## Composition

Copper	0.25 Max	.75 - 1.25	0.25 Max	2.5 - 3.5	.8 - 1.3	3.0 - 4.0	4.0 - 5.0	0.03
Aluminium	3.5 - 4.3	3.5 - 4.3	3.5 - 4.3	3.5 - 4.5	8.0 - 8.8	Remainder	Remainder	8.3 - 9.7
Magnesium	0.02 - 0.05	0.03 - 0.08	0.005 - .002	0.02 - 0.1	0.015 - 0.03	0.1	0.45 - 0.65	Remainder
Iron (Max)	0.1	0.1	0.075	0.1	0.1	2.0	1.3	0.005
Lead (Max)	0.005	0.005	0.003	0.007	0.004	-	-	-
Cadmium (Max)	0.004	0.004	0.002	0.005	0.003	-	-	-
Tin (Max)	0.003	0.003	0.001	0.005	0.002	0.35	-	-
Nickel	-	-	0.005 - 0.02	-	-	0.5	0.1	0.001
Zinc (99.99% + Purity)	Remainder	Remainder	Remainder	Remainder	Remainder	3.0	1.5	0.35 - 1.0
Silicon	-	-	-	-	-	7.5 - 9.5	16.0 - 18.0	0.05
Manganese	-	-	-	-	-	0.5	0.5	0.15

Casting alloys are durable and have good strength, are light weight, rust proof and corrosion resistant, have excellent current carrying and wear properties, are easily finished by plating or with organic or inorganic finishes, have self-lubricating properties and excellent castability.

**Zamak 3** is the lowest cost all purpose alloy.

**Zamak 5** has the highest impact strength of all the zinc based alloys, is approximately 10% higher in tensile strength than Zamak 3.

**Zamak 7** is the softest most ductile alloy, good in applications that require forming during assembly.

**Zamak 2** has excellent compressive and shear strength and because of a higher copper content has improved wear characteristics.

**ZA-8** has good creep strength. It is also higher in tensile strength than all the Zamak alloys. It also has superior plating and finishing characteristics.

**Aluminum 380** This alloy is the workhorse of the aluminum alloys. It is most often specified because it offers the best combination of casting and product properties.

**Alloy 390** is a hypereutectic aluminum-silicon alloy with applications extending to a wide range of castings where high wear resistance, associated with lightness, is required and especially where advantage can be taken of the economics of the diecasting process, e.g. pumps, pulleys, brake shoes and air compressors.

**Magnesium AZ91D** High purity alloy, lightest of all structural metals with dimensional stability, high-strength-to-weight-ratio, good vibration and sound damping and good bearing properties.