

Delphi K-Alloy/ A304

U.S. Patent Number: 6,733,726 – High Corrosion Resistance Aluminum Alloy

Delphi's K-Alloy/A304 is a patented casting alloy engineered to protect today's most critical components from harsh operating environments. K-Alloy/A304 is designed for die casting. Millions of parts have been produced using Delphi's K-Alloy/A304 since its introduction in 2003, eliminating the need for expensive pre and post processing such as anodizing, chromating, and paint.

Benefits

- Excellent corrosion resistance offers unique engineering solutions
- Eliminates pre/post processing needs such as anodizing and paint
- Better thermal conductivity for improved cooling (15% over A380)
- Superior finishing quality for high polish applications
- Cost effective processing characteristics:



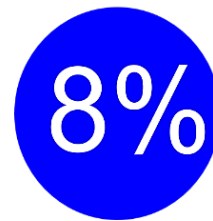
Corrosion Resistant Thermal Conductivity

Offers unique engineering solutions, no paint or coatings required.



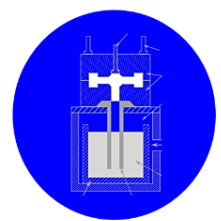
15% better than A380

- Same castability and flow properties as standard die casting alloys
- Use existing molds to achieve desired product dimensions
- Same mechanical and flow properties as standard die cast alloys
- No special tooling or process parameters required



High Elongation

5% as cast
8%-14% heat treated



Longer Die Life

Equal to A380. Die life is 2-3x longer than other alloys. The iron % makes it easily castable.

Typical Applications

Delphi's K-Alloy/A304 is suitable for many diverse applications:



Automotive



Marine



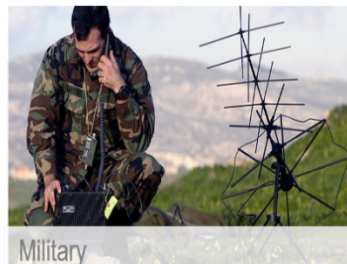
Lighting and Telecommunications



Construction / Agriculture



Furniture



Military

- Automotive, transportation, and harsh under the hood environments
- Electronic component housings exposed to harsh environments.
- Defense applications, such as drones, military radios, and antennas.
- Indoor and outdoor lighting such as stadium lighting.
- Recreational equipment, such as boats and fishing equipment.

Delphi Technologies licenses K-Alloy producers (smelters) worldwide who can sell K-Alloy/A304. Contact us today to find what smelters may be in your region or country:

info@dgimgmt.com - (949) 757-0341

Property Comparison

Property	K-Alloy as cast	K-Alloy heat treated	Aural-2	A360	A380 ADC12	A383	A413
Tensile Strength (PSI)	43,000	42,000	41,000	46,000	47,000	49,000	42,000
Yield Strength (PSI)	25,000	23,000	20,000	25,000	23,000	23,000	19,000
Elongation	5.0%	8-14%	4.5% as cast 8-11% heat treated	3.5%	3.5%	3.5%	3.5%
Thermal Conductivity (W/m.k. @77°F)	120	120	120	113	96	96	121
Electrical Conductivity (% of AICS)	32	-	-	27	25	28	31
Density (gms cm-3)	2.63	2.63	2.64	2.63	2.71	2.74	2.66
Corrosion Resistance (1=worst, 10=best)	10	10	10	6	3	3	6
Die Life % of A380	100%	100%	40%	100%	100%	100%	100%
Cast-ability (1=worst, 10=best)	10	10	6	6	10	10	5

Delphi K-Alloy/A304 Comparison vs. A360 Alloy



On the left: K-Alloy/A304 housing does not show signs of corrosion, but deterioration is evident on the fasteners and screws (see the white ring around the contact point)

On the right: A360 Alloy housing shows signs of surface chemical reaction resulting in significant corrosion on the housing top cover.



On the left: K-Alloy/A304 shows the same housing above with the top cover removed. The sealed surface remains intact and shows no signs of water intrusion nor surface corrosion.

On the right: A360 Alloy housing shows signs of water intrusion. Corrosion to the edge of the housing is pronounced. The raised area on the perimeter shows signs of aggressive corrosion and severe surface pitting.

