K- Alloy / A304

Corrosion Resistant, High Elongation Aluminum Alloy

DELPHI

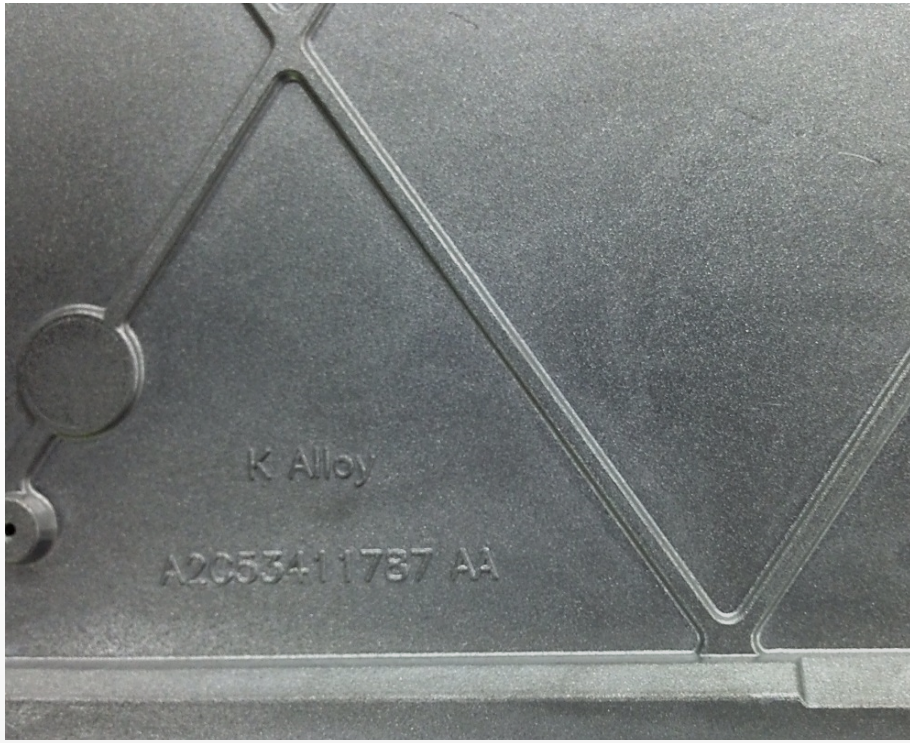
Innovation for the Real World

K-Alloy / A304

Why Use K-Alloy?

Aluminum alloy that provides unexpected levels of corrosion resistance when compared to traditional aluminum alloys.

- Water intrusion due to corrosion
- Components being placed lower in the vehicle
- Components going into harsher environments
- Strict environmental requirements
- New enviroments for aluminum components due to weight reduction requirements

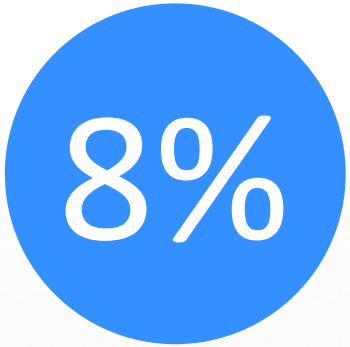


DELPHI

Innovation for the Real World

K-Alloy / A304

Benefits



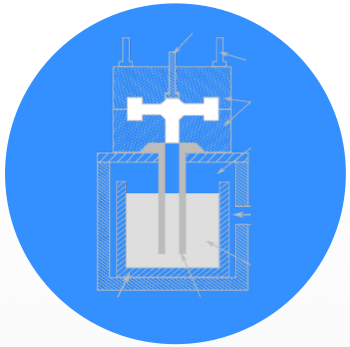
High Elongation

5% as cast

8%-14% heat treated

Corrosion Resistant

Offers unique engineering solutions, no paint or coatings required.



Longer Die Life

Equal to A380. Die life is 2-3x longer than other alloys. High iron content.

Thermal Conductivity

15% better than A380

DELPHI

Innovation for the Real World

K-Alloy / A304

Typical Applications

Automotive Applications

Marine Applications

Indoor / Outdoor Lighting

Construction / Agriculture Equipment

Furniture

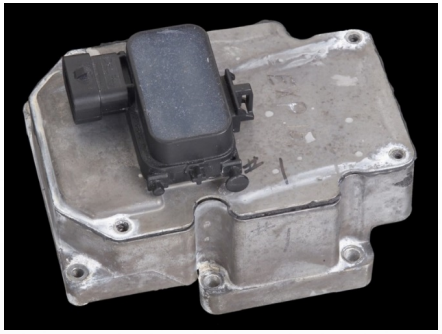
Military Applications

DELPHI

Innovation for the Real World

K-Alloy / A304

Corrosion Resistance



K-Alloy / A304

The housing shows no visual corrosion, nor metal loss die to chemical reaction.

A360 Alloy

The housing shows signs of material loss, pitting, and raised perimeter completely missing.

K-Alloy / A304

The same housing shows the top cover removed. The sealed surface remains intact and shows no signs of water intrusion nor surface corrosion.

A360 Alloy

Housing shows signs of water intrusion. Corrosion to the edge of the housing is pronounced. Severe surface pitting is evident.

DELPHI

Innovation for the Real World

K-Alloy / A304

Material Properties

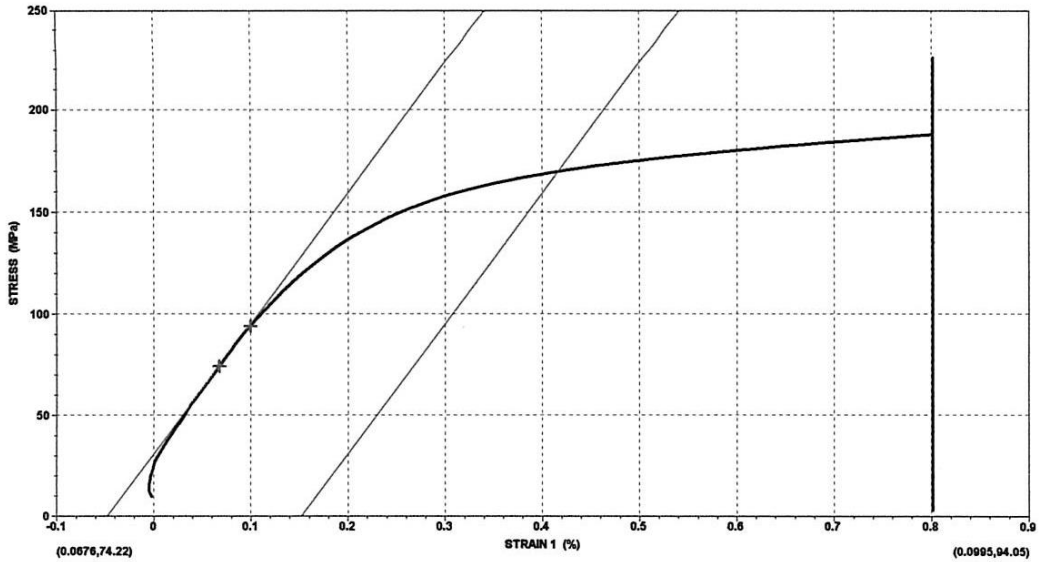
Property	K-Alloy as cast	K-Alloy heat treated	Silafont-36	Aural-2	A360	A380	A383	A413
Tensile Strength (PSI)	43,000	42,000	41,000	36,000	46,000	47,000	49,000	42,000
Yield Strength (PSI)	25,000	23,000	20,000	18,000	25,000	23,000	23,000	19,000
Elongation	5.0%	8-14%	4.5% as cast 8-11% heat treated	5.0% as cast 8-10% heat treated	3.5%	3.5%	3.5%	3.5%
Thermal Conductivity (W/m.k. @77°F)	120	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	2.64	2.63	2.71	2.74	2.66
Corrosion Resistance (1=worst, 10=best)	10	10	10	10	6	3	3	6
Die Life % of A380	100%	100%	40%	40%	100%	100%	100%	100%

DELPHI

Innovation for the Real World

K-Alloy / A304

Material Properties – After heat treatment



UTS 196 MPa
YS 170 Mpa
8% elongation at break

K-Alloy responds well to heat treatment for elongation (high e%) application needs

Many new structural automotive castings require higher e%

DELPHI

Innovation for the Real World