

Delphi K-Alloy and K-Alloy SP

Delphi K-Alloy and Delphi K-Alloy SP are aluminum casting alloys with designed-in corrosion resistance. The Delphi K-Alloy SP is designed for sand casting and permanent mold applications, enabling free-flowing ease of casting. The original Delphi K-Alloy, originally introduced in 2003, suits die casting.

These proprietary alloys provide cast parts with substantial protection from environmental corrosion that often significantly deteriorate components produced with traditional aluminum alloys. Products produced with Delphi K-Alloy and Delphi K-Alloy SP show corrosion resistance superior to parts made with traditional die casting aluminum alloys like A380, A360, and A413 and sand casting and permanent alloys like 319 and 356.

By specifying Delphi K-Alloy, companies can eliminate other expensive post processing designed to minimize corrosion, such as anodizing, chromating, powder coating, and painting. And because Delphi K-Alloy is corrosion resistant throughout, surface damage does not compromise corrosion resistance, which is unlike other coated alloys.

Millions of parts have been produced using Delphi K-Alloy since its introduction. The granted United States patent number for this technology is 6,733,726—High Corrosion Resistance Aluminum Alloy.

► Benefits

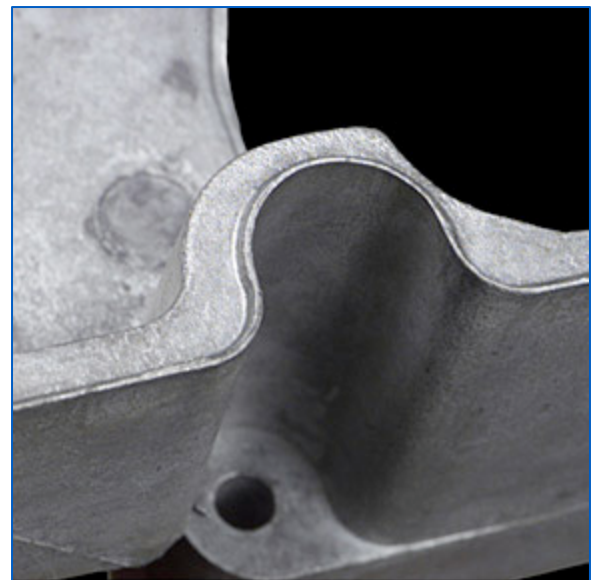
- Excellent corrosion resistance offers unique engineering solutions and can improve product durability
- Improved finishing quality for high polish applications
- Potential savings by elimination of post production corrosion treatments Improved heat dissipation offers new engineering solutions
 - For example, Delphi K-Alloy has 15% better thermal conductivity than A380 die casting alloy
- Time-proven performance in automotive, outdoor lighting, traffic controls, electrical and recreational products
- Suitable for use with multiple casting methods
 - Semi-permanent (Delphi K-Alloy)
 - Permanent (Delphi K-Alloy SP)
 - Sand (Delphi K-Alloy SP)
- RoHS compliant for applications in Europe

► Typical Applications

While originally developed for use in the automotive market, both Delphi K-Alloy and Delphi K-Alloy SP are well suited for products that will be used in corrosive environments and with demanding heat dissipation requirements.



Corrosion level of a conventional A360 aluminum casting when subjected to a 30-day salt spray test.



When subjected to the same test, a Delphi K-Alloy casting exhibits virtually no signs of corrosion. (Both samples have been lightly glass bead blasted to remove salt residue.)

Delphi K-Alloy is suited for use in multiple casting methods, including semi-permanent mold casting. Delphi K-Alloy PS is suited for use in sand and permanent mold casting.

Delphi's aluminum casting alloys can be used in markets as diverse as:

- Electronics components and housings
- Indoor/outdoor lighting
- Electrical components
- Recreational equipment
- Marine equipment (including salt-water environments)
- Antenna bases
- Furniture
- Harsh-environment production equipment (e.g., food or chemical processing)

▶ **Typical Physical Properties for Permanent Mold and Sand Casting for Delphi K-Alloy PS**

	Ultimate Tensile	Yield Strength	Elongation	BHN
Permanent Mold T6	38,000	32,000	4%	86
Permanent Mold (as cast)	28,000	13,000	6%	60
Sand Casting T6	40,000	32,000	4%	87
Sand Casting (as cast)	25,000	11,000	8%	53

▶ **Typical Physical Properties for Die Casting for Delphi K-Alloy**

Young's Modulus	10,400,000 psi
Ultimate Tensile Strength	39,800 psi min.
Yield Strength	20,600 psi min.
Elongation	4.5% min.

▶ **Technical and Licensing Representative**

Delphi has appointed MDW Technologies, LLC (<http://www.mdwtech.com/kalloy>) as its technical and licensing representative to broaden its customer base. MDW identifies and works with potential licensees and their requirements, supports non-commercial trial casting of Delphi K-Alloy, and may assist in other activities leading to production-ready systems.

For more information about Delphi K-Alloy, Delphi K-Alloy PS, and MDW, contact:

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