

# alpha



## ALPHA Solder Preform Solutions Industrial Applications



[macdermidalpha.com](http://macdermidalpha.com)  
July, 2021

# Why ALPHA Solder Preforms for Industrial Applications?

From the initial alloying to the final packaging, every step of preform production is managed in house by Alpha offering customers complete process control from creation to completion. With an extensive global manufacturing footprint and dedicated technical support teams, Alpha is uniquely placed to provide the solutions for your industrial assembly builds.

**Precise Fit:** ALPHA Solder Preforms can fit over or be inserted into difficult to solder processes like connector pins and cable termination interconnects.

**Solder Volume and Flux Level Consistency:** Resulting from Alpha's tightly controlled processing tolerances, ALPHA Solder Preforms provide a precise solder volume and minimal amount of flux that ensures a highly repeatable soldering result. This consistency benefits critical components assemblies.

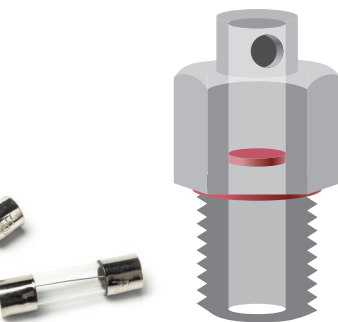
**Extensive Alloy Range:** Alpha offers Solder Preforms in a wide selection of alloys ranging in melting temperatures from as low as 47°C (117°F) to well over 300°C (572°F). The combination of precise solder volume and specific alloys allows for manageable assembly temperatures, enabling a fuse function or a long plastic range; where the solder preform can be pre-assembled to the component for final soldering at a later time.



Mil-spec connectors



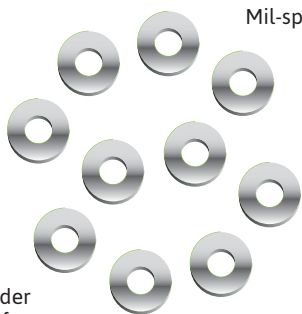
Air-bag igniter



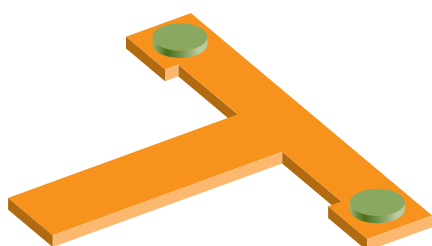
Various fuse applications



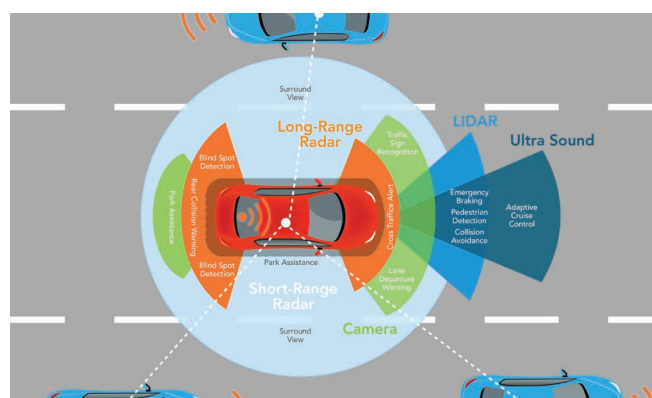
Telecommunications



Solder preforms provide a hermetic seal.



Alloys with a large pasty range enable a preassembled solderable connect.



ADAS (advanced driver-assistance systems)



**ALPHA Preform Industrial Soldering Solutions are used in:**



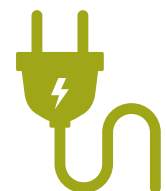
Communication Technology



Transportation



Safety Devices

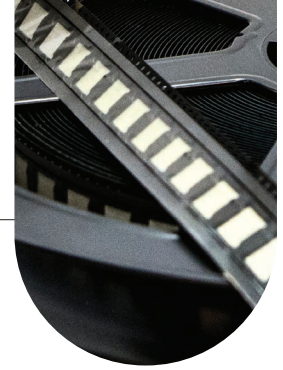


Energy Systems

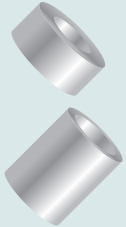


Industrial General Purpose

# ALPHA Solder Preforms Product Offering



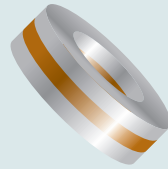
ALPHA Solder Preforms come in a very wide range of alloys, sizes and shapes and can be fluxed if required.



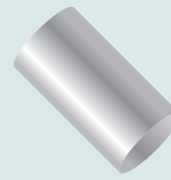
Washers and sleeves



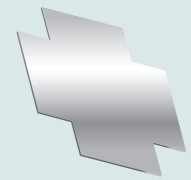
Discs, rectangles



Laminates



Segments



Customized Shapes

## Process implementation

ALPHA Solder Preforms are delivered in bulk or tape & reel packaging. Bulk Preforms can be processed manually, with a jig, fixture or automated feeder systems. ALPHA Solder Preforms are fully compatible with all standard soldering processes such as induction, laser, light beam, soldering iron, hot plates, torch and heat guns.

## ALPHA Preform Alloy and Flux Selector

### Leaded Alloy

Leaded Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	Solidus in °C	Liquidus in °C			
Sn62 Pb36 Ag2	179	354	General Industrial	Silver containing eutectic alloy	
Sn63 Pb37	183	361	General purpose	Most popular leaded eutectic alloy	
Sn60 Pb40	183-188	361-370	General purpose	Off-eutectic, silver-free alloy	
In50 Pb50	184-209	363-408	Communication	High ductility alloy	

Low temperature leaded Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	°C	°F			
Sn16 Pb32 Bi52	95-96	203-205	Safety devices	Ultra-low temperature, cadmium-free	
Sn25 Pb25 Bi50	95-115	203-239	Safety devices	Low temperature, cadmium-free	

High temperature leaded Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	°C	°F			
Sn27 Pb70 Ag3	179-253	354-487	Automotive defroster	High leaded alloy with long pasty range  Most popular high leaded, high temperature alloys	
Sn10 Pb88 Ag2	268-290	514-554	Electrical components		
Sn5 Pb92.5 Ag2.5	280	536	Electrical components		
Sn2 Pb95.5 Ag2.5	299-304	570-579	Electrical components		
In5 Pb92.5 Ag2.5	300	572	Electrical components		
Sn5 Pb95	310-314	590-597	Electrical components		



Multi-busbar solar cells and modules



Preforms attach brushes to lids

# ALPHA Solder Preforms Product Offering

## ALPHA Preform Alloy and Flux Selector

### Lead-Free Alloy

RoHS compliant Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	°C	°F			
SAC305*	217-221	422-430	General purpose	Most popular RoHS compliant alloy	
SACX	217-228	422-442	General purpose	Low-silver (Ag0.3) SAC alloy	
Sn96.5 Ag3.5	221	430	General purpose	Eutectic, copper-free	
SN96 Ag4	221-238	430-460	General purpose	Off-eutectic, copper-free	
Sn99 Sb1	235	455	General purpose	Eutectic, Sb containing alloy	
Sn95 Sb5	232-240	450-464	General purpose	Off-eutectic, Sb containing alloy	
Low temperature RoHS compliant Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	°C	°F			
Sn42 Bi58	138	280	General purpose	Eutectic, RoHS compliant alloy	
Sn42 Bi57.6 Ag0.4	138-139	280-282	General purpose	Silver added for ductility	
Sn60 Bi39.6 Ag0.4	138-170	280-338	General purpose	Off-eutectic, low temperature RoHS alloy	
Sn52 In48	118-131	244-268	Special	Ultra-low temperature, off-eutectic alloy	
Sn48 In52	118	244	Special	Ultra-low temperature, eutectic alloy	
High reliability RoHS compliant Exactalloy®		Melting temperature range		Industry	Remarks
Alloy name	°C	°F			
INNOLOT	206-218	403-424	Automotive, underhood	High reliability alloy	
Powerbond® 2050	235-240	455-464	Power semiconductor	Thermal fatigue resistance alloy	
Powerbond® 2110	222-266	432-511	Power semiconductor	Thermal fatigue resistant, high thermal conductive alloy	

\*Various other SAC alloy variants can be made available, including SAC105, SAC387 and SAC405

\*\*Above listed alloys are the most commonly used types in our industries. Please consult us about the availability of other alloys.

### Flux

ALPHA® external flux coating for Preforms	
Flux type	Remarks
RMA, ROLO	No-clean, halide-free, mildly activated flux (Finishes: Ni/Au, Ag, Cu, etc.)
RMA, ROL1	No-clean, mildly activated flux (Finishes: Ni/Au, Ag, Cu, etc.)
RA, ROM1	No-clean flux with higher activation (Finishes: Brass, Ni, Cu, Sn, etc.)
RSA, ROH1	No-clean flux with highest activation for challenging soldering surfaces
ALPHA® internal flux core for Preforms	
Flux type	Remarks
RMA, ROLO	Halogen-free, mildly activated flux (Finishes: Ni/Au, Ag, Cu, etc.)
RA, ROM0	Halide-free flux with higher activation (Finishes: Brass, Ni, Cu, Sn, etc.)
RSA, ROM1	Highest flux activation for challenging soldering surfaces
*Above listed fluxes are the most commonly used types in our industries. Please consult us about the availability of other flux types.	
KESTER® Tacky Fluxes for Preforms	
Flux type	Remarks
Kester TSF Flux	Tacky flux that can be used to keep preforms in place before soldering

ALPHA offers a wide selection of fusible alloys in a range of alloys and melting temperatures. For more information contact your local MacDermid Alpha Salesperson.



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Alpha and Kester are product brands of MacDermid Alpha Electronics Solutions.

**For more information, contact us at  
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