



MBO Custom Solder Preforms

Alloys, Shapes and Sizes

Production cost benefits can be achieved from the introduction of solder preforms through reducing application time, inspection and quality control.

Wherever consistent volume and repeatable product quality are essential, MBO have taken the lead in developing solder forms suitable for use in either manual or automatic pick and place assembly systems. Due to the increasing demand for these types of product a department within our manufacturing facility has been dedicated to the development and production of bespoke Solder Preforms.

Preform parts are manufactured as consistent volume solder shapes made from either traditional alloys or special composites formulated to suit individual customer requirements. Applications where solder preforms are best suited are usually high volume manufactured products to include: capacitors, connectors, fuses, resistors, relays, semiconductors and thermistors amongst other numerous PCB assembly applications which require accurate solder deposition or soldering of assembled parts which maybe inaccessible using traditional methods.

Selection of Solder Preforms:

- ✓ For use with automatic pick and place equipment or hand assembly techniques.
- ✓ To reduce assembly costs.
- ✓ To guarantee consistent uniform quality of the soldered joint.
- ✓ To perform jointing in places that are inaccessible by normal soldering techniques.
- ✓ To reduce the need for qualified operators.
- ✓ MBO Solder Preforms can be manufactured with or without incorporated flux. To suit the particular application being addressed.

A range of standard shapes and sizes are available. Custom shapes can also be produced (subject to additional tooling charges).

Alloys used in Solder Preforms meet the requirements of NFC 90550, DIN 1707 (8511 – 8516), British Standard BS219 as well as J-Std specification.

Preforms

The solution to volume production/cost problems



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Types of Preforms & Application

Preformed Tapes

Available with hole pitches of either 2.54mm or 5.08mm. These tapes are packaged on reels and for the narrower types, are wound in a similar fashion to solder wire.

Placement

MBO Preforms have a consistent shape and weight and are therefore quickly and easily placed without excessive control, by automatic, semi-automatic or manual methods.

Handling equipment often used is the vibrating bowl with conveyancing to the point of soldering by either gravity or vacuum pick and place tooling.

When the quantities used in production do not justify the use of automatic equipment, a pair of tweezers or the use of a suction pencil will also yield excellent results.

Heating

Several systems can be considered however; they are dependent upon the following factors:

- Ease of soldering accessibility.
- Melting point of the alloy.
- Neighbouring materials.
- Heat capacity of the product parts being soldered.
- Shape and size of the work to be soldered.

Types of Heating

Induction method: Adaptable, but maybe limited by the shape of the inductor.

Infrared Red Method: Infrared Red heating is recommended for assemblies that are heat sensitive. Heat from the Infrared Red source can be focused to a point enabling high temperatures to be reached quickly in confined areas, if required.

Convection Oven Heating Method: A very flexible method using a gas or electric heating source. Uniform temperatures can be obtained within the enclosure. An added benefit is the possibility of the introduction of an inert gas into the chamber that can give protection against oxidation. By adapting this method it is also easy to control any excessive heat build-up by appropriate regulation of a conveyer system. A further extension of this system, for faster throughput, is the addition of Infrared Red pre-heating.

Laser Soldering: Focused energy, accurate and efficient.



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Types of Preforms

Discs

Discs are generally circular shapes but can also take the form of Squares, Rectangles and Hexagons. Both may be manufactured with or without flux. Sizes vary from 1.00mm to 30mm in diameter and can be made in thicknesses between 0.30mm and 7mm.

Washers

Washers can be circular or shaped (Hexagon, Rectangular or Square). Preform Washers can be manufactured from material of a 0.15mm minimum thickness in solid form and from 0.20mm in flux cored form.

Balls

Balls are perfectly spherical volumes, the range of diameters vary from 0.5mm to 6mm, available with or without flux. Balls have the advantage of being easier to distribute more evenly than discs or washers and can be placed in areas that are difficult to reach.

OTHER POSSIBLE FORMS AND SHAPES INCLUDE:

Shaped Wire

The most common is being made into the shape of an O-ring or coils (like springs) in different diameters up to 6mm. Others are available on request.

Wire Segments

Solder wire lengths cut in varying lengths forming pellets, these are available in numerous sizes.

Tapes

Tapes are available in any width up to 30mm, they can be made in thicknesses from 120 microns for no-flux-cored and from 150 microns for flux-cored types.

Formed Tapes

The most common form here is when segments of wound alloy tapes are formed into tubes of various sizes.

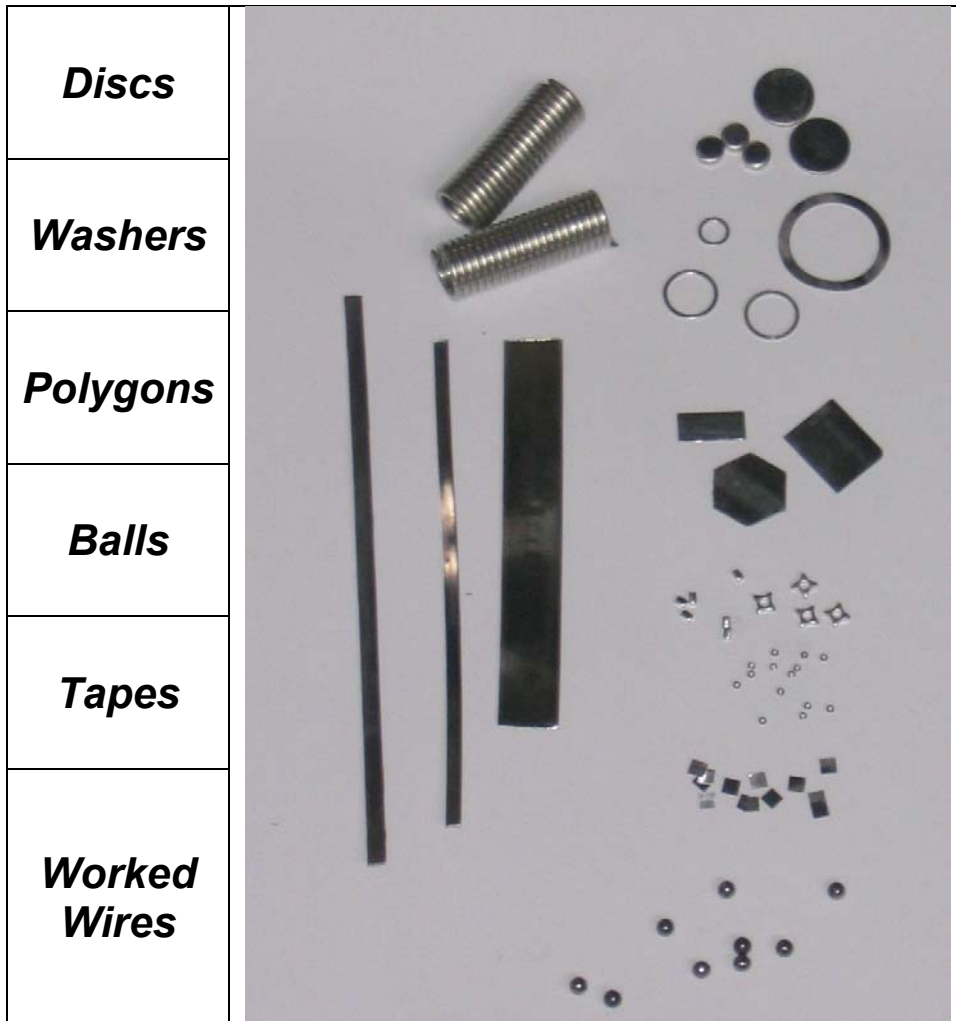
Packaging

In lots and multiples of 1000, packed usually in jars or plastic containers. Preforms are packed together with silica gel to avoid moisture ingress to the flux.



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Standard Preform Tooling

Discs	
Diameter	Maximum Thickness mm
1.00	0.5
1.30	0.5
1.50	0.5
1.70	0.5
2.00	0.7
2.30	0.7
2.50	0.7
3.00	1
3.30	1
3.50	1
4.00	1
4.90	0.4*
5.00	2
5.50	2
6.00	2
7.00	2
7.40	2.5
7.60	2.5
8.00	0.4*
9.00	2.5
10.00	2.5
12.00	0.4*
13.00	0.4*
13.50	0.4*
15.00	2.5
16.00	2.5
19.00	2.5

Squares	
	Maximum Thickness mm
1.50 X 1.50	0.4
0.78 X 1.78	0.4
2.00 X 2.00	0.4
3.00 X 3.00	0.4
4.10 X 4.10	0.4
5.00 X 5.00	0.4
7.00 X 7.00	0.4
9.00 X 9.00	0.4
Rectangular Form	
	Maximum Thickness mm
2.00 X 1.25	0.4
2.78 X 1.76	0.4
4.30 X 2.80	0.4
4.60 X 3.00	0.4
6.00 X 1.50	0.4
6.00 X 5.00	0.4
7.62 X 5.08	0.4
11.43 X 7.62	0.4
12.00 X 3.00	0.4
17.00 X 8.00	2

*Maximum thickness due to « hedgehog » tooling



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Balls
Diameter mm
0.90
1.30
1.50
1.80
2.00
2.25
3.00
3.20
4.40
5.00
5.65
6.20

Hexagon	
	Maximum Thickness mm
21 x 18.3	0.7
Hexagon with hole	
	Maximum Thickness mm
21 x 18.3 Hole 7.2	0.7

Washers		
External Diameter mm	Internal Diameter mm	Maximum Thickness mm
1.30	0.75	0.4
1.60	0.60	0.4
1.60	0.90	0.4
1.70	0.60	0.4
1.72	1.09	0.4
1.72	1.30	0.4
1.90	0.70	0.7
1.90	0.90	0.7
1.90	1.14	0.7
2.00	1.10	0.7
2.10	0.80	0.7
2.28	1.30	0.7
2.30	1.87	0.7
2.40	1.40	0.7
2.50	1.00	0.7
2.60	1.60	0.7
2.80	1.65	0.7
3.00	1.20	0.7
3.04	2.05	0.7



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Washers (contd)		
External Diameter mm	Internal Diameter mm	Maximum Thickness mm
3.20	2.30	0.7
3.30	1.50	0.7
3.50	1.95	0.7
3.60	2.60	0.7
3.60	2.60	0.7
3.87	2.46	0.7
3.90	2.40	0.7
4.00	1.50	0.7
4.00	2.50	0.7
4.00	2.70	0.7
4.30	2.97	0.7
4.50	2.00	0.7
4.50	2.10	0.7
4.50	3.10	0.7
4.50	3.25	0.7
5.00	1.50	0.7
5.00	2.00	1
5.00	3.30	1
5.20	3.70	1
5.50	3.60	1
5.60	4.23	1
5.75	4.45	1
5.80	2.50	1
6.00	2.70	1
6.00	4.00	1
6.00	4.50	1
6.40	3.30	1
6.50	4.00	1
6.70	5.10	1
6.70	5.47	1
7.00	4.20	1.20
7.00	4.60	1.20
7.10	4.70	1.20
7.40	3.50	1.20
7.50	6.00	1.20
7.70	4.85	1.20
7.80	5.70	1.20
8.00	3.40	1.20
8.20	6.20	1.20
8.60	6.20	1.20



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Washers (contd)		
External Diameter mm	Internal Diameter mm	Maximum Thickness mm
10.00	6.50	1.20
11.43	7.62	1.20
12.00	10.00	1.20
12.00	10.20	1.20
13.00	11.00	1.20
14.00	12.00	1.20
14.70	12.70	1.20
16.00	14.00	1.20
19.00	16.00	1.20
24.00	21.00	1.20
23.50	18.00	1.20
25.40	6.35	1.20
29.00	23.00	1.20

Solder Tape: Solid and Flux Cored solder tape is also available in widths up to and including 30mm – For further details please contact MBO (UK) Ltd, if required on – info@mbouk.co.uk.

Dimensions: All are stated in millimeters

Standard Materials: MBO's alloys are manufactured using virgin metals, being produced with high purity raw materials.

Solid as well as rosin and synthetic based activated no-clean or clean internal flux cores can be incorporated into the preform (technical data sheets available on request).

Packaging: Boxes and plastic tubs. Others: please consult us.

Minimum Thicknesses:
300 Ag & Pb95 Sn5 - 0.3mm
SnPb & SnPbAg - 0.25mm
Sn100, SnAg, SnAgCu & SnCu - 0.2mm

For any additional information on tooling sizes and/or alternatives please contact our Technical Service Group by e-mail - info@mbouk.co.uk