



Tin-Lead Soft Soldering Alloys

Alloy Selector Chart

Alloy	Sn	Pb	Other	Melting Range °C	BS.EN 29453 Reference	EN ISO 9453:2006
JM595™	5	95	-	300-315	-	Alloy No. 123
JM1090™	10	90	-	268-299	Alloy No. 8	Alloy No. 122
JM1585™	15	85	-	225-290	-	Alloy No. 121
JM2080™	20	80	-	183-275	-	Alloy No. 117
JM3070™	30	70	-	185-250	Alloy No. 7	Alloy No. 116
JM3565™	35	65	-	183-245	-	Alloy No. 115
JM4060™	40	60	-	183-238	Alloy No. 5	Alloy No. 114
JM4552™	45	52.5	2.5Sb	185-215	-	
JM4555™	45	55	-	183-224	Alloy No. 4	Alloy No. 113
JM5050™	50	50	-	183-216	Alloy No. 3	Alloy No. 112
JM5840™	40	58	2Sb	183-231	Alloy No. 14	Alloy No. 134
JM6040™	60	40	-	183-190	Alloy No. 2	Alloy No. 103
JM6236™	62	36	2 Ag	178-190	Alloy No. 30	Alloy No. 171
JM6337™	63	37	-	183-183	Alloy No. 1	Alloy No. 102

The range of alloys includes 60% tin - 40% lead that has a short melting range from 183 - 190°C, is relatively free flowing and is widely used in soldering copper and copper based alloys.

Tin-lead alloys with 30 - 40% tin are an economic alternative to the higher tin alloys but have much wider melting ranges, and are less free flowing. Their wide melting range makes them useful where controlled joint gaps cannot always be maintained.

All these alloys are available in flux cored versions containing either rosin based or inorganic acid fluxes depending on the application.

Other tin - lead and tin based alloys quoted in BS.EN 29453: 1994 and other national standards can be supplied and their availability should be discussed with a Johnson Matthey Sales Representative.

Uses for These Products

The use of lead in products is increasingly recognised as being undesirable both in terms of the long-term environmental impact and recyclability of products. Consequently the use of lead containing solders will continue to decline.

Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles (ELV), directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) prevent the use of certain hazardous substances including lead containing materials.

The use of lead in potable water systems has also been prohibited in Europe and in many countries worldwide. Despite these considerations many companies continue to use lead containing solders.



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Lead free alternatives such as 99C™, 97C™ and P40™ should be considered wherever possible.



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Conditions for Use

With the correct choice of flux these alloys will join copper and copper alloys, carbon steels and stainless steels. These solders can be supplied in a solid form and in this case a suitable flux should be selected from the list below.

Flux	Recommended for use on	Corrosive/ Non-corrosive	Working Range °C	Product Availability
Soft Solder Flux No. 1S™	Carbon steel / stainless steel	Corrosive	350°C	1 litre container
Soft Solder Flux No. 2S™	Copper / brass	Non Corrosive	350°C	0.5 litre container
Soft Solder Flux No. 3S™	Copper / brass / carbon steel Stainless steel	Corrosive	350°C	1kg container

Rosin based or inorganic acid fluxes

Flux cored wire or soldering paste systems for use with tin-lead and containing rosin-based fluxes are available as 'RMA' systems without 'activation' and only trace halide content or with various levels of 'activation' from 'RA' (0-0.5% halide content) to 'HA' (typically 1% halide content).

Fluxed binder systems in this group are only suitable for soldering copper and brasses. The ability of these binder systems to solder a brass will depend upon the level of activation used within the flux.

Fumes from rosin containing fluxes present a risk to health and safety and in particular can cause asthma. Fumes should be controlled to prevent exposure to operators.

For more information consult the HSE publications:

[COSHH WL17 - Soldering: Hand-held with lead-base, rosin-cored solders](#)
[Controlling health risks from rosin \(colophony\) based solder](#)

Product Availability

Products can be supplied in a variety of forms. Wires, sticks, bars, pellets, flux cored wires powders and pastes. All forms – special order only.

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