

EXCERPTS FROM THE STANDARD EN 29453

CHEMICAL COMPOSITIONS OF TIN-LEAD AND TIN-LEAD-ANTIMONY SOLDER ALLOYS

Group	Alloy No.	Alloy designation	Melting or solidus/liquidus temperature °C	Chemical composition % (m/m)										Sum of all impurities except Sb, Bi and Cu
				Sn	Pb	Sb	Cd	Zn	Al	Bi	As	Fe	Cu	
Tin-lead alloys	1	S-Sn63Pb37	183	62.5 to 63.5	Rem	0.12	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	1a	S-Sn63Pb37E	183	62.5 to 63.5	Rem	0.05	0.002	0.001	0.001	0.05	0.03	0.02	0.05	0.08
	2	S-Sn60Pb40	183-190	59.5 to 60.5	Rem	0.12	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	2a	S-Sn60Pb40E	183-190	59.5 to 60.5	Rem	0.05	0.002	0.001	0.001	0.05	0.03	0.02	0.05	0.08
	3	S-Pb50Sn50	183-215	49.5 to 50.5	Rem	0.12	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	3a	S-Pb50Sn50E	183-215	49.5 to 50.5	Rem	0.05	0.002	0.001	0.001	0.05	0.03	0.02	0.05	0.08
	4	S-Pb55Sn45	183-226	44.5 to 45.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	5	S-Pb60Sn40	183-235	39.5 to 40.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	6	S-Pb66Sn35	183-245	34.5 to 35.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	7	S-Pb70Sn30	183-255	29.5 to 30.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
Tin-lead alloys with antimony	8	S-Pb90Sn10	268-302	9.5 to 10.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	9	S-Pb92Sn8	280-305	7.5 to 8.5	Rem	0.50	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	10	S-Pb98Sn2	320-325	1.5 to 2.5	Rem	0.12	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	11	S-Sn63Pb37Sb	183	62.5 to 63.5	Rem	0.12 to 0.50	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	12	S-Sn60Pb40Sb	183-190	59.5 to 60.5	Rem	0.12 to 0.50	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	13	S-Sn50Sn50Sb	183-216	49.5 to 50.5	Rem	0.12 to 0.50	0.002	0.001	0.001	0.10	0.03	0.02	0.05	0.08
	14	S-Sn58Sn40Sb2	185-231	39.5 to 40.5	Rem	2.0 to 2.4	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	15	S-Sn69Sn30Sb1	185-250	29.5 to 30.5	Rem	0.5 to 1.8	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	16	S-Sn74Sn25Sb1	185-263	24.5 to 25.5	Rem	0.5 to 2.0	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08
	17	S-Sn78Sn20Sb2	185-270	19.5 to 20.5	Rem	0.5 to 3.0	0.005	0.001	0.001	0.25	0.03	0.02	0.08	0.08

(1) All single figure limits are maxima.

(2) Elements shown as "Rem" (i.e. Remainder) are calculated as differences from 100%.

(3) The temperatures given under the heading "Melting or solidus/liquidus temperature" are for information purposes and are not specified requirements for the alloys.

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CHEMICAL COMPOSITIONS OF SOFT SOLDER ALLOYS OTHER THAN TIN-LEAD AND TIN-LEAD-ANTIMONY ALLOYS

Group	Alloy No.	Alloy designation	Melting or solidus/liquidus temperature °C	Chemical composition % (m/m)												Sum of all impurities
				Sn	Pb	Sb	Bi	Cd	Cu	In	Ag	Al	As	Fe	Zn	
Tin-antimony	18	S-Sn95Sb5	230-240	Rem	0.10	4.5 to 5.5	0.10	0.002	0.10	0.05	0.05	0.001	0.03	0.02	0.001	0.2
Tin-lead bismuth and tin-bismuth alloys	19	S-Sn60Pb38Bi2	180-185	59.5 to 60.5	Rem	0.10	2.0 to 3.0	0.002	0.10	0.05	0.05	0.001	0.03	0.02	0.001	0.2
	20	S-Sn49Pb48Bi3	178-205	47.5 to 48.5	Rem	0.10	2.5 to 3.5	0.002	0.10	0.05	0.05	0.001	0.03	0.02	0.001	0.2
	21	S-Bi57Sn43	138	42.5 to 43.5	0.05	0.10	Rem	0.002	0.10	0.05	0.05	0.001	0.03	0.02	0.001	0.2
Tin-lead-cadmium	22	S-Sn50Pb32Cd18	145	49.5 to 50.5	Rem	0.10	0.10	17.5 to 18.5	0.10	0.05	0.05	0.001	0.03	0.02	0.001	0.2
Tin-copper and tin-lead copper alloys	23	S-Sn99Cu1	230-240	Rem	0.10	0.05	0.10	0.002	0.45 to 0.90	0.05	0.05	0.001	0.03	0.02	0.001	0.2
	24	S-Sn97Cu3	230-250	Rem	0.10	0.05	0.10	0.002	2.5 to 3.5	0.05	0.05	0.001	0.03	0.02	0.001	0.2
	25	S-Sn60Pb38Cu2	183-190	59.5 to 60.5	Rem	0.10	0.10	0.002	1.5 to 2.0	0.05	0.05	0.001	0.03	0.02	0.001	0.2
	26	S-Sn50Pb49Cu1	183-215	49.5 to 50.5	Rem	0.10	0.10	0.002	1.2 to 1.6	0.05	0.05	0.001	0.03	0.02	0.001	0.2
Tin-indium	27	S-Sn50In50	117-125	49.5 to 50.5	0.05	0.05	0.10	0.002	0.05	Rem	0.01	0.001	0.03	0.02	0.001	0.2
Tin-silver and tin-lead silver alloys	28	S-Sn96Ag4	221	Rem	0.10	0.10	0.10	0.002	0.05	0.05	3.5 to 4.0	0.001	0.03	0.02	0.001	0.2
	29	S-Sn97Ag3	221-230	Rem	0.10	0.10	0.10	0.002	0.10	0.05	3.0 to 3.5	0.001	0.03	0.02	0.001	0.2
	30	S-Sn62Pb36Ag2	178-190	61.5 to 62.5	Rem	0.05	0.10	0.002	0.05	0.05	1.8 to 2.2	0.001	0.03	0.02	0.001	0.2
	31	S-Sn60Pb36Ag4	178-180	59.5 to 60.5	Rem	0.05	0.10	0.002	0.05	0.05	3.0 to 4.0	0.001	0.03	0.02	0.001	0.2
Lead silver and lead-tin silver alloys	32	S-Pb98Ag2	304-305	0.25	Rem	0.10	0.10	0.002	0.05	0.05	2.0 to 3.0	0.001	0.03	0.02	0.001	0.2
	33	S-Pb95Ag5	304-365	0.25	Rem	0.10	0.10	0.002	0.05	0.05	4.5 to 6.0	0.001	0.03	0.02	0.001	0.2
	34	S-Pb93Sn5Ag2	296-301	4.8 to 5.2	Rem	0.10	0.10	0.002	0.05	0.05	1.2 to 1.8	0.001	0.03	0.02	0.001	0.2

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