

## SALAMANDER SUPER Crucibles

### DESCRIPTION

SALAMANDER SUPER is a high quality ceramic bonded clay graphite crucible range manufactured by plastic forming techniques.

### APPLICATIONS

SALAMANDER SUPER crucibles are used to provide consistent performance in fuel-fired furnaces and medium / high frequency induction furnaces. The smaller sizes are typically used to melt precious metals, while larger sizes can be used for some ferrous alloys such as grey iron as well as to melt non-ferrous alloys.

### TYPICAL METAL CASTING TEMPERATURE

850 - 1600°C (1562 - 2912°F)

### PERFORMANCE CHARACTERISTICS

- Clean melting
- Good thermal conductivity
- Good resistance to chemical corrosion
- High refractoriness

### IDENTIFICATION

SALAMANDER SUPER crucibles are coloured black except for certain smaller sizes that are supplied unpainted.

### PATTERN RANGE

SALAMANDER SUPER crucibles are available in a range of sizes as A-shapes, F-shapes (bilge), and E-shape cylinders to suit a wide spectrum of end user requirements. Ladle liners are also available in standard or bottom pour configuration.

### QUALITY

SALAMANDER SUPER crucibles are manufactured from premium grade raw materials to ISO9000:2000 quality standards

### PREHEATING / FIRST USE

**FUEL-FIRED FURNACES:** A new crucible should be pre-heated empty in order to minimise the temperature gradient across the crucible wall. If the furnace refractories have been repaired or if there is a risk of the crucible having absorbed some moisture, then the furnace should initially be heated slowly up to circa 200°C and held at this temperature until all moisture has been driven off.



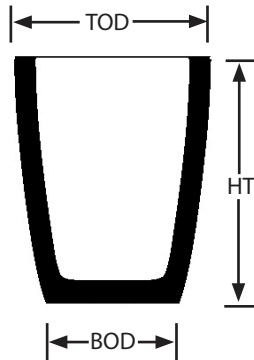
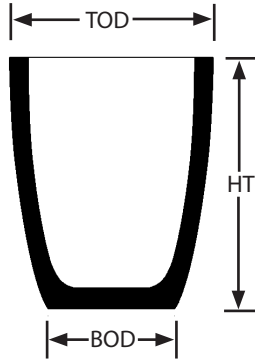
A new crucible should initially be heated slowly and evenly to 600°C on low power, avoiding local impingement of flame. Subsequently the full heat input rate should be utilised to achieve a uniform bright red condition over the whole crucible (circa 900°C / 1650°F) at which point the crucible should be charged immediately taking care to avoid packing metal tightly or bridging ingots across the crucible. The furnace controls can then be set to achieve the desired metal operating temperature and heating should continue at the full rate until the metal has reached the desired temperature.

In the case of crucibles to be fed with molten metal, it is important that the crucible body temperature is equivalent to or slightly above that of the molten metal in order to minimise thermal stress.

**INDUCTION FURNACES:** Small Salamander Super crucibles are sometimes used in medium to high frequency induction furnaces. The heat-up procedure is dependent on furnace frequency, coil dimensions, and the resistivity of the metal being melted. It is recommended where possible to preheat the crucible empty. The furnace should initially be run at 20% of maximum power until the crucible shows signs of red heat. After 30 minutes the power can be increased to 50% of the maximum. Loosely charge the crucible with metal and maintain the power level at 50% until approximately half the crucible contains molten metal. The power should then be increased to maximum.

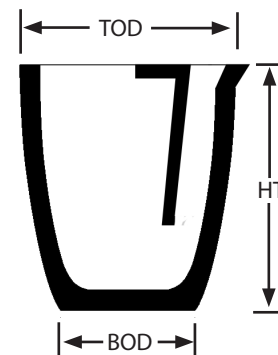
### CHARGING

As soon as the crucible has reached the specified pre-heat temperature, charge and melt immediately. Charge light scrap and returns first in order to form a cushion for heavier material. Use tongs to charge ingots and place large pieces and ingots vertically allowing space for expansion. Only add flux once the metal is molten.

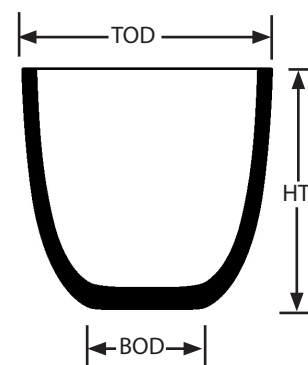


Crucibles for Lift Out and Bale Out Furnaces					
SUPER A-SHAPES (A)	TOD	HT	BOD	Brass Capacity	Brimful capacity
	(mm)	(mm)	(mm)	(Kg)	(Litres)
A5/0	32	35	24	0.09	0.01
A3/0	46	52	30	0.22	0.03
A1/0	60	67	41	0.56	0.07
A0.5	68	78	48	1	0.13
A1	79	97	55	1.5	0.2
A1.5	90	92	55	1.9	0.25
A2	95	109	61	2.5	0.33
A3	105	127	70	3.7	0.49
A4	114	141	76	5.6	0.75
A5	124	152	86	6.8	0.9
A6	130	165	95	9	1.2
A7	140	175	105	11	1.5
A8	156	184	108	12.5	1.7
A10	160	200	110	18	2.4
A12	171	210	121	18	2.4
A16	184	232	130	23	3.1
A20	197	260	145	30	4
A25	210	280	155	36	4.8
A30	232	290	160	43	5.7
A40	232	318	160	50	6.7
A50	248	324	180	60	8
A60	276	362	190	77	10
A70	292	375	200	93	12
A80	300	397	210	105	14
A90	310	397	220	115	15
A100	324	400	230	120	16
A120	333	435	240	138	18
A150	362	452	250	168	22
A200	400	491	285	239	32
SUPER C-SHAPES (C)	TOD	HT	BOD	Brass Capacity	Brimful Capacity
	(mm)	(mm)	(mm)	(Kg)	(Litres)
C25	149	229	100	12	2.1
C30	165	245	110	17	2.3
C80	225	353	160	45	6
C150	275	435	200	86	11
C200	292	470	210	109	15

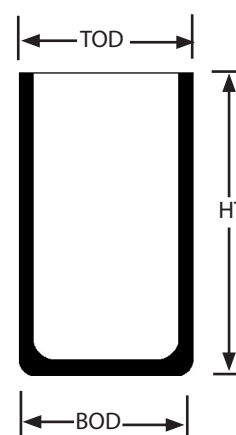
<b>Bottom Pour Crucibles</b>					
SUPER A-SHAPES (AP)	TOD	HT	BOD	Brass Capacity	Brimful Capacity
	(mm)	(mm)	(mm)	(Kg)	(Litres)
AP30	232	290	160	43	5.7
AP40	232	318	160	50	6.7
AP50	248	324	178	60	8
AP51	248	324	178	60	8
AP60	276	362	190	77	10
AP61	276	362	190	77	10
AP70	292	375	200	93	12



<b>Crucibles for Bale Out Furnaces</b>					
SUPER BASINS (B)	TOD	HT	BOD	Brass Capacity	Brimful Capacity
	(mm)	(mm)	(mm)	(Kg)	(Litres)
B173	397	343	215	126	22
B176	397	432	215	174	28



<b>Cylindrical Crucibles for Induction Furnaces</b>					
SUPER E-SHAPES (E)	TOD	HT	BOD	Brass Capacity	Brimful Capacity
	(mm)	(mm)	(mm)	(Kg)	(Litres)
E3014	47	88	47	0.42	0.07
E3013	47	88	47	0.38	0.07
E1251	58	128	50	0.6	0.1
E115	59	155	54	1.1	0.19
E3016	62	88	62	0.92	0.16
E1255	64	154	52	1.6	0.27
E125	65	124	65	0.8	0.14
E467	70	152	70	1.75	0.3
E250	80	250	80	4.1	0.7
E468	82.5	156	82.5	2.3	0.4
E406*	82.5	156	82.5	3	0.51
E303	110	200	110	6.4	1.1
E301	100	265	100	7.4	1.3
E300	110	265	110	8.6	1.5
E96	130	250	130	14	2.3
E93	135	200	135	11	1.8
E323	165	318	165	25	4.3
E375	205	270	195	26	4.4
E305	310	500	310	120	21



Brass capacity is calculated as follows:

Basins - With a freeboard of 75mm

Sizes A5/0 - A5 have no pouring lip

Sizes A6 - A200 normally have a pouring lip but are also available without lip, reference AN

A-Shapes and C-Shapes - 90% of brimful

Cylinders - 70% of brimful

Morganite also supplies a complete range of accessories including stands to provide uniform heating and appropriate mechanical support of the crucible base, and covers to exclude impurities and reduce atmospheric oxidation.

All dimensions are subject to normal manufacturing tolerances

## INSTALLATION

Salamander Super crucibles are used free standing in lift out furnaces. In fuel fired furnaces the stand should be made from similar material to the crucible to ensure uniform heating of the crucible base and provide sufficient mechanical support. The diameter of the stand should be at least the same as the base of the crucible and the height should be such that the base of the crucible is level with the centre line of the burner. The stand and crucible should be installed centrally in the furnace. In induction furnaces the crucible stands on a refractory pedestal and must be installed centrally within the coil. A thin layer of coke dust or other carbonaceous material should be sprinkled on to the stand or pedestal to prevent the crucible sticking to it.

## INDUCTION FURNACES

Small Salamander Super crucibles are sometimes used in medium to high frequency induction furnaces. The heat-up procedure is dependant on furnace frequency, coil dimensions, and the resistivity of the metal being

melted. It is recommended where possible to preheat the crucible empty. The furnace should initially be run at 20% of maximum power until the crucible shows signs of red heat. After 30 minutes the power can be increased to 50% of the maximum. Loosely charge the crucible with metal and maintain the power level at 50% until approximately half the crucible contains molten metal. The power should then be increased to maximum

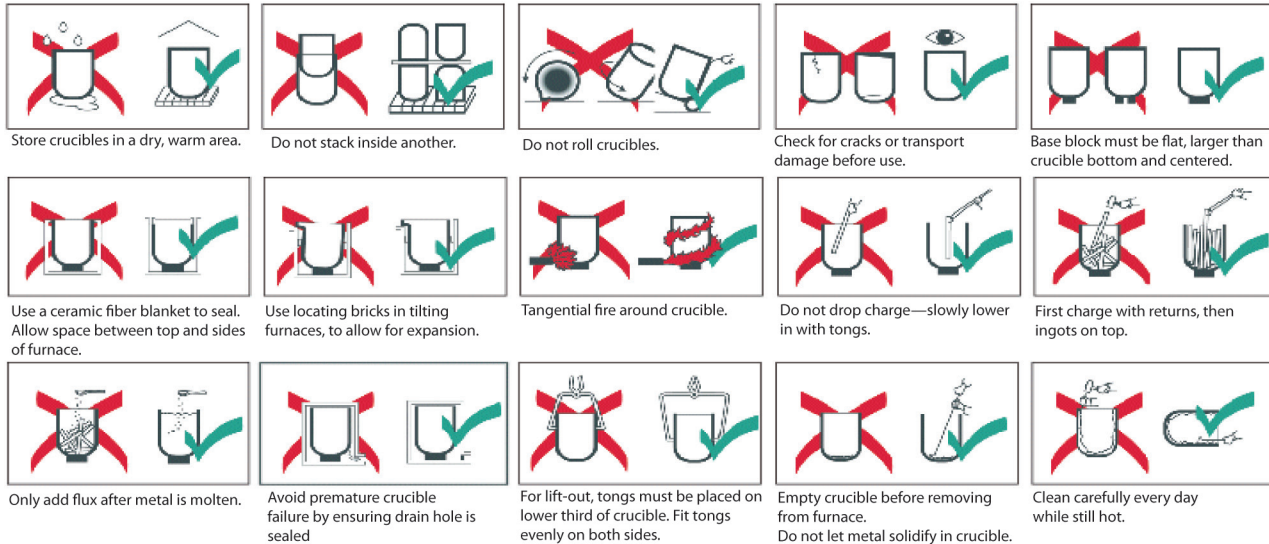
## CLEANING OUT

Crucibles should be cleaned out carefully between melts while red hot in order to remove any build-up of corrosive slag.

## SAFETY

Proper safety clothing must be worn at all times. Ensure that no moisture is introduced into the melt. Provision should be made underneath the furnace to catch metal that may be discharged.

## CRUCIBLE CARE



For additional information on Morgan MMS' products & services or to find a location nearest to you, please visit: [www.morganmms.com](http://www.morganmms.com)