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ULTRAMELT Crucibles

DESCRIPTION

ULTRAMELT is a premium quality carbon bonded silicon carbide crucible manufactured by high pressure iso-static pressing.
ULTRAMELT incorporates Morganite's advanced bonding technology and is a superior grade product designed to provide optimum performance under the most arduous service conditions.

APPLICATIONS

ULTRAMELT offers superior performance for aggressive erosive conditions with heavy flux usage in both copper based alloys and precious metal reclamation. The product is designed for use in gas, oil, and low to medium frequency induction furnaces.

TYPICAL METAL CASTING TEMPERATURE

1000 - 1400°C (1830 - 2550°F)

PERFORMANCE CHARACTERISTICS

- Superior erosion resistance
- Maximum resistance to corrosive chemicals and slags
- Excellent thermal shock resistance
- High mechanical strength
- High consistent density
- Faster melting speed

IDENTIFICATION

ULTRAMELT crucibles are coloured black and utilise pattern coding with the suffix ULTR.

PATTERN RANGE

Ultramelt crucibles are available in a wide range of optimised shapes and sizes to suit a broad spectrum of end user requirements. Heavy wall (HW) versions can be supplied for increased life in the most aggressiveapplication and a range of integral pouring spouts are offered where required.

QUALITY

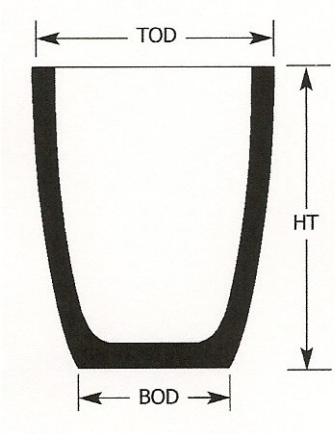
ULTRAMELT crucibles are manufactured from premium grade raw materials to ISO9001:2008 quality standards.

PREHEATING / FIRST USE

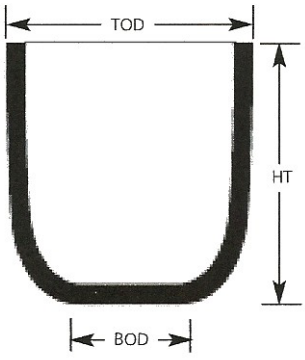
FUEL-FIRED: Crucibles should be pre-heated empty until they reach a uniform bright red colour (circa 900°C) in order to pre-condition the glaze. The pre-heating time will depend on the size of the crucible. In the case of large capacity crucibles and furnaces with high output burners the rate of temperature rise should be controlled in the initial stages to minimise thermal stress. The typical time taken from ambient to red heat is up to 1 hour. Avoid direct flame impingement on the crucible surface.
INDUCTION: 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 power input rate should initially be limited until the crucible becomes bright red over its entire surface. The time taken to pre-heat will depend on the size of the crucible, but is usually in the range 20 – 40 minutes. Once one third of the crucible is full of molten metal the power can be increased to a higher level. Silicon carbide crucibles absorb proportionally high levels of power from the induction field. Care should be taken not to overheat the crucible. The actual maximum power setting should be assessed from experience and will be dependant on the capacity of the crucible. The appearance of the inside wall of the crucible should be monitored for signs of over-heating and the power reduced once the full charge is molten.

CHARGING

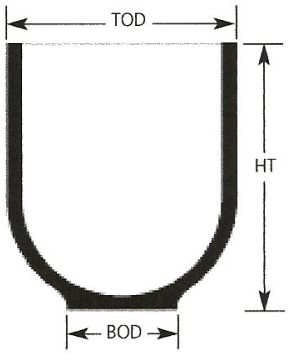
As soon as the crucible has reached the specified pre-heat temperature, charge and melt immediately. Charge light scrap and returns first in order to form a cushion for heavier material. Use tongs to charge ingots and place large pieces and ingots vertically allowing space for expansion. Only add flux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

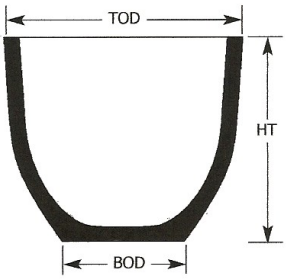


CRUCIBLES FOR LIFT OUT AND BALE OUT FURNACES						
ULTRAMELT A-SHAPES	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
A60ULTR	272	365	175	22.5	82.2	10.9
A80ULTR	301	400	195	24.5	105	14.0
A80HWULTR	301	400	196	36	86	11.4
A425ULTR	468	595	270	46	394	52.5
A440ULTR	468	615	270	46	411	54.7
A465ULTR	469	645	270	46	436	58.0
A505ULTR	470	690	270	46	476	63.3
A560ULTR	471	750	270	46	526	70.1
A595ULTR	472	790	270	46	561	74.6
A655ULTR	473	850	270	46	612	81.4
A400ULTR	505	650	280	34.5	522	69.4
A500ULTR	520	710	285	38	592	78.7
A570ULTR	552	650	300	48	647	86.1
A580ULTR	553	710	300	48	721	95.9
A600ULTR	554	760	300	48	782	104.1
A690ULTR	555	795	300	48	826	109.9
A800ULTR	555	820	300	48	857	114.0
CRUCIBLES FOR BALE OUT FURNACES						
ULTRAMELT BASINS	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
B168ULTR	525	492	305	32	368	56.0
B171ULTR	527	600	305	32	510	73.0
B302ULTR	605	630	368	42	826	109.9
B302HWULTR	605	630	368	51	761	101.2
B503ULTR	609	850	368	42	1175	157.5
B503HWULTR	609	850	368	51	1091	145.2
B502ULTR	610	900	368	42	1265	168.3
ULTRAMELT US BASINS SERIES	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
SC225TULTR	423	527	317	52	256	34
SC300TULTR	470	584	340	52	377	50.1
SC2650-700ULTR	527	700	368	42	676	89.9
SC2650-34ULTR	527	863	368	42	863	114.8
SC3400ULTR	603	483	368	42	591	78.6
SC3450ULTR	604	534	368	42	672	89.4
SC3500ULTR	604	565	368	42	721	96.0
SC600TULTR	606	685	368	51	842	112.1
SC3635ULTR	607	710	368	42	954	127.0
SC3750ULTR	608	813	368	42	1121	149.2
SC3750HWULTR	608	813	368	51	1035	137.7
SC800TULTR	610	915	368	51	1190	158.3
SC3800ULTR	610	915	368	42	1287	171.3

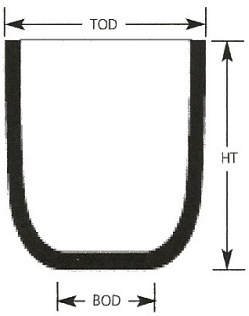


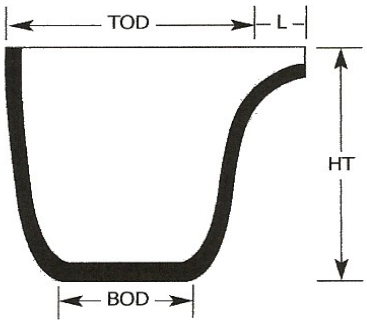
ULTRAMELT BN SHAPE	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
BN SHAPE	(mm)	(mm)	(mm)	(mm)	(kg)	(litres)
BN500ULTR	775	750	312	40	1599	220.0
BN600ULTR	780	900	312	40	2190	280.0
ULTRAMELT BOWL SERIES	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
SB900BULTR	883	648	368	45	1514	201.5
SB1000BUL-TR	885	712	368	45	1752	233.2
SC41200UL-TR	886	826	368	45	2179	289.9



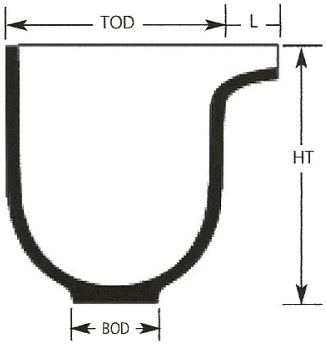


ULTRAMELT 30000 BASIN SERIES	TOD (mm)	HT (mm)	BOD (mm)	WALL (mm)	L (mm)	Brass capacity (kg)	Brimful capacity (litres)
SC30630ULTR	711	597	383	44		1085	144.4
SC30720ULTR	713	670	383	43		1253	166.7
SC30765ULTR	714	692	383	43		1304	173.5
SC30810ULTR	715	730	383	43		1389	184.8
SC31000ULTR	719	900	383	43		1791	238.3
SC31000FLULTR	719	900	383	43	325	1649	219.4
SC31100FLULTR	720	949	383	43	325	1765	234.9
SC31100HWULTR	720	949	383	57		1707	227.2
SC31150ULTR	721	975	383	42		1970	262.1
SC31150HWULTR	721	975	383	57		1764	234.7
SC31270ULTR	723	1041	383	42		2129	283.3
SC31270HWULTR	723	1041	383	57		1908	253.9
SC31400ULTR	725	1143	383	41		2377	316.3
SC31450ULTR	726	1168	383	41		2438	324.4
SC31450HWULTR	726	1168	383	56		2188	291.1





CRUCIBLES FOR TILTING FURNACES							
ULTRAMELT SPOUTED CRUCIBLES	TOD (mm)	HT (mm)	BOD (mm)	WALL (mm)	L (mm)	Brass capacity (kg)	Brimful capacity (litres)
TP80HWULTR	301	400	196	36	280	57	9.8
SC225TFLULTR	423	527	317	52	292	229	30.5
TP843ULTR	432	973	216	40	146	249	38.7
SC300TFLULTR	470	584	340	52	292	335	45.8
SC301TFLULTR	470	584	340	52	325	282	43.8
TP287ULTR	520	600	368	42	146	411	60.4
SC430TFLULTR	521	635	368	51	294	503	66.9
TP89ULTR	555	820	300	48	146	735	97.8
TP387ULTR	605	630	368	42	146	698	92.9
SC600TFLULTR	606	685	368	51	294	781	103.9
TP412ULTR	608	800	368	42	146	1100	146.4
SC700TFLULTR	608	813	368	51	320	943	125.5
TP512ULTR	610	900	368	42	146	1202	160.0
SC800TFLULTR	610	915	368	51	294	1127	150.0
SC801TFLULTR	610	915	368	51	320	1098	146.1
ULTRAMELT TBN SPOUTED SERIES	TOD (mm)	HT (mm)	BOD (mm)	WALL (mm)	L (mm)	Brass capacity (kg)	Brimful capacity (litres)
TBN387ULTR	615	630	246	33	146	762	109.0
TBN412ULTR	615	800	246	37	170	999	137.0
TBN587ULTR	780	900	312	40	170	1571	217.0
TBN730ULTR	850	990	350	40	184	2164	259.0



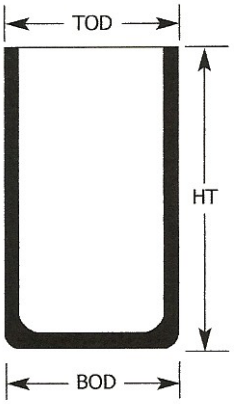
Brass capacity is calculated as follows:
A-Shapes: 90% of brimful
Basins and Bowls: With a freeboard of 75mm
Spouted crucibles: With a freeboard of 75mm measured from the bottom of the spout pouring gap

Cylinders: 70% of brimful

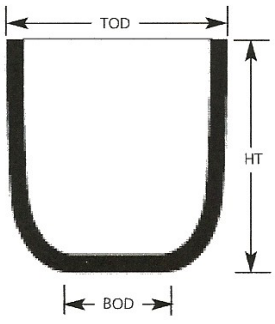
All dimensions are subject to normal manufacturing tolerances

Morganite also supplies a complete range of stands to provide uniform heating and appropriate mechanical support of the crucible base

CRUCIBLES FOR TILTING INDUCTION FURNACES						
ULTRAMELT INDUCTION CYLINDERS	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
E323ULTR	165	318	165	17	23	4.0
E444ULTR	254	475	254	19	93	16.0
SI576-22ULTR	406	559	269	33	262	44.8
SI576ULTR	410	673	269	33	323	55.3
SC225TULTR	423	527	317	52	256	34.0
SI581-565ULTR	460	565	293	38	331	56.6
SI581-26ULTR	464	660	293	38	395	67.6
SI581-28ULTR	466	711	293	38	431	73.7
SI581ULTR	470	845	293	38	524	89.7
SIA819-22ULTR	608	559	470	42	560	95.8
SIA819ULTR	608	813	470	42	875	149.7
SIA819HWULTR	608	813	470	51	847	144.9
SC3034ULTR	609	864	470	42	939	160.7
SC3034HWULTR	609	864	470	51	907	155.1
SC3036ULTR	610	914	470	42	1003	171.6
SC3036HWULTR	610	914	470	51	966	165.3
SC3039ULTR	611	990	470	42	1099	188.0
SC6029ULTR	644	736	546	51	870	148.8
SC6030ULTR	644	762	546	51	904	155.0
SC6038ULTR	650	959	546	51	1174	200.8
E9053ULTR	905	1320	800	55	3534	604.6
E9050ULTR	905	1850	800	50	5090	870.8
E9051ULTR	905	1900	800	50	5238	896.2



ULTRAMELT 50000 INDUCTION SERIES	TOD (mm)	HT (mm)	BOD (mm)	Wall (mm)	Brass Capacity (kg)	Brimful Capacity (litres)
SC38.5X30ULTR	962	762	734	55	2209	378.0
SC38.5X32ULTR	964	813	734	55	2370	405.5
SC38.5X37ULTR	967	940	734	55	2807	480.3
SC38.5X40ULTR	968	1016	734	55	3063	524.0
SC38.5X58ULTR	978	1473	734	55	4597	786.5
SC50064ULTR	978	1626	734	55	5173	885.0



INSTALLATION

The stand should be made from the same material as 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.

TILTING FURNACES

Cement the stand on the floor of the furnace and ensure that it is central and level. Place the crucible centrally on the stand and use a thin layer of Morcem 900 cement to bond the crucible and stand together. Use three equi-spaced grip bricks positioned 75mm below the rim of the crucible, leaving a 6-10mm gap between these and the crucible wall for expansion. Insert cardboard spacers in the gap. Leave a clear 38mm space under the spout to prevent the crucible from "hanging up" on the spout. After the crucible and accessories have been installed, initially fire the furnace slowly in order to release moisture and to set the cement.

INDUCTION FURNACES

Cylindrical crucibles are installed in tilting furnaces with a protective layer of back-up material, which should be refractory in composition (e.g. magnesite) with no sintering additives.

Back-up thickness is determined by crucible size. A slip plane of mica or glass fibre wool should first be installed against the furnace wall. A layer of back-up is placed in the base of the furnace to support the crucible and establish it at the correct height. The "star wires" are positioned to make contact with the crucible base in order to provide earth leakage protection. The crucible is lowered and centred in the furnace and back-up material is then added in layers approximately 50mm thick, de-aired and compacted using a forked tool, with each layer scored to provide a key for the next layer. The top of the crucible and back-up lining are sealed in position using plastic refractory. Ultramelt crucibles can be supplied with an integral spout, or alternatively a pouring spout can be fashioned using plastic refractory.

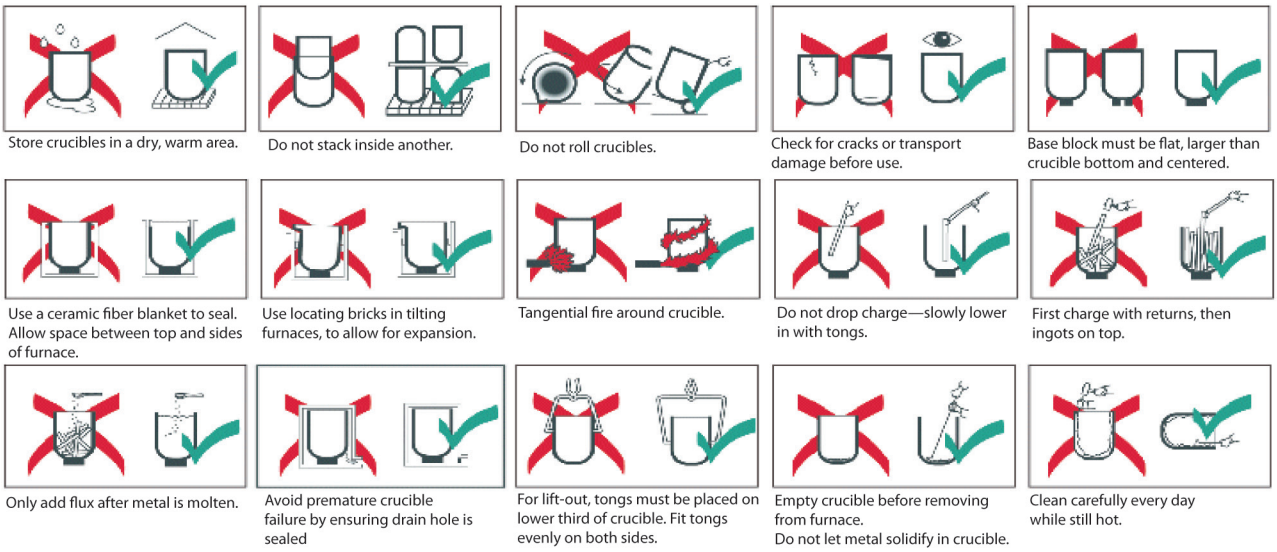
CLEANING OUT

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

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



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