

## DESCRIPTION

Excel E is a high quality carbon-bonded silicon carbide crucible manufactured using the latest roller-forming techniques and incorporating a special multi-phase glaze protection system. This product range is designed for aluminium melting and holding applications.

## APPLICATIONS

EXCEL E is used for melting, holding and melt/holding of aluminium alloys in electric resistance and gas-fired furnaces.

## TYPICAL METAL CASTING TEMPERATURE

620 - 900°C (1148 - 1652°F)

## PERFORMANCE CHARACTERISTICS

- Fast melting speed through high consistent thermal conductivity
- High resistance to oxidation
- Excellent Thermal Shock resistance
- Energy efficient

## IDENTIFICATION

EXCEL E crucibles are coloured green and utilise the pattern coding X\_E. e.g. BX401E

## PATTERN RANGE

Excel E crucibles are available in a comprehensive range of shapes and sizes to suit most end user requirements. Custom sizes can be supplied by special request. Pyrometer hole in the wall and pyrometer pocket configurations are available to facilitate accurate measurement of metal temperature. A selection of fixed pouring spouts with optimised profiles is offered where required for tilting furnace applications.

Excel E crucibles can be supplied with MorganMMS' unique PD coating system, which can assist with metal cleanliness and prevention of dross adhesion.

## QUALITY

EXCEL E crucibles are manufactured from premium grade raw materials under an ISO 9001:2000 quality management system.



## PREHEATING / FIRST USE

**ELECTRIC RESISTANCE FURNACES:** Crucibles should be pre-heated empty on full power until they reach a uniform bright red colour (circa 900°C) and be held at this temperature for 30 minutes in order to pre-condition the glaze. The crucible can then be charged and the controller adjusted to achieve the desired operating temperature.






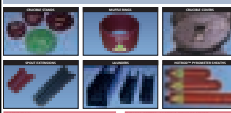
**GAS FIRED FURNACES:** Crucibles should be pre-heated empty until they reach a uniform bright red colour (circa 900°C) and held at this temperature for 30 minutes in order to pre-condition the glaze. The crucible can then be charged and the controller adjusted to achieve the desired operating temperature.

The time taken to reach temperature 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 before applying the full power of the burner. Avoid direct flame impingement on the crucible surface.

## CHARGING

As soon as the crucible has been pre-heated as specified, 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 and use the minimum quantity required to obtain good metal quality.

## FULL LINE OF CRUCIBLES AND ACCESSORIES TO MEET EVERY APPLICATION

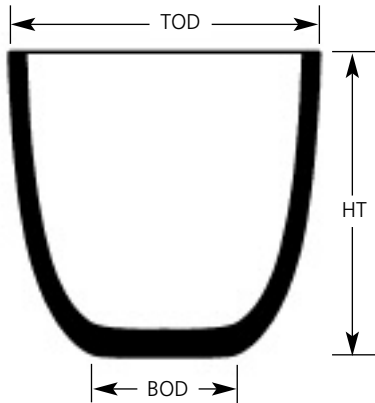
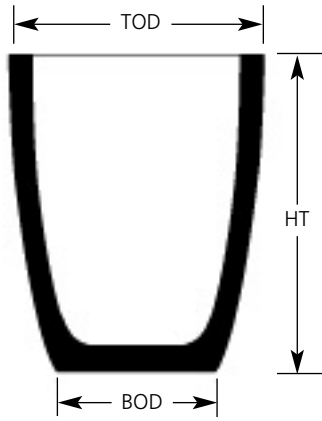
<p><b>EXCEL, HIMELT</b> Crucibles</p>  <p><b>EXCEL, HIMELT</b> Roller-Formed SiC</p>	<p><b>INDUX</b> Crucibles</p>  <p><b>INDUX</b> Clay Graphite</p>	<p><b>ISO-ALUSTAR</b> Crucibles</p>  <p><b>ISO-ALUSTAR</b> ISO-Pressed Clay Graphite</p>	<p><b>SALAMANDER SUPER</b> Crucibles</p>  <p><b>SALAMANDER SUPER</b> Clay Graphite</p>	<p><b>ULTRAMELT</b> Crucibles</p>  <p><b>ULTRAMELT</b> ISO-Pressed SiC</p>	<p><b>ACCESSORIES</b> Crucible</p>  <p><b>ACCESSORIES</b></p>
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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)





**Crucibles for Lift Out and Bale Out Furnaces**

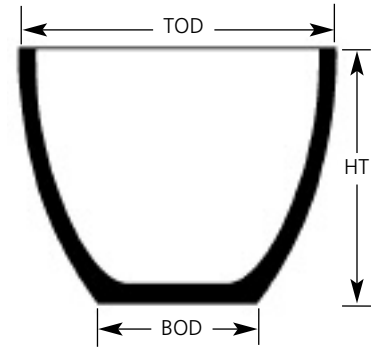
EXCEL E A-SHAPES (AX_E)	TOD (mm)	HT (mm)	BOD (mm)	Aluminium Capacity (Kg)	Brimful Capacity (Litres)
AX150E	362	452	250	60	25
AX200E	400	491	285	77	32
AX250E	421	546	255	89	37
AX300E	443	543	310	104	43
AX325E	445	584	310	115	47
AX350E	464	606	295	123	51
AX400E	515	650	300	155	64
AX450E	517	675	300	163	67
AX500E	520	700	300	172	71
AX600E	543	760	315	202	83
AX800E	550	800	350	249	102
AX1000E	616	822	420	346	142

**Crucibles for Bale Out Furnaces**

EXCEL E BASINS (BX_E)	TOD (mm)	HT (mm)	BOD (mm)	Aluminium Capacity (Kg)	Brimful Capacity (Litres)
BX173E	397	343	215	42	22
BX174E	397	394	215	50	25
BX176E	397	432	215	58	28
BX164E	464	375	280	65	34
BX166E	527	402	315	85	44
BX167E	527	451	315	105	51
BX168E	527	492	315	119	56
BX169E	527	551	315	144	65
BX171E	527	600	315	165	73
BX177E	527	620	315	172	76
BX178E	527	710	315	207	89
BX179E	527	762	315	230	97
BX202E	616	500	355	163	77
BX302E	616	630	355	233	103
BX401E	616	700	355	271	117
BX402E	616	800	355	327	138
BX502E	616	900	355	382	158
BX712E	720	600	380	316	141
BX713E	720	670	380	370	161
BX714E	720	695	380	389	168
BX715E	720	730	380	416	178
BX716E	720	765	380	442	187
BX721E	720	785	380	457	193
BX724E	720	800	380	469	197
BX718E	720	885	380	534	221
BX719E	720	950	380	584	240
BX720E	720	975	380	603	247
BX1264E	769	600	460	310	142
BX847E	775	750	338	441	191
BX247E	775	750	460	444	192
BX263E	775	890	460	575	241
BX262E	775	950	460	635	263
BX264E	775	1000	460	700	287
BX850E	850	750	450	595	254
BX855E	850	890	450	749.0	311
BX851E	850	950	450	815	336
BX854E	850	980	450	848	348
BX857E	850	1000	450	870.0	356
BX2100E	850	1140	300	964	391
BX852E	850	1140	450	1130	453
BX853E	850	1240	450	1252	498

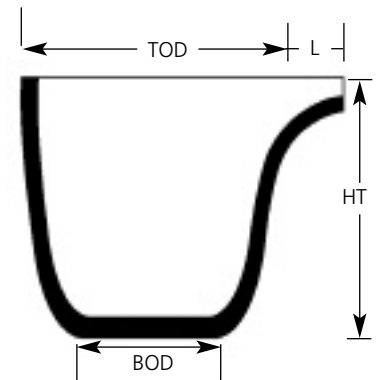
MORGANITE CRUCIBLE LTD reserves the right to change specifications at any time. Not responsible for any typographic errors.

EXCEL E BOWLS (BX_E)	TOD (mm)	HT (mm)	BOD (mm)	Aluminium Capacity (Kg)	Brimful Capacity (Litres)
BX300E	570	305	475	136	65
BX400E	700	450	305	161	83
BX500E	715	525	305	216	104
BX600E	725	585	305	262	122
BX700E	726	630	305	298	136
BX800E	726	690	305	347	154
BX890E	850	603	350	328	156
BX900E	850	650	350	386	178
BX1000E	850	690	350	431	194
BX1100E	850	750	350	500	220
BX1300E	850	813	350	560	242
BX1500E	850	850	350	611	261
BX1600E	850	890	350	656	278
BX1800E	850	980	350	757	315
BX2600E	850	1244	350	1025	414
BXB900E	885	650	350	409	188
BXB1000E	885	690	350	455	205



### Spouted Basins for Tilting Furnaces

EXCEL E SPOUTED BASINS (TBX_E / TPX_E)	TOD (mm)	HT (mm)	BOD (mm)	L (mm)	Aluminium Capacity (Kg)	Brimful Capacity (Litres)
TPX287E	527	600	315	146	150	56
TBX171E	527	600	315	280	151	56
TBX177E	527	621	315	280	158	59
TPX178E	527	710	315	146	192	71
TBX178E	527	710	315	280	193	71
TPX387E	616	630	355	146	213	79
TBX401E	616	700	355	290	253	94
TPX401E	616	700	355	146	254	94
TBX402E	616	800	355	290	308	114
TPX412E	616	800	355	146	310	115
TPX512E	616	900	355	146	361	134
TBX512E	616	900	355	324	362	134
TPX847E	775	750	338	184	803	297
TPX487E	775	750	460	184	399	148
TPX587E	775	890	460	184	530	196
TPX584E	775	1000	380	184	655	243
TPX1500E	850	850	350	184	555	206
TPX1600E	850	890	350	184	600	222
TPX1800E	850	980	350	184	700	259
TPX851E	850	950	450	184	752	279
TPX852E	850	1140	450	184	1067	395



#### Aluminium capacity is calculated as follows:

- A-Shapes - 90% of brimful
- Basins and Bowls - With a freeboard of 75mm
- Spouted Basins - With a freeboard of 75mm measured from the bottom of the spout

All dimensions are subject to normal manufacturing tolerances

Pyrometer pocket and hole in wall configurations are available to facilitate measurement of metal temperature

Alternative sizes to those listed can be made available by request

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

## 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 in fuel-fired furnaces. The stand and crucible should be installed centrally in the furnace.

## BALE-OUT FURNACES

The crucible should be installed with an 8mm gap between the upper wall of the crucible and the furnace lining to allow for expansion. Failure to leave a sufficient gap can lead to cracking.

A layer of ceramic fibre insulating material should be placed across the top of the furnace lining and the top surface of the crucible rim in order to seal the chamber and insulate the metal top plates. Ceramic fibre material must not be pushed down between the furnace lining and crucible wall as this would insulate the crucible, prevent the glaze from functioning, and lead to a rapid weakening by oxidation.

Where a flanged metal top ring is fitted to the furnace a 9mm gap should be present between the top ring and crucible wall to allow for expansion. Too small a gap can result in cracking of the crucible.

## 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.

## CLEANING OUT

Crucibles should be cleaned out carefully between melts or at least once per day in holding applications while hot in order to remove build-up of oxide dross. In tilting furnaces 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



Store crucibles off the floor in a dry, warm place.



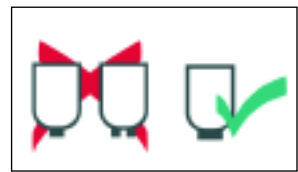
Do not nest one inside another. Separate layers with hardboard.



Do not roll crucibles. Move using a sack truck with padding.



Check thoroughly for cracks or damage before use.



Use the correct crucible stand which must be central and support the whole base.



Allow space for expansion between crucible and furnace lining/cover.



Use correctly positioned grip bricks in tilting furnaces, leaving gaps for expansion. Do not hang crucible on spout.



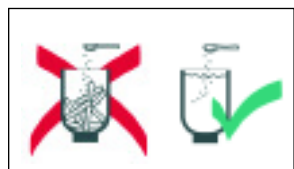
The flame path must be tangential to the crucible.



Ingots should be loaded carefully into the crucible using tongs.



First charge with light returns, as a cushion, then add ingots vertically.



Only add flux after the metal is molten.



Avoid ingress of cold air by ensuring that the drain hole is sealed.



Lift-out tongs should hold crucible on its lower third and fit evenly on both sides.



The crucible must be emptied before switching off the furnace.



The crucible should be cleaned out carefully every day while still red hot.



DISTRIBUTED BY



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