Magnesia Carbon Refractories

Product	MgO in DBM	Fixed C	Apparent Porosity	Coked AP at 1000°C in reducing atmosphere	Bulk Density	Cold Crushing Strength	MOR at room temperature	MOR at 1400°C	Application area
	%	%	%	%	gm/cm^3	kg/cm^2	kg/cm^2	kg/cm^2	
MCL MAGCARB-SL10	97.5	8.0	5.0	12.0	3.00	500	125	110	EBT/EOF, LD Converter
MCL MAGCARB-SL15	97.5	13.0	6.0	13.0	2.98	500	125	110	
MCL MAGCARB-HS10	97.5	8.0	5.0	12.0	3.00	500	125	110	
MCL MAGCARB-HS15	97.5	13.0	6.0	13.0	2.98	500	125	110	
MCL MAGCARB-HS20	97.5	18.0	6.0	14.0	2.95	450	110	90	
MCL MAGCARB- R5	97.0	4.0	4.0	11.0	3.05	450	125	90	LRF, VD, VOD slag zone
MCL MAGCARB- R5(S)	97.5	4.0	3.0	10.0	3.05	500	150	100	
MCL MAGCARB- R10	97.0	8.0	5.0	12.0	3.00	450	125	90	
MCL MAGCARB- R10(S)	97.5	8.0	4.0	11.0	3.00	500	150	100	
MCL MAGCARB -R15	97.0	13.0	5.0	13.0	2.95	400	100	90	
MCL MAGCARB- R15(S)	97.5	13.0	5.0	12.0	2.95	450	125	100	
MCL MAGCARB- SSL5	96.0	4.0	5.0	13.0	3.00	450	-	-	LRF,VD,VOD metal zone and bottom
MCL MAGCARB -SSL10	96.0	8.0	5.0	13.0	3.00	450	-	-	

Alumina Magnesia Carbon Refractories

Product	MgO in DBM	Fixed C	Al_2O_3	Apparent Porosity	Bulk Density	Cold Crushing Strength	Application area
	%	%	%	%	gm/cm^3	kg/cm^2	
MCL AMC- 5	10.0	5.0	60.0	7.0	2.95	400	LRF,VD, VOD metal zone and bottom
MCL AMC- 10	10.0	8.0	60.0	8.0	2.92	400	
MCL MALC-10	15.0	7.0	70.0	8.0	2.98	400	LRF,VD,VOD bottom impact

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Special Basic Refractories

Product	MgO	ZrO_2	SiO_2	Al_2O_3	Cr_2O_3	Fe_2O_3	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Application area
	%	%	%	%	%	%	%	gm/cm^3	kg/cm^2	°C	
DENSE MAGNESITE CHROME											
MCL MCLD-I	60.0	-	6.5	-	15.0	-	22.0	2.90	250	1600	General applications
MCL MCLD-II	65.0	-	5.0	-	12.0	-	20.0	2.90	300	1620	
MCL MCLD-III	70.0	-	4.0	-	10.0	-	20.0	2.95	350	1650	
DIRECT BONDED MAGNESITE CHROME											
MCL DBMC-I	65.0	-	3.0	-	12.0	-	18.0	2.95	350	1650	Non-ferrous industry
MCL DBMC-II	70.0	-	2.5	-	10.0	-	18.0	3.00	400	1700	
MCL DBMC-TZ	65.0	-	0.6	-	16.0	-	16.0	3.15	500	1700	
MCL DBMC-III	75.0	-	2.0	-	8.0	-	18.0	3.05	400	1700	Cement industry
DENSE CHROME MAGNESITE											
MCL CMN	30.0	-	-	-	18.0	-	25.0	2.85	200	1550	General applications
MCL CMN R	35.0	-	-	-	22.0	-	21.0	2.90	400	1550	Reheating Furnace Hearth
MCL DBCM-SPL	50.0	-	1.0	-	25.0	-	17.0	3.15	400	1700	Non-ferrous industry
MAGNESITE											
MCL MGN	85.0	-	6.5	-	-	-	22.0	2.85	350	1550	EAF, Hot Metal Mixer and general apllications
MCL MGR	60.0	-	-	-	-	-	21.0	2.75	400	1650	Reheating Furnace Hearth
MCL MGD-I	90.0	-	5.0	-	-	-	20.0	2.90	400	1600	EAF, Hot Metal Mixer and general apllications
MCL MGD-II	92.0	-	4.0	-	-	-	18.0	2.92	500	1620	
MCL MGD-III	94.0	-	3.0	-	-	-	18.0	2.92	500	1640	
LOW IRON MAGNESITE											
MCL MGIS-I	95.0	-	2.0	-	-	1.0	18.0	2.92	500	1650	Glass Industry and Special applications
MCL MGIS-II	96.0	-	1.5	-	-	0.8	18.0	2.95	500	1700	
MCL MGIS-III	97.0	-	1.0	-	-	0.6	18.0	2.98	600	1700	
MCL MGIS-IV	97.0	-	0.6	-	-	0.6	17.0	3.00	600	1700	
MAGNESITE ZIRCON BRICKS											
MCL MAG ZIR-TY-1	77.0	12.0	8.0	-	-	-	14.0	2.90	550	1650	Glass Tank Furnace Regenarator
MCL MAG ZIR-TY-2	74.0	12.0	10.0	-	-	-	16.0	2.90	500	1600	
MCL MAG ZIR-TY-3	92.0	4.0	0.5	-	-	-	17.0	2.85	500	1700	Lime Kiln
MAG-AL SPINEL BRICKS											
MCL MAG-AL-9010	90.0	-	1.0	7.0	-	0.8	17.0	3.00	600	1650	Lime Kiln and Cement Rotary Kiln
MCL MAG-AL-8515	86.0	-	1.5	12.0	-	0.8	18.0	2.95	600	1620	

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Basic Monolithics

Product	MgO	SiO_2	Cr_2O_3	Setting	Grading	Sintering temperature	Application temperature	Application area
	%	%	%		mm	°C	°C	
MCL MGM	85.0	-	-	Ceramic	0-0.5	1600		Mortar for general application
MCL MCM	55.0	-	12.0	Ceramic	0-1	1650		
MCL CMM	30.0	-	18.0	Ceramic	0-1	1650		
MCL PATCH MCX	75.0	-	8.0	Ceramic	0-2	800	1750	Masses for Induction Furnace
MCL RAM MCX	75.0	-	8.0	Ceramic	0-5	800	1750	
MCL RAM 84	84.0	-	-	Ceramic	0-5	1550	1750	Ramming Masses for EAF,EOF & LD
MCL FET 84	84.0	-	-	Ceramic	0-5	1500	1750	
MCL GUN 85	85.0	6.5	-	Chemical / Ceramic	0-4	1500	1750	
MCL RAM 86	86.0	-	-	Ceramic	0-5	1550	1750	
MCL RAM 90	90.0	5.0	-	Ceramic	0-5	1550	1750	
MCL RAM 95	95.0	2.5	-	Ceramic	0-5	1550	1750	Gunning Masses for EAF, EOF and LD Converter
MCL GUN 88	88.0	-	-	Ceramic	0-3	1550	1750	
MCL GUN 92	92.0	5.0	-	Ceramic	0-3	1550	1750	
MCL GUN 95	94.0	2.5	-	Ceramic	0-3	1550	1750	
MCL HOT PATCH MIX	88.0	2.0	-	Ceramic	0-4	1550	1750	Hot patching mass for LRF & BOF

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Insulation Bricks

Product	Service temperature	Refractoriness	Bulk Density	Apparent Porosity	Cold Crushing Strength	Thermal conductivity at 600 °C mean temperature	Al_2O_3	Fe_2O_3
	°C	Orton	gm/cm^3	%	kg/cm^2	W/mK	%	%
Maithan LW	1200	30	1.10	55.0	30	0.45	30.0	2.5
Maithan LWS	1200	30	1.30	50.0	70	0.58	30.0	2.5
Maithan HSI	1300	31	1.60	45.0	150	0.70	35.0	2.5
Maithan CFI	1250	30	0.80	65.0	15	0.35	30.0	2.5
Maithan CFS	1250	30	0.65	70.0	10	0.23	30.0	2.5
Maithan HFI	1300	30	0.90	60.0	20	0.40	30.0	2.5
Maithan HFK	1400	32	1.10	55.0	40	0.50	40.0	2.5
Maithan HFK HS	1400	32	1.30	50.0	100	0.60	40.0	2.0
Maithan HF 60S	1500	35	1.60	45.0	150	0.70	58.0	1.5

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Special Insulation Bricks

Product	Classification temperature	Bulk Density	Cold Crushing Strength	Thermal conductivity at mean temperature of				Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3
	°C	gm/cm^3	kg/cm^2	W/mK				%		%	%
				400°C	600°C	800°C	1000°C	for 24 hours			
Maithan HF22	1250	0.65	17	0.24	0.27	0.28	0.30	1200°C	± 0.5	40.0	0.70
Maithan HF23	1300	0.55	10	0.18	0.20	0.22	0.24	1250°C	± 0.6	42.0	0.65
Maithan HF25	1400	0.80	40	0.32	0.36	0.40	0.45	1350°C	± 1.5	38.0	0.80
Maithan HF26	1450	0.70	16	0.25	0.27	0.29	0.31	1350°C	± 0.5	58.0	0.70
Maithan HF28	1550	1.00	35	0.41	0.43	0.44	0.45	1450°C	± 0.7	60.0	1.00
Maithan HF28S	1550	0.90	40	0.39	0.41	0.47	0.43	1450°C	± 0.5	62.0	0.80
Maithan HF30	1650	1.10	40	0.46	0.51	0.56	0.60	1550°C	± 0.5	72.0	0.80
Maithan HF32	1700	1.30	60	0.58	0.63	0.67	0.70	1600°C	± 0.5	72.0	0.60

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Fireclay/Superduty

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Permanent Linear Change on Reheating	Refractoriness	Al_2O_3	Fe_2O_3	Other	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	°C	%	%	%		
MCL 30D	23.0	2.05	250	1350	1350°C/2 hrs. ±0.5	1690	36.0	2.5	-	Chamotte	General Purpose, Stove wall & checkerwork, glass tank bottom, coke ovens, anode baking, transfer ladles, backup
MCL 40	23.0	2.10	300	1400	1400°C/2 hrs. ±0.5	1710	40.0	2.5	-	Chamotte	
MCL 40D	21.0	2.15	300	1400	1400°C/2 hrs. ±0.5	1710	41.0	2.0	-	Chamotte	
MCL 40TB	22.0	2.15	250	1400	1400°C/2 hrs. ±0.5	1710	40.0	2.0	-	Chamotte	
MCL HG	20.0	2.15	300	1380	1400°C/2 hrs. ±0.5	1690	38.0	2.5	-	Chamotte	
MCL 42	21.0	2.20	350	1420	1420°C/2 hrs. ±0.8	1730	42.0	2.0	-	Chamotte/Kyanite	General Purpose, Stove wall & checkerwork, coke ovens, anode baking, blast funace main, reheating furnace, glass regenrator wall & checkerwork
MCL 42D	19.0	2.25	400	1430	1450°C/2 hrs. ±0.5	1730	43.0	2.0	-	Chamotte/Kyanite	
MCL 42SD	16.0	2.28	500	1450	1450°C/2 hrs. ±0.3	1730	44.0	1.5	-	Chamotte/Kyanite	
MCL 45	21.0	2.25	400	1430	1450°C/2 hrs. ±0.5	1745	45.0	1.8	-	Chamotte/Sillimanite	
MCL 45D	19.0	2.30	450	1470	1480°C/2 hrs. ±0.5	1745	45.0	1.5	-	Chamotte/Sillimanite	
MCL 45SD	16.0	2.36	600	1480	1500°C/2 hrs. ±0.5	1750	47.0	1.0	-	Chamotte/Sillimanite	

High Performance Superduty

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Permanent Linear Change on Reheating	Refractoriness	Al_2O_3	Fe_2O_3	Other	Primary Raw Material	
	%	gm/cm^3	kg/cm^2	°C	%	°C	%	%	%		
MCL S	16.0	2.38	600	1500	1500°c/2 hrs. ±0.4	1750	47.0	1.0	Alkali: 0.6	Chamotte/Sillimanite	Blast Furnace upper stack & throat
MCL SX	15.0	2.40	650	1540	1500°c/2 hrs. ±0.2	1770	48.0	0.9	Alkali: 0.5	Kaolin/Andalusite	Glass regenerator wall & checkerwork
MCL SDA	18.0	2.36	600	1530	1500°c/2 hrs. ±0.3	1770	48.0	0.9	Alkali: 0.5	Kaolin/Andalusite	Anode Baking furnace
MCL SDT	12.0	2.40	700	1520	1500°c/2 hrs. ±0.2	1770	48.0	0.9	Alkali: 0.5	Kaolin/Andalusite	TV Glass furnace regenerator
MCL SDP	16.0	2.38	600	1500	1500°c/2 hrs. ±0.5	1750	45.0	1.0	P_2O_5: 1.5	Chamotte/Sillimanite	Aluminum Indus., Blast furnace throat

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High Alumina: Low Iron

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Permanent Linear Change on Reheating	Al_2O_3	Fe_2O_3	Other	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	%	%	%		
MCL 50K	21.0	2.28	450	1480	1480°C/2 hrs. ±0.5	50.0	1.5	-	Kyanite	General applications, Stove checkerwork & wall, Reheating furnace roof, Glass general applications, Glass tank bottom, Glass regenerator, Blast furnace, Coke oven, Lime calcination, Ceramic industry
MCL SILL	21.0	2.30	450	1500	1500°C/2 hrs. ±0.5	56.0	1.5	-	Kyanite/Sillimanite	
MCL SILL D	18.0	2.35	500	1520	1500°C/2 hrs. ±0.5	58.0	1.2	Alkali: 0.8	Kyanite/Sillimanite	
MCL 60K	20.0	2.35	500	1520	1500°C/2 hrs. ±0.5	60.0	1.5	-	Kyanite/Sillimanite	
MCL 62	21.0	2.42	500	1520	1500°C/2 hrs. ±0.5	62.0	1.5	-	Sillimanite/Alumina	
MCL 62D	18.0	2.45	600	1550	1600°C/2 hrs. ±0.5	62.0	1.2	Alkali: 0.8	Sillimanite/Alumina	
MCL 60TB	21.0	2.40	450	1540	1600°C/2 hrs. ±0.5	60.0	1.2	-	Sillimanite/Alumina	
MCL 62SD	16.0	2.50	650	1580	1600°C/2 hrs. ±0.3	63.0	1.0	Alkali: 0.6	Sillimanite/Fused Alumina	
MCL 70D	18.0	2.60	600	1600	1600°C/2 hrs. ±0.3	70.0	1.0	Alkali: 0.5	Sillimanite/Fused Alumina	

High Alumina: Bauxite

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Permanent Linear Change on Reheating	Al_2O_3	Fe_2O_3	Other	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	%	%	%		
MCL 50B	23.0	2.30	350	-	-	50.0	-	-	Bauxite/Chamotte	General applications in steelmaking
MCL 60B	23.0	2.50	400	-	-	60.0	-	-	Indigenous Bauxite	
MCL 70B	23.0	2.60	450	-	1600°c/2 hrs. ±2.5	68.0	3.0	-	Indigenous Bauxite	
MCL 75BD	21.0	2.65	550	1500	1600°c/2 hrs. ±2.0	75.0	2.5	-	Chinese Rotary Kiln Bauxite	Steel ladle metal line and backup
MCL 80B	21.0	2.70	500	1480	1600°c/2 hrs. ±1.5	78.0	3.0	-	Chinese Round Kiln Bauxite	
MCL 80BD	20.0	2.75	550	1520	1600°c/2 hrs. ±1.5	80.0	2.5	-	Chinese Rotary Kiln Bauxite	

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High Alumina: Specialised

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Permanent Linear Change on Reheating	Al_2O_3	Fe_2O_3	Other	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	%	%	%		
MCL 62AD	16.0	2.50	650	1600	1600°C/2 hrs. ±0.5	62.0	1.0	Alkali: 0.6	Andalusite/Fused Alumina	Glass regenerator packing support, wall, checkerwork, crown, port, Blast furnace hearth, belly, bosh, stack
MCL 62ADS	16.0	2.55	650	1650	1600°C/2 hrs. ±0.3	63.0	0.9	Alkali: 0.6	Andalusite/Fused Alumina	
MCL 65AD	16.0	2.57	700	1650	1600°C/2 hrs. ±0.3	65.0	0.8	Alkali: 0.5	Andalusite/Fused Alumina	
MCL 65ADS	16.0	2.60	700	1680	1600°C/2 hrs. ±0.2	66.0	0.8	Alkali: 0.5	Andalusite/Fused Alumina	
MCL MULCOR 70	16.0	2.60	700	1700	1600°C/2 hrs. ±0.2	69.0	0.6	Alkali: 0.4	Andalusite/Fused Alumina	
MCL MULCOR 80	15.0	2.80	1000	1700	1650°C/2 hrs. ±0.1	80.0	0.5	Alkali: 0.3	Mullite/Fused Alumina	Blast Furnace hearth, bosh, belly
MCL MULCOR 90	16.0	2.90	900	1700	1700°C/2 hrs. ±0.1	90.0	0.3	Alkali: 0.3	Fused Alumina	Chemical industry, Specialized iron & steel applications, Carbon black, Secondary reformers, High temperature kilns
MCL COR 94	16.0	3.00	900	1700	1700°C/2 hrs. ±0.1	94.0	0.3	Alkali: 0.3	Fused Alumina/Tabular Alumina	
MCL 80 SDP	18.0	2.75	800	1550	1600°C/2 hrs. ±1.5	82.0	1.5	P_2O_5: 1.5	Chinese Bauxite/Fused Alumina	Aluminum industry
MCL 85 SDP	18.0	2.80	800	1550	1600°C/2 hrs. ±1.5	85.0	1.0	P_2O_5: 1.5	Chinese Bauxite/Fused Alumina	
MCL HAH	18.0	2.95	1000	1550	1600°C/2 hrs. ±0.5	88.0	1.8	Morgan Marshall: 30	Chinese Bauxite/Fused Alumina	Rolling mill hearth
MCL MULL	18.0	2.55	650	1700	1650°C/2 hrs. ±0.1	72.0	0.5	Mullite Phase: 80	Fused Mullite	Glass specialized applications, regenrator wall, crown & packing, High temperature kilns
MCL MULL D	16.0	2.60	700	1700	1700°C/2 hrs. ±0.1	75.0	0.3	Mullite Phase: 90	Fused Mullite	
MCL MULL X	15.0	2.65	900	1700	1700°C/2 hrs. ±0.1	76.0	0.3	Mullite Phase: 90	Fused Mullite/Tabular Alumina	

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Zircon Bearing

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Al_2O_3	ZrO_2	Fe_2O_3	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	%	%		
MCL ZIR 63	20.0	3.60	600	1600	-	63.0	0.5	Zircon Sand	Glass melter sub paving, superstructure, steel metering nozzle
MCL ZIR 65	17.0	3.70	800	1700	1.0	65.0	0.3	High Purity Zircon Sand	
MCL ZM 4831	16.0	3.05	1000	1700	48.0	30.0	0.5	Fused AZS/Zircon/Alumina	Glass melter sub paving, glass contact, superstructure, regenerator wall, port, crown
MCL ZM 5725	15.0	3.10	1200	1700	56.0	24.0	0.5	Fused AZS/Zircon/Alumina	
MCL ZM 6010	17.0	2.90	800	1650	60.0	10.0	0.8	Andalusite/Zircon	
MCL ZM 7020	18.0	2.95	800	1700	68.0	18.0	0.3	Fused AZS/Zircon/Fused Alumina	

Silicon Carbide

Product	Apparent Porosity	Bulk Density	Cold Crushing Strength	RUL ta	Al_2O_3	SiC	Fe_2O_3	Primary Raw Material	Application
	%	gm/cm^3	kg/cm^2	°C	%	%	%		
MCL SiC 80	19.0	2.45	600	1500	15.0	80.0	1.2	Fused SIC/Clay	Ferro alloy submerged arc furnace
MCL SiC 85	16.0	2.50	800	1550	12.0	84.0	0.9	Fused SIC/Clay	

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Refractory Cement and High Purity Binder

Product	Refractoriness		Cold Crushing Strength*			Specific surface area	Specific gravity	Setting time		Al_2O_3	SiO_2	CaO	Fe_2O_3	MgO	Mineralogical Composition	
	Orton Cone	°C	kg/cm^2			cm^2/gm	gm/cm^3	minutes		%	%	%	%	%	Principal phases	Secondary phases
			After 6 hrs.	After 1 day	After 1 day+ 1 day at 100°c			Initial	Final							
HYBOND 75	31	1683	125	350	500	4000	2.90-2.95	40	400	70.0	0.7	23.6	0.3	0.8	Ca, Ca_2	$C_{12}A_7$, α Alumina
HYBOND SUPER	34	1763	20	150	400	4500	3.10-3.20	30	300	78.0	0.5	18.5	0.3	-	Ca, Ca_2, α-Alumina	$C_{12}A_7$
LUMICEM	13-14	1349-1398	150	400	450 (after 3 days)	3000	-	30	400	48.0	4.0	35.0	5.0	0.9	Ca	$C_{12}A_7$,C_2A_5,CT

* 1:3 vibrated mortar using standard graded sand

Lumicem is a High Alumina Refractory Binder that sets hydraulically and with refractory aggregates, provides a superior refractory castable.Lumicem contains more than 45% Alumina and exibits excellent setting behaviour.Comparatively lower level of iron makes Lumicem a binder with refractoriness of over 1380°C. The castable made using Lumicem develops high crushing strength and abrasion resistance.Lumicem is equivalent to Calandum, Cement Fondu, Luminite, Istra and other Alumina refractory binders available in the market internationally.

A quality assurance plan has been implemented with stringent quality parameters covering the entire process which also conforms and is certified to the international quality standard ISO 9001:2000

The above data constitutes average results of current production test values

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Conventional Castables

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°C	Refractoriness	Dry density at 110°C	Cold Crushing Strength		Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2		%		%	%
Mac Cast / Maccast-C (SI)	1300	11-14	± 0.55	20/1564	2000	110°C/ 24hrs. 800°C/ 3hrs.	250 200	800°c/3hrs.	± 0.50	34.0	3.0
Mac Crete Special	1350	11-12	± 0.55	1450	2150	110°C/ 24hrs. 800°C/ 3hrs. 1350°C/ 3hrs.	400 250 300	1350°c/2hrs.	± 0.8	40.0	4.0
Mac Crete Normal	1400	10.5-12	± 0.55	1580	2100	110°C/ 24hrs. 800°C/ 3hrs. 1350°C/ 3hrs.	250 240 225	1400°c/3hrs.	± 1.0	48.0	4.0
Mac Crete Super	1450	11-12	± 0.65	1680	2450	110°C/ 24hrs. 800°C/ 3hrs. 1450°C/ 3hrs.	350 300 450	1400°c/3hrs.	± 1.0	55.0	5.5
Macheat C	1500	10.5-11.5	± 0.55	30/1665	2100	110°C/ 24hrs. 800°C/ 3hrs. 1450°C/ 3hrs.	350 280 500	1500°c/3hrs.	± 1.0	48.0	1.8
Macheat C Super	1500	10-11	± 0.55	1665	2280	110°C/ 24hrs. 800°C/ 3hrs.	450 390	1500°c/3hrs.	± 0.9	50.0	1.7
Macheat C Special	1500	11-12	± 0.55	1500	2000	110°C/ 24hrs. 800°C/ 3hrs. 1350°C/ 3hrs.	400 360 260	1500°c/3hrs.	± 1.0	50.0	1.3
Macheat K	1600	10-11	± 0.60	31/1683	2200	110°C/ 24hrs. 800°C/ 3hrs. 1550°C/ 3hrs.	350 280 520	1550°c/3hrs.	± 1.5	55.0	1.8
Macheat K Special	1600	10-11	± 0.88	1670	2000	110°C/ 24hrs. 800°C/ 3hrs. 1550°C/ 3hrs.	450 350 550	1550°c/3hrs.	± 1.5	57.0	1.5

Maximum Grain size: 5mm **Nature of Bond: Hydraulic** **Installation: Pouring / Casting** **Delivery state: Dry** **Shelflife: 6 months**

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use.

The above data constitutes average results of current production test values

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Conventional Castables

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°c	Refractoriness	Dry density at 110°c	Cold Crushing Strength		Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3	CaO	SiO_2
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2		%		%	%	%	%
Macheat A High Strength	1700	9-10	± 0.80	1750	2750	110°c/24hrs.	650	1550°c/3hrs.	± 1.0	88.0	1.5	-	-
Macheat A Supreme	1700	10-11	± 0.80	1750	2650	110°c/24hrs.	500	1500°c/3hrs.	± 2.0	77.0	1.2	-	-
						800°c/3hrs.	400						
						1550°c/3hrs.	600						
Macheat M	1700	9-10	± 0.75	1800	2600	110°c/24hrs.	350	1550°c/3hrs.	± 2.0	75.0	1.5	-	-
						800°c/3hrs.	450						
						1550°c/3hrs.	600						
Macheat 65A	1700	10-11	± 0.75	1800	2400	110°c/24hrs.	400	1550°c/3hrs.	± 1.0	62.0	1.5	-	-
						800°c/3hrs.	350						
						1550°c/3hrs.	550						
Macheat A	1750	9-10	± 0.80	37/1820	2800	110°c/24hrs.	600	1500°c/3hrs.	± 2.0	84.0	1.0	-	-
						800°c/3hrs.	430						
						1550°c/3hrs.	650						
Macheat 94T	1800	9-10	± 0.90	38/1835	2800	110°c/24hrs.	600	800°c/3hrs.	± 0.1	93.0	0.3	5.0	0.3
						800°c/3hrs.	450	1100°c/3hrs.	± 0.2				
						1100°c/3hrs.	400	1550°c/3hrs.	± 0.4				
						1550°c/3hrs.	650						
Macheat 97T	1850	9-10	± 0.90	38/1835	2600	110°c/24hrs.	400	1100°c/3hrs.	± 0.25	95.0	0.3	2.8	-
						800°c/3hrs.	280						
						1100°c/3hrs.	280	1550°c/3hrs.	± 0.8				
						1550°c/3hrs.	380						

Maximum Grain size: 5mm **Nature of Bond: Hydraulic** **Installation: Pouring / Casting** **Delivery state: Dry** **Shelflife: 6 months**

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use. Th above data constitutes average results of current production test values

Low Cement Castables

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°C	Refractoriness	Dry density at 110°C	Cold Crushing Strength				Permanent Linear Change on reheating			Al_2O_3	Fe_2O_3
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2				%			%	%
						110°C/24hrs.	800°C/ 3hrs.	1100°C/3hrs.	1500°C/3hrs.	800°C/3hrs.	1100°C/3hrs.	1500°C/3hrs.		
MAC VIB 45	1550	5.0-6.0	± 0.55	32/1717	2300	700	800	900	1000	± 0.2	± 0.3	± 1.0	45.0	2.0
MAC VIB 60	1600	5.0-6.0	± 0.66	36/1804	2600	750	800	900	1000	± 0.2	± 0.3	± 1.0	57.0	1.8
MAC VIB 60S	1600	4.7-5.5	± 0.60	36/1804	2550	750	800	900	1000	± 0.2	± 0.3	± 0.8	58.0	1.3
MAC VIB 70	1600	4.5-5.0	± 0.65	36/1804	2700	750	800	900	1000	± 0.2	± 0.3	± 1.0	68.0	2.0
MAC VIB 70LI	1650	4.5-5.2	± 0.65	36/1804	2650	700	800	900	1000	± 0.12	± 0.2	± 0.7	68.0	1.5
MAC VIB 70M	1700	4.5-5.5	± 0.65	37/1820	2600	700	800	900	1100	± 0.2	± 0.3	± 0.6	70.0	1.3
MAC VIB 80	1700	4.5-4.8	± 0.75	37/1820	2900	800	900	1000	1200	± 0.2	± 0.3	± 1.2	78.0	2.3
MAC VIB 90	1700	4.2-4.5	± 0.85	37/1820	3050	950	1000	1150	1200	± 0.2	± 0.3	± 0.6	87.0	1.5
MAC VIB 95	1800	4.0-4.8	± 0.90	38/1835	3100	1000	1050	1100	1250	± 0.2	± 0.3	± 0.8	92.0	0.3

Maximum Grain size: 6mm **Nature of Bond: Hydraulic** **Installation: Vibrating** **Delivery state: Dry** **Shelflife: 3 months**

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use.

The above data constitutes average results of current production test values

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Insulating Castable

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°c	Refractoriness	Dry density at 110°c	Cold Crushing Strength		Thermal conductivity at 500°c hot face	Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2		Kcal/hr. m. °C	%		%	%
Maclite LT	500	25-30	± 0.50	-	1400	110°C/24 hrs.	90	0.40	500°C/3 hrs.	± 0.5	24.0	2.5
						500°C/3 hrs	45					
Maclite Pourable	900	60-70	± 0.60	-	700	110°C/24 hrs.	15	0.22	800°C/3 hrs.	± 1.5	20.0	9.0
						800°C/3 hrs.	12					
Maclite 4	1000	100-110	± 0.55	-	500	110°C/24 hrs.	4	0.10	800°C/3 hrs.	± 0.5	30.0	11.0
						800°C/3 hrs.	2					
Maclite 7	1100	70-80	± 0.57	12/1337	850	110°C/24 hrs.	12	0.14	800°C/3 hrs.	± 1.0	33.0	8.5
						800°C/3 hrs.	4		1100°C/3 hrs.	± 1.6		
						1000°C/3 hrs.	6					
Maclite 9	1100	55-60	± 0.57	14/1398	1000	110°C/24 hrs.	15	0.28	500°C/3 hrs.	± 0.2	33.0	6.0
						800°C/3 hrs.	6		800°C/3 hrs.	± 0.6		
						1000°C/3 hrs.	10		1100°C/3 hrs.	± 1.0		
Maclite 9HS	1100	38-45	± 0.57	14/1398	1000	110°C/24 hrs.	20	0.28	1100°C/3 hrs.	± 1.5	40.0	3.0
						800°C/3 hrs.	10					
						1300°C/3 hrs.	16					
Maclite 10S	1100	45-50	± 0.55	13/1349	1100	110°C/24 hrs.	20	0.22	800°C/3 hrs.	± 0.8	30.0	6.0
						800°C/3 hrs.	15		1200°C/3 hrs.	± 1.2		
						1200°C/3 hrs.	12					
Maclite 8S	1300	45-50	± 0.57	15/1430	900	110°C/24 hrs.	25	0.20	800°C/3 hrs.	± 0.3	40.0	1.0
						800°C/3 hrs.	20		1100°C/3 hrs.	± 0.5		
						1300°C/3 hrs.	30		1300°C/3 hrs.	± 1.0		
Maclite 11LI(Z)	1300	40-45	± 0.60	14/1398	1000	110°C/ 24 hrs.	10	0.22	1100°C/3 hrs.	± 1.0	45.0	1.2
						800°C/3 hrs.	5					
						1100°C/3 hrs.	5		1300°C/3 hrs.	± 1.5		
						1300°C/ 3 hrs.	35					
Maclite 11	1350	35-40	± 0.57	14/1398	1250	110°C/ 24 hrs.	35	0.31	1100°C/3 hrs.	± 0.2	34.0	3.5
						800°C/3 hrs.	25					
						1000°C/ 3 hrs.	25		1300°C/3 hrs.	± 1.0		
						1300°C/3 hrs.	40					
Maclite 11LI	1350	35-40	± 0.60	14/1398	1250	110°C/24 hrs.	45	0.34	1100°C/3 hrs.	± 0.2	45.0	1.5
						800°C/ 3 hrs.	30					
						1100°C/3 hrs.	30		1300°C/3 hrs.	± 1.0		
						1300°C/3 hrs.	50					

Maximum Grain size: 6mm **Nature of Bond: Hydraulic** **Installation: Rodding/Tamping*** **Delivery state: Dry** **Shelflife: 6 months**

* For Maclite Pourable: Pouring

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use.

The above data constitutes average results of current production test values

Insulating Castables

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°c	Refractoriness	Dry density at 110°c	Cold Crushing Strength		Thermal conductivity at 500°c hot face	Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2		Kcal/hr. m. °C	%		%	%
Maclite 11 SPL.	1350	30-35	± 0.6	14/1398	1100	110°C/24 hrs.	30	0.30	1100°C/3 hrs.	± 0.2	41.0	1.5
						800°C/3 hrs.	25		1300°C/3 hrs.	± 1.0		
						1100°C/3 hrs.	25					
						1300°C/3 hrs.	35					
Maclite 13	1350	30-35	± 0.6	14/1398	1450	110°C/24 hrs.	50	0.33	1100°C/3 hrs.	± 0.2	39.0	3.5
						800°C/3 hrs.	30		1300°C/3 hrs.	± 0.6		
						1000°C/3 hrs.	30					
						1300°C/3 hrs.	50					
Maclite 13LI	1350	35-40	± 0.6	15/1430	1450	110°C/24 hrs.	80	0.40	1100°C/ 3 hrs.	± 0.2	44.0	1.5
						800°C/3 hrs.	40		1300°C/3 hrs.	± 0.6		
						1100°C/3 hrs.	80					
						1300°C/3 hrs.	40					
Maclite 15	1350	30-35	± 0.6	15/1530	1600	110°C/24 hrs.	90	0.44	1100°C/3 hrs.	± 0.2	40.0	3.2
						800°C/3 hrs.	60		1300°C/3 hrs.	± 0.6		
						1000°C/3 hrs.	60					
						1300°C/3 hrs.	70					
Maclite 15LI	1350	25-30	± 0.6	15/1430	1600	110°C/24 hrs.	130	0.44	800°C/3 hrs.	± 0.2	45.0	1.5
						800°C/3 hrs.	75		1100°C/3 hrs.	± 0.5		
						1100°C/3 hrs.	75		1300°C/3 hrs.	± 1.0		
						1300°C/3 hrs.	90					
Maclite HT	1500	25-35	± 0.6	23/1605	1550	110°C/24 hrs.	80	0.42	1100°C/3 hrs.	± 0.5	63.0	1.4
						800°C/3 hrs.	40		1300°C/3 hrs.	± 1.5		
						1100°C/3 hrs.	40					
						1300°C/3 hrs.	50					
Maclite 97L	1800	20-25	± 0.8	38/1835	1650	110°C/24 hrs.	70	1.10	800°C/3 hrs.	± 1.1	95.0	0.3
						800°C/3 hrs.	60		1100°C/3 hrs.	± 0.2		
						1100°C/3 hrs.	40		1550°C/3 hrs.	± 1.2		
						1550°C/3 hrs.	60					

Maximum Grain size: 6mm **Nature of Bond: Hydraulic** **Installation: Rodding/Tamping** **Delivery state: Dry** **Shelflife: 6 months**

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use.

The above data constitutes average results of current production test values

Customized products for Sponge Iron

Product	Maximum service temperature	Water addition at site	Reversible thermal expansion at 1000°C	Refractoriness	Dry density at 110°C	Cold Crushing Strength		Permanent Linear Change on reheating		Al_2O_3	Fe_2O_3	$Al_2O_3 + ZrO_2 + TiO_2$	Special Features
	°C	%	%	Orton Cone/°C	kg/m^3	kg/cm^2		%		%	%		
MACLITE 11 (SI)	1300	30-40	± 0.57	14/1398	1250	110°C/ 24hrs.	35	1100°C/3hrs.	± 0.2	28.0	4.5	-	
						800°C/3hrs.	25						
						1000°C/3hrs.	25	1300°C/3hrs.	± 1.0				
						1300°C/3hrs.	40						
MAC HEAT C (SI)	1450	10.5-11.5	± 0.55	30/1665	2050	110°C/24hrs.	350	1500°C/3hrs.	± 1.0	34.0	3.0	-	
						800°C/3hrs.	280						
						1450°C/3hrs.	500						
MAC VIB 45 (GCT)	1450	7-10		31	2200	110°C/24hrs.	700	800°C/3hrs.	± 0.2	43.0	1.2	-	Extra high sticking during application;suitable for GCT and Pollution Duct with reasonable outside temperature,withstand chemical attack & high velocity dust laden gases
						800°C/3hrs.	800						
						1100°C/3hrs.	900	1100°C/ 3hrs.	± 0.3				
MAC VIB 45M	1550	5-6	± 0.55	32/1717	2300	110°C/24hrs.	700	800°C/3hrs.	± 0.2	45.0	0.7	-	
						800°C/3hrs.	800	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	900						
						1500°C/3hrs.	1000	1500°C/ 3hrs.	± 1.0				
MAC VIB 60 (SI)	1550	5-6	± 0.66	36/1804	2500	110°C/24hrs.	650	800°C/3hrs.	± 0.2	-	1.5 ± 0.5	60.0	Load thermal conductivity and good load bearing capacity. Best suitable for preheating zones for 100 TPD DRI kiln.
						800°C/3hrs.	700	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	800	1500°C/3hrs.	± 1.0				
MAC VIB 70 (SI)	1550	4.5-5.0	± 0.65	36/1804	2600	110°C/24hrs.	650	800°C/3hrs.	± 0.2	-	1.5 ± 0.5	70.0 ± 2.0	High abrasion resistance and load bearing capacity.Best suitable for middle zones of 100 TPD DRI kiln
						800°C/3hrs.	700	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	800	1550°C/3hrs	± 1.0				
MAC VIB 60M SPL.	1600	5		36	2600	110°C/24hrs.	750	800°C/3hrs.	± 0.2	60.0	0.8	-	Excellent spalling resistance, high abrasion & anti-accretion characteristic, low outer shell temperature
						800°C/3hrs.	1000	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	1200						
MAC VIB 60 LR	1600	5		36	2600	110°C/24hrs.	750	800°C/3hrs.	± 0.2	60.0	1.0	-	Low outer shell temperature, excellent spalling resistance, high abrasion and anti accretion characteristic
						800°C/3hrs.	1000	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	1200						
MAC VIB 80 (SI)	1650	4.5-5.5	±0.75	36/1804	2700	110°C/24hrs.	700	800°C/3hrs.	± 0.2	-	2.0 ± 0.3	80.0 ± 2.0	High abrasion resistance and high load bearing capacity.Best suitable for 100 TPD DRI kiln
						800°C/3hrs.	800	1100°C/3hrs.	± 0.3				
						1100°C/3hrs.	900	1550°C/3hrs.	± 0.8				
MAC VIB 80 SPL/LI	1700	5		37/1820	2900	800°C/3hrs.	1200	800°C/3hrs.	+0.2	80.0	1.0	-	Anti accretion,wear resistace and high degree of resistance to reducing atmosphere
						1100°C/3hrs.	1500	1100°C/3hrs.	+0.3				
MAC VIB 80 LR	1700	5		37/1820	2900	800°C/3hrs.	1200	800°C/3hrs.	+0.2	80.0	1.2	-	Tailor made for sintering zone,low outer shell temperature
						1100°C/3hrs.	1500	1100°C/3hrs.	+0.3				

Maximum Grain size: 6mm* **Nature of Bond: Hydraulic** **Installation: Vibrating**** **Delivery state: Dry** **Shelflife: 3 months*****

* For MACHEAT C(SI) and MAVIB 45(GCT): 5 mm

** For MACHEAT C(SI) and MACLITE 11(SI): pouring/casting

*** For MACHEAT C(SI) and MACLITE 11(SI): 6 months

In addition to the above we can supply tailor made specifications to suit customer's requirement. For each product, a current product information will be provided. Please follow application procedure sheet before use.

The above data constitutes average results of current production test values

High Alumina, Zircon Mortar, Patch & Ramming Masses

Product	Grain size	Type of setting	Sintering Temperature	Al_2O_3	ZrO_2
	(mm)		°C	(%)	(%)
MCL ZSM	0 - 0.5	Chemical	1000 - 1100		50.0
MCL ZMM	0 - 0.5	Chemical	1000 - 1100	65.0	15.0
MCL PATCH ZS	0 - 2.0	Chemical	1000 - 1100		50.0
MCL PATCH ZM	0 - 2.0	Chemical	1000 - 1100	55.0	24.0
MCL RAM ZS	0 - 2.0	Chemical	1000 - 1150		50.0
MAC SET-70K	0 - 0.5	Chemical	1200	69.0	
MAC SET-90K	0 - 0.5	Chemical / Ceramic	1200	89.0	

Insulating, Heat & Air Setting Mortar & Pot Mix

Product	Grain size	Type of Setting	Service Temperature	Refractoriness	Al_2O_3	Fe_2O_3
	(mm)		°C	Orton	(%)	(%)
MAC INS-30	0 - 0.5	Ceramic		29 - 30	30.0	2.0
MAC INS-K	0 - 0.5	Ceramic		32 - 33	42.0	1.8
MAC SET INSUL-K	0 - 0.5	Air Setting	1500		42.0	1.5
MAC SET ASC	0 - 0.5	Air Setting	1600		42.0	1.5
MAC SET SILL	0 - 0.5	Air Setting	1650		52.0	1.5
MAC SET SILL SUPER	0 - 0.5	Air Setting	1500	35	58.0	1.2
MAC SET-50 (F) SINGLE COMPONENT	0 - 0.5	Air Setting	1550		50.0	2.5
MAC SET-50 (N) SINGLE COMPONENT	0 - 1.0	Air Setting	1550		50.0	2.5
MAC SET-60	0 - 0.5	Air Setting	1600		60.0	2.5
MAC SET-70	0 - 0.5	Air Setting	1650		70.0	3.0

Note :

Delivery state : For Air Setting Mortar Single / Double component i.e. Dry and Liquid Binder.

Grading : 95% passing thropugh the maximum indicated grain size.

Service Temperature : The temperature given above are indicative.

Above are average test data subject to reasonable variation.

MAC SET-50 is equivalent to ACCOSET-50 of ACC.

In addition, we can supply tailor made variety to suit **Customer's requirement.**

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Fireclay Mortar

Product	Refractoriness	Grain size	Service Temperature	Type of Setting	Al_2O_3	Fe_2O_3
	Orton	(mm)	°C		(%)	(%)
MAC MH	29 - 30	0 - 1	1300	Ceramic	30.0	2.0
MAC HH	31 - 32	0 - 1	1400	Ceramic	36.0 - 38.0	2.0
MAC SH	32 - 33	0 - 0.5	1450	Ceramic	42.0 - 45.0	2.0
MAC SILL	34 - 35	0 - 0.5	1450	Ceramic	50.0 - 52.0	1.5
MAC SILL (SPL.)	35 - 36	0 - 0.5	1500	Ceramic	54.0 - 56.0	1.5
MAC-50	33 - 34	0 - 0.5	1550	Ceramic	50.0	2.5
MAC-60	34 - 35	0 - 0.5	1600	Ceramic	60.0	2.5

High Alumina Mortar

Product	Refractoriness	Grain size	Service Temperature	Type of Setting	Al_2O_3	Fe_2O_3
	Orton	(mm)	°C		(%)	(%)
MAC-70	35 - 36	0 - 0.5	1650	Ceramic	70.0	3.0
MAC-70S	35 - 36	0 - 0.5	1700	Ceramic	70.0	2.0
MAC-70 LI	36	0 - 0.5	1700	Ceramic	70.0	1.0
MAC-80	36 - 37	0 - 0.5	1700	Ceramic	80.0	3.0
MAC-80 LI	38	0 - 0.5	1750	Ceramic	80.0	0.5
MAC-90 SPL	38	0 - 0.5	1800	Ceramic	90.0	0.5

Plastic Materials

Product	Installation	Grain size	Service Temperature	Nature of Bond	B.D. at 1000°C	Status of delivery	Al_2O_3
		(mm)	°C		gm/cm3		%
Plastocast 30P	Ramming	0 - 7	1450	Ceramic	1.90	Slices	30.0
Plastocast 40P	Ramming	0 - 7	1540	Ceramic	2.06	Slices	40.0
Plastocast 45P	Ramming	0 - 7	1600	Ceramic	2.10	Slices	45.0
Plastocast 60P	Ramming	0 - 7	1650	Ceramic	2.27	Slices	60.0
Plastocast 80P	Ramming	0 - 7	1700	Ceramic	2.55	Slices	80.0

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