



INDUSTRIAL PLANT EQUIPMENT & TRADING L.L.C

REFRACTORY HAND BOOK

(revision 2-2019)

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INDUSTRIAL PLANT EQUIPMENT & TRADING L.L.C

SUMMARY

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Item	Grade	Chemical Analysis			Bulk density (g/cm3)	Appar. porosity (%)	Cold crushing strength (N/mm2)	Thermal expansion		Application	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)				1200°C (%)	1500°C (%)		
28 V	T.AL.30.V	35	0,2	63	2,3	18	80	0,5 (1000°C)		acid proof	
1 V	T.AL.42.V	44	1,6		2,25	15	> 45	0,6 (1100°C)	0,8 (1400°C)	bottom insulation	
2 V	T.AL.40.V	45,2	1,9	40,3	2,05	19	> 45	0,6 (1000°C)		bottom insulation	
3 V	T.AL.50.V	50	0,5	42	2,4	18	≥ 80	0,6		forehearth superstructure, special shapes	
29 V	T.AL.52.V	54	0,7	40,9	2,2	14	≥ 60	0,6 (1100°C)	0,8 (1400°C)	bottom blocks and special shape	
30 V	T.AL.49.LW.V	50,1	1	38,3	0,8		4			special shapes insulation high temperature resistance	
31 V	T.AL.50.LW.V	54,5	0,6	31,8	1,5		9			special shapes insulation high temperature resistance	
32 V	T.AL.56.LW.V	56	0,7	25	0,8		4			special shapes insulation high temperature resistance	
33 V	T.AL.59.V	59,2	1,1	35	2,4	18	65			bottom blocks and special shape	
4 V	T.AL.60.V	60	0,9	34	2,4	21	≥ 30	0,7		special shapes	
34 V	T.AL.70.F-ND.V	70	0,6	27,3	2,6	18	90	2,1		bottom paving, insulation wall in large shape size	
35 V	T.AL.70.F-NL.V	70	0,2	26,6	2,5	20	90	1,51		forehearth and working-end superstructure	
5 V	T.AL.70.V	71,4	0,3	25,4	2,52	18	≥ 120	0,66 (1000°C)		safety bottom layer	
6 V	T.AL.72.V	72	1,5	22	2,45	17	≥ 65	0,65 (1100°C)	0,8 (1400°C)	safety bottom layer	
7 V	T.AL.74.V	74	0,5	22	2,6	18	≥ 80	0,9		forehearth superstructure	
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Specific technical data sheet for each material is available.

Item	Grade	Chemical Analysis			Bulk density (g/cm3)	Appar. porosity (%)	Cold crushing strength (N/mm2)	Thermal expansion		Application	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)				1200°C (%)	1500°C (%)		
36 V	T.AL.80.F-NH.V	74,9	0,7	20,5	2,7	20	105	2,45		forehearth and working-end superstructure in very large shape	
8 V	T.AL.77.V	80	0,5	17	2,8	18	≥ 100	0,7		special shapes	
37 V	T.AL.90.LW.V	90,2	0,1	0,7	1,55		4			special shapes insulation high temperature resistance	
9 V	T.AL.91.V	91	0,5	6	3,1	18	≥ 100	0,8		special shapes, port neck crown, lipstone	
10 V	T.AL.99.V.GC	97	0,03	1,5	3,2	16	≥ 200	1,0		glass contact, port neck entrance	
11 V	T.AL.966.V.AN	19,4		76,9		10	≥ 30	0,1		orifice ring	
12 V	T.AL.99.V.AN	97	0,03	1,5	3,0	22	≥ 100	0,8		orifice ring	
38 V	T.AL.91.C.AN	92	0,15	7	2,8	22				orifice ring	SPLICAST
13 V	T.AL.77.V.LT	82	0,5 ZrO2 11	4	3	22	≥ 100	0,8		lipstone	
14 V	T.ALZ.65.V	73	0,5 ZrO 5	21	2,75	18	≥ 50	0,8	-	High thermal shock & chemical corrosion resistance	
15 V	T.ALZ.76.V	76	0,5	18	2,6	25	≥ 100	0,8	-	W-E & Forehearth superstructure, special shape	

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Item	Grade	Chemical Analysis				Bulk density (g/cm3)	Appar. porosity (%)	Cold crushing strength (N/mm2)	Thermal expansion		Application	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	ZrO2 (wt%)	SiO2 (wt%)				1200°C (%)	1500°C (%)		
16 V	T.ZR.10.V.SU	70	0,1	9	17	3	20	≥ 100	0,7		superstructure, special shapes	
17 V	T.ZR.20.V.SU	67	0,2	20	10	3,2	20	≥ 100	0,81		safety botton layer and special shapes	
18 V	T.ZR.30.V.SU	62	0,1	25	16	3	20	≥ 100	0,7		superstructure, colouring forehearth	
19 V	T.ZR.55.V	30	0,1	55	11	3,4	18	≥ 100	0,9		safety bottom layer	
20 V	T.ZR.10.V.AN	76	0,1	10	9	3	20	≥ 40	0,7		orifice ring	
21 V	T.ZR.10.V.GC	82	0,1	12	6	3,1	16	≥ 100	0,8		glass contact	
22 V	T.ZR.20.V.GC	65	0,1	20	5	3,1	16	≥ 100	0,8		glass contact	
23 V	T.ZR.30.V.GC	59	0,1	27	12	3,2	16	≥ 100	0,8		glass contact	
39 V	T.ZR.20.C.AN	65	0,15	20	11	2,85	22				orifice ring	SPLIPCAST
40 V	T.ZR.22.V.BP	54	0,2	22	19	3,05	16 -18	≥ 200			bottom paving and special shape	
41 V	T.ZR.30.V.BP	47,5	0,1	31,8	18,5	3,1	18-20	≥ 100			bottom paving and special shape	
24 V	T.ZR.20.F.V.SU	66	0,1	23	9	3,4	20	≥ 100	0,95		safety bottom layer , especially for high iron content glass	
25 V	T.ZR.30.V.BL	58	0,1	27	12	3	17	≥ 100	0,7		feeder expendables; channel blocks; colouring forehearth's superstructure; blocks for hot-repairs	
26 V	T.ZR.30.V.EXP	58	0,1	27	12	3	18	≥ 100	0,7		feeder expendables; blocks for hot-repairs	
27 V	T.SIL.98.V	-	0,1		99,7	1,9	18	≥ 60	0,1		special shape for hot repair	

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Item	Grade	Chemical Analysis			Bulk density (g/cm3)	Apparent porosity (%)	Cold crushing strength (Mpa - N/mm2)	Thermal conductivity				Mortar	Application	NOTE
		Al2O3	Fe2O3	SiO2				600°C	800°C	1000°C	1200°C			
		(wt%)	(wt%)	(wt%)				(W/mK)	(W/mK)	(W/mK)	(W/mK)			
1 PM	T.AL.18.P	16	1,5	72	1,85	20-22	≥ 250	1 (400°C)	1,1 (700°C)	1,20		T.CE.AL.40.D T.CE.AL.40.W	bottom layer waste channel	
2 PM	T.AL.40.P	38	2	57	2,05	20/22	≥ 400	1 (400°C)	1,1 (700°C)	1,20		T.CE.AL.40.D T.CE.AL.40.W	bottom layer regenerator wall	
27 PM	T.AL.35T.P	38	2,5		2,05	18	35		1,30 (1100°C)	1,4 (1100°C)		T.CE.AL.40.D T.CE.AL.40.W	general purpose	
3 PM	T.AL.40T.P	40	2	55	2,15	17	≥ 40		1,35 (1100°C)	1,45 (1100°C)	1,55 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	bottom layer regenerator wall	
28 PM	T.AL.40-42.P	42	1,4		2,2	16	45		1,20 (1100°C)	1,35 (1100°C)	1,55 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	general purpose	
29 PM	T.AL.43.P	43	1	50	2,39	19	45	1,3 (500°C)		1,40		T.CE.AL.40.D T.CE.AL.40.W	general purpose	
30 PM	T.AL.43.S.P	43	1,3	51	2,4	18,5	60	1,3 (500°C)		1,40		T.CE.AL.40.D T.CE.AL.40.W	general purpose	
4 PM	T.AL.42.P	44	2	50	2,15-2,2	23	≥ 300					T.CE.AL.40.D T.CE.AL.40.W	general purpose	
5 PM	T.AL.42-44.P	44	1,6	50	2,25	15	≥ 45		1,20	1,35 (1100°C)	1,55 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	general purpose	
6 PM	T.AL.44.P	44	1,8	50	2,2	19	≥ 40		1,20	1,40 (1100°C)	1,55 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	general purpose	
31 PM	T.AL.45S.P	45	0,9	50	2,33	15,5	50	1,3 (500°C)		1,40		T.CE.AL.40.D T.CE.AL.40.W	general purpose	
7 PM	T.AL.45.P	45	1,5	50	2,33	16	≥ 50		1,60	1,65 (1100°C)	1,7 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	general purpose	
8 PM	T.AL.44-2.P	46	1,4	47	2,3	18	≥ 45		1,25	1,35 (1100°C)	1,55 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	general purpose	
32 PM	T.AL.46.P	46	1,3	50	2,28	16	50		1,60	1,65 (1100°C)	1,7 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	structural lining of heating units	
33 PM	T.AL.46S.P	46	1,1	47	2,41	16	50	1,4 (500°C)		1,50		T.CE.AL.40.D T.CE.AL.40.W	structural lining of heating units	
9 PM	T.AL.60.P	60	1	37	2,55	16	≥ 70		1,70	1,85 (1100°C)	1,96 (1400°C)	T.CE.AL.40.D T.CE.AL.40.W	bottom layer regenerator wall	
51 PM	T.AL.60.S.P	60,5	1,3	35,5	2,63	15,5	50	1,4 (500°C)		1,50		T.CE.AL.60.D T.CE.AL.60.W	general purpose	
10 PM	T.AL.60.H.P	64	0,9	34	2,6	14	≥ 70		1,70	1,85 (1100°C)	1,96 (1400°C)	T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
34 PM	T.AL.62.P	62,5	0,8	35,5	2,57	13,5	100	1,4 (500°C)		1,50		T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
35 PM	T.AL.63.P	63	0,7	34	2,55	13,5	80	1,4 (500°C)		1,50		T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
36 PM	T.AL.65S.P	63	1,1	30	2,55	16	100	1,4 (500°C)		1,50		T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
11 PM	T.AL.65.P	63	1,7	20	2,4	18	≥ 50		1,80	2,1 (1100°C)	2,3 (1400°C)	T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	

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Item	Grade	Chemical Analysis			Bulk density (g/cm3)	Apparent porosity (%)	Cold crushing strength (Mpa - N/mm2)	Thermal conductivity				Mortar	Application	NOTE
		Al2O3	Fe2O3	SiO2				600°C	800°C	1000°C	1200°C			
		(wt%)	(wt%)	(wt%)				(W/mK)	(W/mK)	(W/mK)	(W/mK)			
37 PM	T.AL.65A.P	64	1		2,55	18	60		1,89	2,12 (1100°C)	2,32 (1400°C)	T.CE.AL.60.D T.CE.AL.60.W	structural lining of heating units	
12 PM	T.AL.65.H.P	66	0,9	32	2,6	15	≥ 70		1,89	2,12 (1100°C)	2,32 (1400°C)	T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
38 PM	T.AL.68.P	66	0,7	31	2,72	14,5	90	1,4 (500°C)		1,50		T.CE.AL.60.D T.CE.AL.60.W	bottom layer regenerator wall	
13 PM	T.ALZ.65.P	75	0,2 ZrO2 5	19	2,5	18	≥ 50		1,80	1,76	1,77	T.CE.AL.60.D T.CE.AL.60.W	safety bottom paving and regenerator	
14 PM	T.AL.70.P	72	1,5	25	2,45	17	≥ 65	1,7 (400°C)	1,7 (700°C)	1,90		T.CE.AL.70.D T.CE.AL.72.D	regenerator wall	
39 PM	T.AL.70K.P	71	0,9		2,65	15	70		1,89	2,12 (1100°C)	2,32 (1400°C)	T.CE.AL.70.D T.CE.AL.72.D	structural lining of heating units	
40 PM	T.AL.71.P	71	0,3	27	2,61	15,5	80	1,4 (500°C)		1,80		T.CE.AL.70.D T.CE.AL.72.D	structural lining of heating units	
15 PM	T.AL.72.P	72	0,4	27	2,6	15 - 17	≥ 80	2,2 (400 °C)	1,7 (700°C)	1,70		T.CE.AL.70.D T.CE.AL.72.D	regenerator wall	
41 PM	T.AL.75M.P	76	0,2		2,7	13	75					T.CE.AL.70.D T.CE.AL.72.D	structural lining of heating units	
16 PM	T.AL.75.FM.P	77	0,5	23	2,7	15 - 17	≥ 80	2,5 (400 °C)	1,9 (700°C)	2,70		T.CE.AL.90.D	target wall regenerator crown	
42 PM	T.AL.80.P	78	0,4	19	2,86	13,5	80	2,2 (500°C)		2,20		T.CE.AL.90.D	target wall regenerator crown	
43 PM	T.AL.80.B.P	81	2		2,8	20	80					T.CE.AL.90.D	general purpose	
44 PM	T.AL.82.P	82,5	1,5	11,5	2,8	18	80	1,4 (500°C)		1,50		T.CE.AL.90.D	general purpose	
45 PM	T.AL.91.P	91	0,2	8	3,0	15,5	120	2,8 (500°C)		2,60		T.CE.AL.90.D	target wall regenerator crown	
46 PM	T.AL.98.P	98	0,1	0,3	3,2	19	120	3,1 (500°C)		2,80		T.CE.AL.90.D	target wall regenerator crown	
17 PM	T.ZR.11.P	80	ZrO2 12	3	3,2	17	≥ 100		3,00	3,10	3,20	T.CE.ZR.06.ERS.D	target wall bottom layer	
47 PM	T.ZR.18.P	70	ZrO2 17,5	10,5	3,33	14,5	140		2,40	2,35	2,60	T.CE.ZR.06.ERS.D	container glass, flat glass, special glass	
18 PM	T.ZR.20.P	70	ZrO2 18	10	3,2	16	≥ 90		3,10	3,20	3,30	T.CE.ZR.06.ERS.D	target wall bottom layer	
19 PM	T.ZR.30.P	50	ZrO2 32	15	3,1	16	≥ 100	2,2 (400°C)	1,9 (700°C)	1,80		T.CE.ZR.06.ERS.D	target wall bottom layer	
20 PM	T.ZR.65.P		ZrO2 65	33	3,7	18	≥ 100	2,8 (400°C)	2,0 (700°C)	2,00		T.CE.ZR.55.W	special application	
48 PM	T.ZR.65Z.P	0,7	ZrO2 65	33	3,7	16	100					T.CE.ZR.55.W	special application	

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Rev.: 2-2019

Verified by: TDM

Approved by: QPM

Item	Grade	Chemical Analysis			Bulk density (g/cm3)	Apparent porosity (%)	Cold crushing strength (Mpa - N/mm2)	Thermal conductivity				Mortar	Application	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)				600°C (W/mK)	800°C (W/mK)	1000°C (W/mK)	1200°C (W/mK)			
46 PM	T.MG.95.P	MgO 94,8	0,9	1,7	3,01	15	105	7,8 (500°C)	6 (700°C)	4,70		T.CE.MG.95.D	regenerator wall, chimney blocks	
49 PM	T.MG.95S.P	MgO 94	0,7	1	2,95	18	50	6,00			3,50	T.CE.MG.95.D	regenerator wall, chimney blocks	
21 PM	T.MG.97.P	MgO 97	CaO 1,5	0,8	3,05	15	≥ 80	7,7 (500°C)	6 (700°C)	4,50		T.CE.MG.95.D	regenerator wall, chimney blocks	
50 PM	T.FMG.97.P	MgO 97	CaO 1,0	0,5	3	13	70		6,5 (700°C)	5,00	4,30	T.CE.MG.95.D	steel industry, walls and bottom of open hearth furnaces, electric arch furnace and ladle; hot iron	
22 PM	T.MG.98.P	MgO 97	CaO 1,3	0,6	3,05	15	≥ 80	7,7 (500°C)	6 (700°C)	4,80		T.CE.MG.95.D	regenerator wall, chimney blocks	
51 PM	T.MG.98Z.P	MgO 98,1	CaO 0,8	0,5	2,95	16	65		5,1 (700°C)	4,50	3,90	T.CE.MG.95.D	Checkers for regenerators of glass melting tank	
23 PM	T.MG-CR.35-40.P	MgO 35	Cr2O3 40	1	3,3	16	≥ 40	2,7 (500°C)	2,8 (700°C)	3,60		T.CE.MG.95.D	regenerator wall, chimney blocks	
24 PM	T.MG-CR.60-20.P	MgO 60	Cr2O3 20	1	3,15	16	≥ 40	3,0 (500°C)	3,1 (700°C)	3,50		T.CE.MG.95.D	regenerator wall, chimney blocks	
25A PM	T.MGZ.13.P A	MgO 78	ZrO2 13	8	3,2	13	≥ 80					T.CE.MG.95.D	regenerator wall upper part, chimney blocks	
25B PM	T.MGZ.13.P B	MgO 76	ZrO2 13	10	3,1	15	≥ 80	2,7 (500°C)	2,6 (700°C)	2,70		T.CE.MG.95.D	regenerator wall, chimney blocks	
52 PM	T.MZF13.P	MgO 77	ZrO2 12	6,9	3,03	15	70					T.CE.MG.95.D	regenerator wall upper part, chimney blocks	
53 PM	T.SI.96A.P	CaO 2,5	0,5	96	2,31-2,34		40					T.CE.SIL.98.D	crown	
26 PM	T.SI.96.P	CaO 2,4	0,8	96	1,87	18	≥ 40	1,2 (400°C)	1,4 (700°C)	1,60		T.CE.SIL.98.D	crown	

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								WS	ZWS	PT		
		Cavity Free	Cavity Reduced	Cavity Normal								
		(RT- VF)	(RR,ENC)	(RN- RC)								
		(wt%)	(wt%)	(wt%)	(g/cm3)	(%)	(Mpa - N/mm2)	(g/cm3)	(g/cm3)	(g/cm3)		
1 AZS	T.AZS.33	49	32,5	15,2	3,78	1,1	≥ 300	3,60	3,55	3,40	glass contact	
2 AZS	T.AZS.1681.33	52	33	13,5	3,84		≥ 350	3,72	3,72	3,50	glass contact	
3 AZS	T.AZS.36	49	36	13	3,95	1,0	≥ 300	3,70	3,65	3,45	glass contact	
4 AZS	T.AZS.1691.36	50,8	35	12	3,92		≥ 350	3,80	3,80	3,52	glass contact	
5 AZS	T.AZS.41	45	41	12,2	4,00	1	≥ 300	3,85	3,80	3,55	glass contact	
6 AZS	T.AZS.1711.41	45,8	41	12	4,12		≥ 350	3,97	3,97	3,70	glass contact	
7 AZS	T.ZB.9510	0,8	94,5	4	5,4		≥ 400				Glass contact , special application	

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Item	Grade	Chemical Analysis			Applic. temper. (°C)	Bulk density (g/cm3)	Cold crushing strength (Mpa - N/mm2)	Thermal conductivity (W/mK)				NOTE
		Al2O3	Fe2O3	SiO2				600°C	800°C	1000°C	1200°C	
		(wt%)	(wt%)	(wt%)				(W/mK)	(W/mK)	(W/mK)	(W/mK)	
1 IM	T.IS.MA.5	15	4	75	900	0,425	1,3	0,14	-	-	-	
26IM	T.IS.MA.900	14,8	4,1	66,5	900	0,425	1,3	0,14				
2 IM	T.IS.MA.55	17,6	3,1	64	1000	0,550	3,5	0,18	-	-	-	
27 IM	T.IS.MA.1150	30,6	3		1150	0,490	1,6	0,26	0,34			
28 IM	T.IS.MA.1260-23	42	0,9	55	1260	0,600	1,2	0,24	0,26	0,28		
29 IM	T.IS.MA.125-06	43	< 1	51,6	1230	0,650	1,2	0,20	0,23	0,26		
3 IM	T.IS.MA.1200	41	1	52	1200	0,60	1,5	0,20	0,23	0,25	-	
4 IM	T.IS.MA.23ECO	35	0,7	45,4	1260	0,50	1,0	0,15	0,18	0,20	-	
5 IM	T.IS.MA.23	37	0,7	44,4	1260	0,48	1,2	0,14	0,17	0,19	-	
6 IM	T.IS.MA.1260	31,2	2,8		1260	0,59	2,8	0,31	0,35		0,40	
7 IM	T.IS.MA.1260.G	43	0,8		1260	0,58	1,2	0,17	0,25			
30 IM	T.IS.MA.23T	40	1	55,3	1260	0,60	1,5	0,20	0,23	0,23		
31 IM	T.IS.MA.25	34	1,3	63	1350	0,80	2,4	0,28	0,32	0,37		
32 IM	T.IS.MA.25L	34	1,3	63	1350	0,70	1,6	0,23	0,27	0,31		
33 IM	T.IS.MA.1350	45	1	51	1350	0,80	2,5	0,28	0,32	0,37		
34 IM	T.IS.MA.135-08	42	1,5	47,6	1350	0,80	2,4	0,28	0,34			
8 IM	T.IS.MA.25-HD	48	0,7	49,1	1350	0,88	2,7	0,39	0,40	0,41	0,43	
9 IM	T.IS.MA.8	41,5	1,5		1350	0,88	3,6	0,35	0,39	0,42	0,45	
35 IM	T.IS.MA.9	37	1,7		1350	0,95	5,0	0,42	0,45	0,48		
10 IM	T.IS.MA.10	40	1,8	54	1350	1,05	6,0	0,43	0,45	0,48	0,51	
11 IM	T.IS.MA.12	36,8	2,2		1350	1,25	21,5	0,52	0,55	0,60	0,64	
CONTINUED ON PAGE 9												

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Item	Grade	Chemical Analysis			Applic. temper. (°C)	Bulk density (g/cm3)	Cold crushing strength (Mpa - N/mm2)	Thermal conductivity (W/mK)				NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)				600°C (W/mK)	800°C (W/mK)	1000°C (W/mK)	1200°C (W/mK)	
12 IM	T.IS.MA.12.H	40	1,8	54,5	1400	1,20	12,0	0,44	0,47	0,53	0,58	
36 IM	T.IS.MA.26-08	38	1,3	56	1400	0,80	3,5	0,31	0,33	0,35	0,38	
13 IM	T.IS.MA.26-HD	48	0,7	49,1	1400	0,92	3,1	0,45	0,49	0,53	-	
14 IM	T.IS.MA.1400	52,5	0,75	44	1400	0,85	3,0	0,30	0,35	0,38	-	
37 IM	T.IS.MA.1430-26	56	0,8	41	1430	0,80	1,8	0,32	0,34	0,36	0,38	
38 IM	T.IS.MA.140-08	50	0,9	45,9	1430	0,80	2,2	0,23	0,28	0,33	0,36	
15 IM	T.IS.MA.26	58	0,7	39,1	1430	0,80	1,6	0,27	0,30	0,33	0,35	
39 IM	T.IS.MA.26-6	59	0,7	37,5	1430	0,80	2,0	0,29	0,30	0,32	0,34	
16 IM	T.IS.MA.1430	55	0,9	40,9	1430	0,80	1,8	0,28	0,30	0,32	0,35	
40 IM	T.IS.MA.1500	67	0,7	30	1500	0,90	3,0	0,35	0,37	0,39	0,42	
41 IM	T.IS.MA.150-09	64	0,7	33,2	1500	0,90	4,5	0,33	0,35	0,38		
17 IM	T.IS.MA.28	67,1	0,6	31	1540	0,89	2,1	0,32	0,34	0,36	0,38	
18 IM	T.IS.MA.1540	71,2	0,8		1540	0,95	5,8	0,40	0,43	0,47	0,49	
19 IM	T.IS.MA.1540.G	65	0,8		1540	0,90	2,4	0,33	0,35	0,38	0,41	
20 IM	T.IS.MA.1550	73	0,7	24	1550	1,05	3,3	0,44	0,46	0,48	-	
21 IM	T.IS.MA.30	73,4	0,5	25,1	1650	1,02	2,1	0,39	0,40	0,41	0,42	
22 IM	T.IS.MA.1650	72	0,5	25,5	1650	1,00	2,8	0,42	0,44	0,45	0,47	
23 IM	T.IS.MA.32	77	0,3	21,5	1760	1,25	3,5	0,50	0,51	0,53	0,56	
24 IM	T.IS.MA.1760	76	0,6	21,9	1760	1,25	3,4	0,50	0,51	0,53	0,55	
42 IM	T.IS.MA.SIL.06	1,7		93	1600	0,60	1,0	0,23	0,29	0,33		
43 IM	T.IS.MA.SIL.08	1,7		93	1600	0,80	1,5	0,25	0,35	0,41		
25 IM	T.IS.MA.SIL.09	CaO 2,5	1	92	1450	1,05	4,0	0,56 (400°C)	0,86		1,05	
44 IM	T.IS.MA.SIL.10	1,7		93	1600	1,00	2,0	0,30	0,35	0,41		

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Item	Grade	Chemical Analysis			Max recomm. Temper. (°C)	Type of set	Max. grain size (mm)	kg for 100 bricks 230x114x64	Self life (months)	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)						
DRY CEMENTS										
16CE	T.CE.AL.30.D	34,2			1400	ceramic	1		no limit	
1 CE	T.CE.AL.40.D	54,5	1,6	37	1450	chemical - ceramic	0,2	15	12	
17CE	T.CE.AL.45.D	45,5			1500	hydraulic	1		no limit	
2 CE	T.CE.AL.60.D	61,7	1,5	30,5	1700	chemical - ceramic	0,2	20	12	
18CE	T.CE.AL.60P.D	60				ceramic	0,5		no limit	
3 CE	T.CE.AL.70.D	70,6	1,5	19,9	1750	chemical	0,5	20	6	
4 CE	T.CE.AL.72.D	70,5	0,8	26,3	1600	ceramic	0,2	20	12	
19CE	T.CE.AL.80P.D	81,2				ceramic	1		no limit	
5 CE	T.CE.AL.90.D	90,9	0,3	8	1750	ceramic	0,5	20	12	
6 CE	T.CE.SIL.92.D	3,9	0,2	91,2	1350	chemical - ceramic	0,05	20	12	
20CE	T.CE.SIL.96.D	1		96	1680	ceramic	0,3			
7 CE	T.CE.SIL.98.D	2,7	0,1	96		ceramic	0,3			
8 CE	T.CE.ZR.05.ERS.D	43,2	ZrO2 27,7	25,2	1600	chemical - ceramic	0,2	25	12	
9 CE	T.CE.ZR.06.ERS.D	33,6	ZrO2 37,3	24,8	1600	chemical - ceramic	0,2	25	12	
21CE	T.CE.MG.82.D	MgO 82	7,4	4,8		hydraulic	0,1			
10 CE	T.CE.MG.95.D	MgO 95	0,2	1	1750	ceramic	0,2	25	6	
WET CEMENTS										
11 CE	T.CE.AL.40.W	42	2,9	32	1600	chemical	0,3	15	6	
22CE	T.CE.EXTRA32	47	1,2	49	1760	ready-mixed	0,04	20	6	
12 CE	T.CE.AL.60.W	58	1,6	40	1750	chemical	0,3	18	6	
13 CE	T.CE.AL.05.ERG.W	86,6	0,3	8,8	1750	chemical	0,2	25	6	
14 CE	T.CE.ZR.50.W	6,1	ZrO2 48,6	40,4	1650	chemical - ceramic	0,2	25	6	
15 CE	T.CE.ZR.55.W	2,7	ZrO2 55,6	39,2	1650	chemical - ceramic	0,2	25	6	

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Specific technical data sheet for each material is available.

Item	Grade	Chemical Analysis			Bulk density		Max. service temp. (°C)	Max. Grain size (mm)	Cold crush. strength		Water required to cast (%)	Perm. linear change		NOTE
		Al ₂ O ₃ (wt%)	Fe ₂ O ₃ (wt%)	SiO ₂ (wt%)	dried 110°C (g/cm ³)	after firing to MST (g/cm ³)			dried 110°C (MPa)	after firing to MST (MPa)		5h@1000°C (%)	5h@MST (%)	
1 CA	T.CA.AL.38	38,5	2,7	52,8	2,15	2,12	1400	6	50	50 (1200°C)	7 - 9	800°C -0,20	1200°C -0,30	
2 CA	T.CA.AL.38-10	38,5	2,7	52,8	2,15	2,12	1400	10	65	65 (1200°C)	7 - 9	800°C -0,15	1200°C -0,20	
3 CA	T.CA.AL.40	45,2	5,0	40,3	2	1,99 (800°C)	1420	6	35	25 (800°C)	12 - 15	-	800°C -0,10	
34 CA	T.CA.AL.43	43,5	1,6	49,6	2,22	2,15 (1200°C)	1500	6	60	55 (1200°C)	7 - 9	800°C -0,15	1200°C -0,20	
35 CA	T.CA.AL.43 0-5	43,5	1,6	49,6	2,22	2,15 (1200°C)	1500	5	60	55 (1200°C)	7 - 9	800°C -0,15	1200°C -0,20	
36 CA	T.CA.AL.50	49,1	1,3	45,4	2,3	2,30 (1200°C)	1550	6	60	80 (1200°C)	6 - 6,5	800°C -0,15	1200°C -0,15	
4 CA	T.CA.AL.50.ZR	48,1	ZrO ₂ 9,6	30,7 Sic 9,7	2,86	2,83	1600	6	70	100	8 - 10	1200°C ±0,10	1600°C 0,15	
5 CA	T.CA.AL.50.S	52,4	1,2 Sic 7,7	32,7	2,5	2,42	1600	6	110	70	5 - 6	800°C -0,20	1200°C -0,05	
6 CA	T.CA.AL.57	56,8	1,5	34,7	2,35	2,3	1600	6	85	65	6 - 8	800°C -0,15	1200°C -0,15	
7 CA	T.CA.AL.60	56,7	1,1	37,8	2,4	2,4 (1200°C)	1650	6	65	65 (1200°C)	6 - 8	1200°C -0,05	0,85	
8 CA	T.CA.AL.60.UD	59,6	1,1	36,5	2,55	2,52 (1200°C)	1650	6	45	80 (1200°C)	6	800°C -0,05	1200°C -0,10	
9 CA	T.CA.AL.61	60,1	1,2	33,1	2,45	2,45 (1600°C)	1650	3	75	95 (1600°C)	6	800°C -0,05	1200°C -0,20	
10 CA	T.CA.AL.70.F	70	0,6	27,3	2,68	2,66 (1200°C)	1650	6	95	110 (1200°C)	6 - 8	800°C -0,15	1200°C -0,15	
37 CA	T.CA.AL.70.F-NL	70	0,2	26,6	2,52	2,52 (1600°C)	1700	6	60	80 (1600°C)	6 - 8	800°C -0,15	1200°C -0,15	
11 CA	T.CA.AL.70	71,4	0,3	25,4	2,55	2,52 (1200°C)	1700	6	75	120 (1200°C)	6	800°C -0,10	1200°C -0,05	
12 CA	T.CA.AL.75.ZR	75,2	ZrO ₂ 11,9	10,8	2,9	-	1600	6	105	135 (1200°C)	4	1200°C -0,10	-	
38 CA	T.CA.AL.80.F-NH	74,9	0,7	20,5	2,62	2,63 (1600°C)	1700	6	70	125 (1600°C)	6,5	1200°C -0,15	1600°C -0,1	
13 CA	T.CA.AL.90.CR	88,1	Cr ₂ O ₃ 4,8	6,6	3,1	3,06 (1600°C)	1800	10	35	130 (1600°C)	6 - 8	1200°C ±0,05	1600°C -0,20	
14 CA	T.CA.AL.92.F.CR	90,6	0,1	Cr ₂ O ₃ 5	3,17	3,15 (1600°C)	1800	6	70	115 (1600°C)	6 - 8	1200°C -0,15	1600°C -0,15	
15 CA	T.CA.AL.90.P	91,6	0,5	P ₂ O ₅ 3,5	2,88	2,98 (1200°C)	1500	6	60	65 (1200°C)	8 - 10	800°C -0,15	1200°C -0,20	
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Item	Grade	Chemical Analysis			Bulk density		Max. service temp. (°C)	Max. Grain size (mm)	Cold crush. strength		Water required to cast (%)	Perm. linear change		NOTE
		Al ₂ O ₃ (wt%)	Fe ₂ O ₃ (wt%)	SiO ₂ (wt%)	dried 110°C (g/cm ³)	after firing to MST (g/cm ³)			dried 110°C (MPa)	after firing to MST (MPa)		5h@1000°C (%)	5h@MST (%)	
16 CA	T.CA.AL.90	91,9	0,1	7,7	3,05	3,02 (1600°C)	1750	10	60	110 (1600°C)	6 - 8	1200°C -0,05	1600°C -0,20	
17 CA	T.CA.AL.93	93,5	0,1	4,1	3	2,96 (1600°C)	1700	6	80	120 (1600°C)	4,5	1200°C -0,10	1600°C -0,10	
18 CA	T.CA.AL.94.F	93,5	0,1	0,2	3,05	3,05 (1600°C)	1750	6	110	140 (1600°C)	5,5 - 6	1200°C -0,1	1600°C ±0,10	
19 CA	T.CA.AL.95	94,8	0,1	0,1	2,75	2,72 (1600°C)	1800	6	75	80 (1600°C)	8 - 10	1200°C -0,05	1600°C -0,05	
20 CA	T.CA.AL.95-10	94,8	0,1	0,1	2,75	2,72 (1600°C)	1800	10	80	80 (1600°C)	8 - 10	1200°C -0,05	1600°C -0,05	
21 CA	T.CA.AL.95.CR	94,9	0,1	Cr ₂ O ₃ 4	3,1	3,05 (1600°C)	1750	10	65	120 (1600°C)	4,0	1200°C -0,05	1600°C -0,15	
22 CA	T.CA.AL.97	96,5	0,1	0,1	3,08	3,08 (1200°C)	1800	6	120	120 (1200°C)	4,5 - 5	1200°C -0,15	-	
23 CA	T.CA.AL.50.ERG	96,4	0,2	0,6	3,05	3,05 (1600°C)	1750	6	70	130 (1600°C)	6 - 8	1200°C -0,10	1600°C -0,15	
24 CA	T.CA.AL.50.ERG-3	96,4	0,2	0,6	3,05	3,05 (1600°C)	1750	3	65	130 (1600°C)	6	1200°C -0,10	1600°C -0,15	
25 CA	T.CA.AL.50.ERG-10	96,6	0,2	0,6	3,05	3,05 (1600°C)	1750	10	75	130 (1600°C)	6 - 8	1200°C -0,10	1600°C -0,15	
26 CA	T.CA.AL.98	98	0,1	0,3	3,1	3,08 (1600°C)	1800	6	80	120 (1600°C)	5,0	1200°C -0,05	1600°C -0,05	
27 CA	T.CA.ZR.17	55,2	ZrO ₂ 17,5	23	2,75	2,72(1200°C)	1600	6	70	110 (1200°C)	5,5	800°C -0,10	1200°C -0,15	
39 CA	T.CA.ZR.22	55	ZrO ₂ 24	17	3	3,0(1200°C)	1550	3	65	115 (1200°C)	5 - 6	800°C -0,10	1200°C -0,05	
28 CA	T.CA.ZR.27	58	ZrO ₂ 27	12,6	3,05	2,98(1200°C)	1600	6	50	95 (1200°C)	6 - 8	800°C -0,10	1200°C -0,05	
40 CA	T.CA.ZR.30	47,4	ZrO ₂ 31,8	18,5	3,05	3,05(1200°C)	1550	3	70	120 (1200°C)	5 - 6	800°C -0,10	1200°C -0,05	
29 CA	T.CA.ZR.35-3	46,8	ZrO ₂ 32,3	16,9	3,15	3,10(1200°C)	1650	3	60	80 (1600°C)	6	800°C -0,10	1200°C -0,15	
30 CA	T.CA.ZR.50.ERS	27,6	ZrO ₂ 44,9	25	3,2	3,2 (1200°C)	1700	6	65	110 (1200°C)	4	800°C -0,10	1200°C -0,10	
31 CA	T.CA.ZR.60	2,6	ZrO ₂ 63,4	32	3,3	3,2 (800°C)	1400	0,5			6 - 8			
32 CA	T.CA.SIL.75	22,6	0,1	73,2	2,02	2,02 (1200°C)	1300	4	50	50 (1200°C)	6 - 8	800°C -0,05	1200°C -0,10	
33 CA	T.CA.SIL.98		0,1	99,7	1,92	1,85 (1200°C)	1650	4	28	60 (1200°C)	4	800°C -0,10	1200°C ±0,10	

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Item	Grade	Chemical Analysis			Bulk density		Max.	Max	Cold crush. strength		Water	Perm. linear change		NOTE	
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)	dried	after firing	service temp. (°C)	Grain size (mm)	dried	after firing	required to cast (%)	change	5h@ 800°C (%)		5h@MST (%)
					110°C (g/cm3)	to MST (g/cm3)			110°C (MPa)	to MST (MPa)					
INSULATING CASTABLES															
11 ICA	T.IS.CA.FOX	4	1,3	89,6	0,32 wet			42,9 micron						fossil flour	
1 ICA	T.IS.CA.1100.LI	36	1	45	0,9	0,59 (800°C)	1100	4	2	1 (800°C)	75	-0,1	-0,9 (800°C)		
2 ICA	T.IS.CA.1350.LI	50,1	1	38,3	1,1	0,85 (1200°C)	1350	6	4	1,8 (1200°C)	60-65	-0,2	-1,2 (1200°C)		
12 ICA	T.IS.CA.1400.LI	60	1	25	1,25	1,14 (800°C)	1400	4	7	5 (800°C)	25 - 30	0,3			
13 ICA	T.IS.CA.1400.ULW	56	0,7	25	0,8	0,68 (1200°C)	1400	3	3 (800°C)		55 - 60	-0,35	-1,2 (1200°C)		
3 ICA	T.IS.CA.23.LI	49,8	0,9	38,3	1,4	1,35 (800°C)	1450	4	9	7 (800°C)	30-40	-0,3	-		
14 ICA	T.IS.CA.1450.LI	54,5	0,6	31,8	1,5	1,37 (800°C)	1450	6	9	7 (800°C)	35	-0,05	-		
4 ICA	T.IS.CA.1500	87,2	0,2	0,4	1,10 (800°C) 1,20 (1200°C)		1500	6	6	5 (1200°C)	45-55	-0,1	-0,05 (1200°C)		
5 ICA	T.IS.CA.1550.LI	52,1	1,4	37,9	1,54	-	1550	6	15	10 (1200°C)	20-25	-0,2	-		
15 ICA	T.IS.CA.1550.LI-P	50,9	1,5	38,1	1,6	1,5 (800°C)	1550	6	22	17 (800°C)	25	-0,13	-		
6 ICA	T.IS.CA.1650.LI	62,1	0,4	19,8	1,68	1,6 (800°C)	1650	6	10	7 (800°C)	20-25	-0,2	-		
7 ICA	T.IS.CA.65	67	1	27,9	1,7	1,6 (1200°C)	1650	5	22	18 (1200°C)	10-15	-0,1	-0,35 (1600°C)		
8 ICA	T.IS.CA.75	74,7	0,6	16,4	1,7	1,6 (1200°C)	1650	5	25	20,0	15-20	-0,1	-0,35		
9 ICA	T.IS.CA.90	90,2	0,1	0,7	1,4	1,38 (1200°C)	1700	2	8	4 (1200°C)	20-30	-0,15	±0,05 (1200°C)		
10 ICA	T.IS.CA.95	95,9	0,1	0,4	1,7	1,66 (1600°C)	1700	5	25	35 (1600°C)	10-15	-0,20	-0,35 (1600°C)		
DENSE GUNNING MATERIALS															
1 GU	T.GUN.AL.38	40,2	4,4	44,9	2,1	2,0 (1200°C)	1400	6	50	40 (1200°C)	adjusted at the nozzle	-0,15	-0,20 (1200°C)		

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Specific technical data sheet for each material is available.

Item	Grade	Chemical Analysis				Bulk density		Max. service temp. (°C)	Type of supply	Type of set	Max. grain size (mm)	Water or Binder required to cast (%)	Self life (months)	NOTE
		Al2O3 (wt%)	ZrO2 (wt%)	SiO2 (wt%)	P2O5 (wt%)	dried	after firing							
						110°C (g/cm3)	to MST (g/cm3)							
PATCH PRODUCTS														
1 PA	T.PA.ZR.160	62,1	21,6	11,2	4,2 - 2,3		2,95 patch (1200°C)	1650	dry + binder	chemical	0,5	10-15%	6	
2 PA	T.PA.ZR.ERP	0,8	ZrO2+HfO2 60,3	30,8	7,5-4,5		3,25 patch 3,30 ramm. (1200°C)	1660	dry + binder	chemical	0,5	15-20% patching 5-10% ramming	6	
3 PA	T.PA.ZR.ERP 0-3	0,8	ZrO2+HfO2 60,3	30,8	7,5-4,5		3,25 patch 3,30 ramm. (1200°C)	1660	dry + binder	chemical	3	15-20% patching	6	
4 PA	T.PA.SIL.98	97,5									4			
RAMMING MIX														
4 RAM	T.RAM.AL.70	70,5	23			2,55	2,52 (1200°C)	1650	ready to use	ceramic	6	NO	6	
1 RAM	T.RAM.AL.94.D	93,5	2,9			2,65	2,80 (1600°C)	1800	dry	ceramic	6	5 - 6%	12	
2 RAM	T.RAM.ZR.47	24,1	47,4	23,8		3,5	3,3 (1600°C)	1600	ready to use	chemical - ceramic	6	NO	6	
3 RAM	T.RAM.SIL.98	99,7				1,92	1,95 (1200°C)	1650	dry + binder	chemical	4	4 - 6%	6	
5 RAM	T.RAM.ZR.160	62,1	22	11,2	4,2 - 2,3		2,98 (1200°C)	1650	dry + binder	chemical	0,5	5 - 10%	6	

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Item	Grade	Chemical Analysis			Classification temp. (°C)	Bulk density (Kg/m3)	Thermal conductivity					Linear Shrinkage at class.temp. (%)	Thickness (mm)	NOTE
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)			300 °C	400 °C	600 °C	800 °C	1000 °C			
1 IB	T.IS.B.1200.ECO.WB				1150	360-480	0,07	0,09	0,12	0,15	-	<2	6,10, 13, 15,18	
2 IB	T.IS.B.1260	42-47	<0,15	53-58	1260	300	250°C 0,085	-	500°C 0,145	0,17	0,23	1000°C/24h 1,9 1200°C/24h 4,3	25, 40, 50	
3 IB	T.IS.B.1200.ECO				1300	350	-	0,08	0,11	0,15	0,20	<1,5	20, 25, 30, 40, 50	
13 IB	T.IS.B.1200ZK	42-50	<0,2	50-58	1200	390			0,13	0,16	0,19	<4	3,5,6,10,12,15,18,20,25,30,40,50	
14 IB	T.IS.B.1250.ECO	1,5-3,5		60-65	1250	320		0,08	0,11	0,12	0,16	<3,5	12,15,20,25,30,40,50	
4 IB	T.IS.B.1260-100				1260	310	0,07	0,08	0,11	0,15	0,20	3,0	10, 13, 20, 25, 40, 50	
15 IB	T.IS.B.1260P	42-48		52-55	1260	320		0,08	0,11	0,15	0,19	3,0	5,6,8,10,12,15,20,25,30,40,50,60, 75,80,100	
5 IB	T.IS.B.1400-115				1400	310	0,07	0,08	0,11	0,15	0,20	3,7	25, 40, 50	
16 IB	T.IS.B.1400ZK	28-32	<0,2	52-56	1400	340			0,16	0,20	0,26	<4	3,6,10,12,15,18,20,25,30,40,50	
6 IB	T.IS.B.MCR.BOARD				1000	230	0,022	0,024	0,031	0,040	-	800°C/12h 1 1000°C/12h 4,8	10, 15, 20, 25, 30, 40, 50	
18 IB	T.IS.B.MCR.1000				1000	200-250	0,022 (200°C)	0,027	0,034	0,044		950°C/24h 1,4	10, 15, 20, 25, 30, 40, 50	
19 IB	T.IS.B.MCR.1200				1100	300-360	0,022 (200°C)	0,030	0,043	0,060		1000°C/24h 3,5	10, 15, 20, 25, 30, 40, 50	
7 IB	T.IS.B.MCR.HT				1150	260	-	0,035	0,043	0,060	-	800°C/12h - 1000°C/12h 2	6, 8, 10, 13	
17 IB	T.IS.B.MCR.FBK				1000	240		0,029	0,035	0,044		<0,5 (one side)		
8 IB	T.IS.B.CS.1000	0,2	CaO 45	45,00	1000	225	-	0,10	0,12	0,14	-	950°C/12h 1,5		
9 IB	T.IS.B.CS.1100				1100	285	-	0,10	0,14	0,18	-	1,5	25, 30, 40, 50, 60. 80, 100, 160	
10 IB	T.IS.B.VRM.1100-400	10	MgO 24	44,00	1100	400	-	0,16	0,18	-	-	<2	20, 25, 30	
11 IB	T.IS.B.VRM.1100-600	10	MgO 24	44,00	1100	600	-	0,18	0,20	-	-	<2	20, 25, 30	
12 IB	T.IS.B.VRM.1100-750	10	MgO 24	44,00	1100	800	-	0,20	0,21	-	-	<2	20, 25, 30	

Other type of board fiber available on special request

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Specific technical data sheet for each material is available.

Item	Grade	Chemical Analysis			Classificat ion temp. (°C)	Bulk density (Kg/m3)	Thermal conductivity					Linear Shrinkage			Thickness								NOTE	
		Al2O3 (wt%)	Fe2O3 (wt%)	SiO2 (wt%)			400 °C	600 °C	800 °C	1000 °C	1200 °C	1000	1200	1400	6	10	13	19	25	38	50			
																						(W/mK)		
14 MT	T.IS.MT.1200-64	-	CaO 26-32	62-68	1000	64	0,11	0,18	0,29	0,42		-	1,0	-				X	X	X	X			
15 MT	T.IS.MT.1200-96	-	CaO 26-32	62-68	1000	96	0,09	0,14	0,21	0,29		-	1,0	-		X	X	X	X	X	X	X		
16 MT	T.IS.MT.1200-128	-	CaO 26-32	62-68	1000	128	0,08	0,12	0,18	0,25		-	1,0	-	X	X	X	X	X	X	X	X		
17 MT	T.IS.MT.1200-160	-	CaO 26-32	62-68	1000	160						-	1,0	-			X	X	X					
1 MT	T.IS.MT.HT-96.ECO	-	CaO+MgO 18-25	70-80	1300	96	0,10	0,19	0,32	0,48	0,69	-	-	-	X	X	X	X	X	X	X	X		
2 MT	T.IS.MT.HT-128.ECO	-	CaO+MgO 18-25	70-80	1300	128	0,08	0,14	0,23	0,34	0,48	-	-	-	X	X	X	X	X	X	X	X		
3 MT	T.IS.MT.HT-160.ECO	-	CaO+MgO 18-25	70-80	1300	160						-	-	-	X	X	X	X	X	X	X	X		
18 MT	T.IS.MT.ISO1260-128		MgO 18-27	70-80	1260	128	0,10	0,14	0,20	0,27							X		X	X	X			
19 MT	T.IS.MT.ISO1260-160		MgO 18-27	70-80	1260	160	0,09	0,13	0,20	0,30									X					
4 MT	T.IS.MT.1260-64	44,0	CaO+MgO 0,05	56,0	1260	64	0,07	0,20	0,30	0,43	-	1,5	3,0	-	X	X	X	X	X	X	X	X		
5 MT	T.IS.MT.1260-96	44,0	CaO+MgO 0,05	56,0	1260	96						1,5	3,0	-	X	X	X	X	X	X	X	X		
6 MT	T.IS.MT.1260-128	44,0	CaO+MgO 0,05	56,0	1260	128						1,5	3,0	-	X	X	X	X	X	X	X	X		
7 MT	T.IS.MT.1260-160	44,0	CaO+MgO 0,05	56,0	1260	160						1,5	3,0	-	X	X	X	X	X	X	X	X		
8 MT	T.IS.MT.1420-64	35	CaO+MgO 0,09	50	1425	64						-	1,0	3,5	X	X	X	X	X	X	X	X		
9 MT	T.IS.MT.1420-96	35	CaO+MgO 0,09	50	1425	96	0,11	0,16	0,23	0,32	-	-	1,0	3,5	X	X	X	X	X	X	X	X		
10 MT	T.IS.MT.1420-128	35	CaO+MgO 0,09	50	1425	128	0,10	0,15	0,20	0,27	-	-	1,0	3,5	X	X	X	X	X	X	X	X		
11 MT	T.IS.MT.1420-160	35	CaO+MgO 0,09	50	1425	60						-	1,0	3,5	X	X	X	X	X	X	X	X		
12 MT	T.IS.MT.1600-96	72	CaO+MgO -	28	1600	96	0,08	0,13	0,19	0,27	0,39	-	-	0,8			X		X					
13 MT	T.IS.MT.1600-128	72	CaO+MgO -	28	1600	128	0,08	0,12	0,17	0,24	0,33	-	-	0,8			X		X					

Other type of blanket fiber available on special request

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Item	Grade	Chemical Analysis			Classif temp. (°C)	Bulk density (Kg/m3)	Thermal conductivity					Linear Shrinkage			Thickness									NOTE
		CaO					300 °C	500 °C	700 °C	900 °C	1000 °C	1200	1260	1320	3	6	10	13	19	25	38	50		
		Al2O3	MgO	SiO2																				
		(wt%)	(wt%)	(wt%)																			(W/mK)	
14 FE	T.IS.FE.1250HD	42-50		50-58	1250	200-300	0,11 (600°C) 0,14 (800°C) 0,19					< 4 -			X	X	9	12	18	X				
1 FE	T.IS.FE.607-64.ECO	-	18-25	70-80	1300	64	0,07	0,16	0,28	0,45	0,55	< 2	-	-		X	X	X	X	X				
2 FE	T.IS.FE.607-96.ECO	-	18-25	70-80	1300	96						< 2	-	-		X	X	X	X	X				
3 FE	T.IS.FE.607-128.ECO	-	18-25	70-80	1300	128	0,07	0,12	0,20	0,32	0,38	< 2	-	-		X	X	X	X	X				
4 FE	T.IS.FE.607-160.ECO	-	18-25	70-80	1300	160						< 2	-	-		X	X	X	X	X				
5 FE	T.IS.FE.607-192.ECO	-	18-25	70-80	1300	192	0,06	0,09	0,14	0,21	0,25	< 2	-	-		X	X	X	X	X				
6 FE	T.IS.FE.607-288.ECO	-	18-25	70-80	1300	288	0,05	0,08	0,11	0,16	0,19	< 2	-	-		X	X	X	X	X				
7 FE	T.IS.FE.1320-64	35	0,05	50	1320	64	0,10	0,17	0,27	0,41	0,59	-	2,50	3,00		X	X	X	X	X				
8 FE	T.IS.FE.1320-96	35	0,05	50	1320	96	0,08	0,14	0,21	0,31	0,42	-	2,50	3,00		X	X	X	X	X				
9 FE	T.IS.FE.1320-128	35	0,05	50	1320	128	0,08	0,12	0,18	0,25	0,34	-	2,50	3,00		X	X	X	X	X				
10 FE	T.IS.FE.1320-160	35	0,05	50	1320	160	0,07	0,11	0,16	0,22	0,29	-	2,50	3,00		X	X	X	X	X				
11 FE	T.IS.FE.1320-192	35	0,05	50	1320	192	0,07	0,11	0,15	0,20	0,25	-	2,50	3,00		X	X	X	X	X				
12 FE	T.IS.FE.1320-288	35	0,05	50	1320	288	0,07	0,10	0,13	0,17	0,21	-	2,50	3,00		X	X	X	X	X				
13 FE	T.IS.FE.1320-384	35	0,05	50	1320	384	0,06	0,10	0,13	0,15	0,18	-	2,50	3,00		X	X	X	X	X				
15 FE	T.IS.FE.1400Z	28-32	ZrO2 14-18	52-56	1400	200-300	0,15 (800°C) 0,21					< 4 (1400°C)			X	X	9	12	18	X				

Other type of felt fiber available on special request

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Item	Grade	Chemical Analysis			Classif temp. (°C)	Bulk density (Kg/m3)	Thermal conductivity				Linear Shrinkage at class.temp. (%)	Thickness								NOTE
		CaO					200	400	600	800		1	2	3	4	5	6	8	10	
		Al2O3	MgO	SiO2			°C	°C	°C	°C										
		(wt%)	(wt%)	(wt%)								(mm)								
<u>FIBRES</u>																				
1 IF	T.IS.FI.1260.ECO	-	18-25	70-80	1300	250						wool								
2 IF	T.IS.FI.1420.ZR	34,9	ZrO2 15,2	50,0	1425	265						wool								
7 IF	T.IS.FI.1600	95-97		3-5	1600	330-350					< 3	wool								
<u>PAPER</u>																				
3 IF	T.IS.CC.1200.ECO	< 1	29-39	61-67	1200	140-160	0,06	0,10	0,15	0,22	< 4	X	X	X	X	X				
4 IF	T.IS.CC.1260	-	18-25	70-80	1300	210	0,04	0,07	0,10	0,14	< 2	X	X	X	X	X	X	X	X	
8 IF	T.IS.CC.1400	48-54		46-52	1400	210	0,09	0,13	0,20		3,0	X	X	X						
<u>ROPE</u>																				
5 IF	T.IS.RO.HT	42 - 46		54-58	1260	depend on diam						6	8	12	19	25	30	35	40	
6 IF	T.IS.RO.SIL	4,5		94,5	1000	0,65						from 0,6 to 0,9 microns								
<u>MASTIC</u>																				
9 IF	T.IS.FOAM.1260ECO		18-27	70-80	1200	wet 1200 after dry 380														

Other type of product available on special request

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