

RAMMING AND GUNNING MIXES & MORTARS

Chemical and physical properties - typical

Product	Grain size (mm)	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	Cr ₂ O ₃ (%)	Yield by volume (kg.m ⁻³)	Required water content (l/100kg)	Material consumption (kg.m ⁻³)	Application temperature (°C)	Nature of bond	Classification	
I	DC 10	0-6	91,0	0,5	0,5	0,5	0,1	2,9	-	4,5-5,0	2900	1750	chemical	B RM PNEU HYDR OXID
	DC 12	0-6	77,0	1,2	1,4	3,9	2,2	11,0	-	4,0-4,5	2900	1750	chemical	B RM PNEU HYDR OXID
	DC 20	0-6	91,0	0,5	1,7	0,5	0,5	2,9	-	-	-	1750	chemical	B RM PNEU HYDR OXID
	DS 10	0-3	88,5	4,1	1,5	1,4	1,3	-	-	5,0-5,5	2800	1750	chemical	B RM PNEU HYDR OXID
	DS 12	0-6	73,0	3,8	1,3	4,6	2,8	11,0	-	4,5-5,0	2800	1750	chemical	B RM PNEU HYDR OXID
	DS 20	0-3	85,5	4,0	1,5	1,3	1,0	2,9	-	5,0-5,5	2800	1750	chemical	B RM PNEU HYDR OXID
	DS 22	0-6	73,0	3,8	1,3	4,6	2,8	11,0	-	4,5-5,0	2800	1750	chemical	B RM PNEU HYDR OXID
	PC 10	0-6	86,0	1,1	2,4	8,1	0,5	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 20	0-6	83,5	2,1	5,9	5,9	0,6	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 30	0-6	81,5	2,1	8,0	6,0	0,6	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 40	0-6	85,0	2,1	6,0	6,0	0,6	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 50	0-6	85,5	2,9	5,8	4,4	0,8	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 60	0-6	83,5	1,6	7,9	5,9	0,4	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 70	0-6	73,0	0,8	20,0	5,3	0,3	-	2200	-	2700	1750	ceramic	B RM PNEU HYDR OXID
	PC 90	0-6	72,0	0,9	20,0	6,0	0,3	-	2200	-	2700	1680	ceramic	B RM PNEU HYDR OXID
SLUT 1-P	0-3	61,3	0,9	1,8	13,5	4,8	15,3	3	16,0	-	-	chemical	B RM SAND HYDR OXID	
II	TC 10	0-3	83,0	6,4	1,9	4,8	0,9	-	-	-	-	1750	ceramic	B CBG GUN HYDR OXID
	TC 13	0-3	64,5	5,5	1,8	10	2,7	13,0	-	-	-	1750	ceramic	B CBG GUN HYDR OXID
	TC 20	0-3	76,0	5,3	7,8	7,4	0,7	-	-	-	-	1750	ceramic	B CBG GUN HYDR OXID
	TC 40	0-3	81,5	3,9	4	4,6	1	-	-	-	-	1750	chemical	B CBG GUN HYDR OXID
	TC 50	0-3	76,5	2,6	7,9	7,5	0,7	-	-	-	-	1750	chemical	B CBG GUN HYDR OXID
	TC 60	0-3	81,0	2,0	2,5	8	0,9	-	-	-	-	1750	chemical	B CBG GUN HYDR OXID
	TC 65	0-3	81,0	4,5	2,5	8	0,8	-	2200	-	-	1750	chemical	B CBG GUN HYDR OXID
III	MCZ 10	0-0,2	84,5	1,1	2,3	7,9	0,5	-	-	21,0	-	1750	chemical	B HJ TRUEL HYDR OXID
	MCZ 20	0-0,2	83,5	1,0	2,3	7,7	0,5	-	-	19,0	-	1750	chemical	B HJ TRUEL HYDR OXID
	MCZ 30	0-0,2	93,0	0,6	2,3	0,2	0,5	-	-	21,0	-	1750	chemical	B HJ TRUEL HYDR OXID
	MCZ 33	0-0,2	54,0	0,5	0,9	14	7	20,0	-	20,0	-	1750	chemical	B HJ TRUEL HYDR OXID
	MSZ 23	0-0,2	65,5	3,7	1,2	5,8	3,4	15,5	-	20,0	-	1750	chemical	B HJ TRUEL HYDR OXID
	MSZ 23S	0-0,2	66,0	6,5	1,2	5,6	3,3	15,5	-	22,0	-	1750	chemical	B HJ TRUEL HYDR OXID
IV	ZC 10(O)	0-3	84,0	2,1	2,4	8,1	0,6	-	-	-	-	1750	chemical	B DM SELF HYDR OXID

I - REFRAMIT

II - REGUNIT

III - REFIX

III - REFILL

Product	Charakteristics	Main application	
I	DC 10	Ramming mass made of electro fused magnesia with Cr ₂ O ₃ -content.	First installation and repairs of steel refining ladles and vacuum vessels.
	DC 12	Ramming mass made of electro fused magnesia and chrome ore.	First installation and repairs of steel refining ladles, vacuum vessels and roofs of electric arc furnaces.
	DC 20	Ramming mass made of electro fused magnesia with chrome-ore addition.	First installation and repairs of tap holes of BOF converters.
	DS 10	Ramming mass made of sintered natural magnesia.	Steelmaking furnaces and converters.
	DS 12	Ramming mass made of sintered natural magnesia and chrome ore.	Monolithic linings of steel casting ladles.
	DS 20	Ramming mass made of sintered natural magnesia with chrome-ore addition.	Steelmaking furnaces and converters.
	DS 22	Ramming mass made of sintered natural magnesia and chrome ore.	Monolithic linings of steel casting ladles.
	PC 10	Dry ramming and vibrating mass with increased sintering made of sintered magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 20	Dry ramming and vibrating mass with increased sintering made of sintered natural magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 30	Dry ramming and vibrating mass with increased sintering made of sintered natural magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 40	Dry ramming and vibrating mass made of sintered natural magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 50	Dry ramming and vibrating mass made of sintered natural magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 60	Dry ramming and vibrating mass made of sintered natural magnesia.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
	PC 70	Dry ramming and vibrating mass made of iron magnesia with increased CaO and low iron magnesia-content.	First installations and repairs of hearths of electric arc and open-hearth furnaces.
PC 90	Dry ramming and vibrating mass made of sintered natural magnesia with increased CaO content.	First installations and repairs of hearths of electric arc and open-hearth furnaces.	
SLUT 1-P	Dry magnesia-chromite mass made of sintered natural magnesia and chrome ore.	First installations and repairs of the bottoms of thermal units and tapping troughs of heart furnaces.	
II	TC 10	Gunning material made of sintered natural magnesia.	Hot repairs of thermal units, in preference electric arc and open-hearth furnaces.
	TC 13	Gunning material made of sintered natural magnesia and chrome ore.	Hot repairs of thermal units, in preference electric arc and open-hearth furnaces.
	TC 20	Gunning material made of sintered natural magnesia.	Hot repairs of thermal units, in preference electric arc furnaces.
	TC 40	Gunning material made of sintered natural magnesia.	Hot and cold repairs of thermal units, in preference open-hearth furnaces.
	TC 50	Gunning material made of sintered natural magnesia.	Hot and cold repairs of thermal units, in preference open-hearth furnaces.
	TC 60	Gunning material made of sintered natural magnesia.	Hot and cold repairs of thermal units, in preference electric arc furnaces and ladles.
	TC 65	Gunning material made of sintered natural magnesia without content of P2O5.	Hot and cold repairs of thermal units, in preference electric arc furnaces and ladles.
III	MCZ 10	Bricklaying mortar made of sintered natural iron magnesia.	Lining of magnesia bricks.
	MCZ 20	Bricklaying mortar made of sintered natural iron magnesia.	Wet and dry mortar from building materials on the basis of natural magnesia.
	MCZ 30	Bricklaying mortar made of high-quality sintered iron free magnesia.	Lining of low-iron magnesia bricks.
	MCZ 33	Bricklaying mortar made of low iron magnesia and low siliceous chrome ore.	Lining of magnesia-chromite bricks.
	MSZ 23	Bricklaying mortar made of sintered magnesia and chrome ore.	Lining of magnesia-chromite bricks.
	MSZ 23S	Bricklaying mortar made of low iron magnesia and chrome ore.	Lining of magnesia-chromite bricks. Designed especially for steelmaking vessels processing low-phosphorous steel.
IV	ZC 10(O)	Filling material made of sintered natural magnesia. (O) – material can be additionally oiled.	Filling material between working lining and insulating lining.

REPAIRING MASSES

Chemical and physical properties - typical

Product	Grain size (mm)	MgO (%)	SiO ₂ (%)	CaO (%)	Fe ₂ O ₃ (%)	Al ₂ O ₃ (%)	Bulk density after drying (g.cm ⁻³)	Loss by ignition (%)	Classification
SB-ZMES (O)	0-3, 0-6,	76,0	1,8	13,0	7,5	0,30	-	-	B RM SAND HYDR OXID
SB-ZMES "S" (O)	0-3, 0-6,	82,0	1,5	6,0	7,5	0,30	-	-	B RM SAND HYDR OXID
SR 72 (O)	0-1, 0-3, 0-6	75,0	2,0	13,0	7,0	0,35	3,30	-	B RM SAND HYDR OXID
SR 78 (O)	0-3, 0-6,	80,0	2,0	10,0	7,0	0,35	3,35	-	B RM SAND HYDR OXID
SR 86 (O)	0-3, 0-6,	86,0	2,0	5,0	7,5	0,35	3,40	-	B RM SAND HYDR OXID
SGM I (O)	0-3, 0-6,	82,0	1,0	8,0	7,0	0,35	3,30	-	B RM SAND HYDR OXID
SGM II (O)	0-1, 0-3, 0-6	78,0	1,0	12,0	7,0	0,35	3,25	-	B RM SAND HYDR OXID
SGM III	0-0,2	78,0	2,0	12,0	7,0	0,35	-	-	B HJ TRUEL HYDR OXID
SGM III "S"	0-0,2	83,0	2,0	5,0	8,0	0,50	-	-	B HJ TRUEL HYDR OXID
MAGNOVIT 55	0-1	59,0	0,5	1,5	5,0	0,30	-	31,0	-
AGROMAG 68	0-0,5	76,0	1,0	2,0	6,5	0,30	-	11,0	-
ÚLET 1	0-0,5	76,0	0,6	1,8	6,5	0,30	-	13,5	-
ÚLET 2	0-0,5	61,0	1,0	2,0	5,0	0,30	-	28,5	-

Remarks: (O) – material can be additionally oiled – oil content 1-2%

Product	Charakteristics
SB-ZMES (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SB-ZMES "S" (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SR 72 (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SR 78 (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SR 86 (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SGM I (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SGM II (O)	Repairing material made of iron magnesia with specially adjusted grain size distribution.
SGM III	Connecting material made of iron magnesia with specially adjusted grain size distribution.
SGM III "S"	Connecting material made of iron magnesia with specially adjusted grain size distribution.
MAGNOVIT 55	Calcined magnesia separated from the furnace aggregates combustions.
AGROMAG 68	Calcined magnesia separated from the furnace aggregates combustions.
ÚLET 1	Calcined magnesia separated from the furnace aggregates combustions.
ÚLET 2	Calcined magnesia separated from the furnace aggregates combustions.