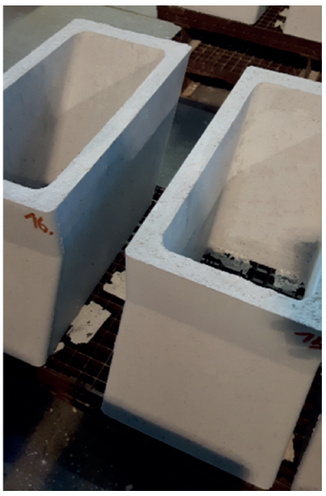
PRODUCT INFORMATION SHEET

ALKON® CAST LV 75
ALUMINUM INDUSTRY

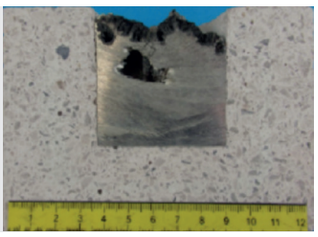
PRODUCT DESCRIPTION

ALKON® CAST LV 75 is a fused silica based low cement castable designed for the aluminum alloys casting area: launder linings, dams, filter boxes, casting tables

- Thermal shock resistant
- High mechanical strength
- Dimensionally stable
- Non wetting / non reacting with aluminum-Mg alloys
- Preheating unnecessary



Corrosion test with fired product at 800°C, alloy 5085 (4,5%Mg)+NaCl/KCl, 8 hour test at 800°C.



DELIVERED VALUE

Durability: precast piece will resist mechanical cleaning by the operator and is less subject to surface damage

- High mechanical strength: CCS after firing at 800°C is 100MPa
- Mechanical properties do not deteriorate with thermal shocks: residual MOR is 75% at 8MPa, and residual modulus of elasticity is 85% vs initial after 7 thermal shocks from 1,000°C to 25°C

No contamination: controlled end product chemistry

- Without coating, and in the presence of salt forcing reactions, the product is not attacked by highly reactive Al-Mg alloys at 800°C
- Long term corrosion resistance can always be improved by the usual protective coatings: boron nitride, bone ash, ALKON® PATCH PT 85 U, ALKON® PATCH OZ 93 U

Typical benefits from fused silica precast:

- Very low thermal expansion for long launders no open joints and low infiltration risk
- Medium thermal effusivity for a controlled chilling effect at the beginning of a casting when the launder is not preheated
- Floats on aluminum, minimizing risks of refractory inclusions

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PRODUCT INFORMATION SHEET

ALKON® CHEM PB 85
ALUMINUM INDUSTRY

PRODUCT DESCRIPTION

This phosphate-bond, 2-component castable combines a state-of-the-art chemical bonding system with high phosphate content and bauxite aggregate with maximum 6 mm grain size.

- Excellent resistance to aluminum corundum growth even if process temperature exceeds 1,200°C
- Excellent non-sticking properties
- Excellent thermal shock resistance
- High mechanical resistance
- Good bond on existing lining
- No flash but still quick setting
- No dry-out constraints

TYPICAL USE & APPLICATION

The main usage of ALKON® CHEM PB 85 is medium size (1 to 15 ton) repairs in aluminum furnaces, where there is aluminum contact but not only: melting / holding / shaft furnace hearth or walls, burner block, ladle, etc.

It is preferred in aluminum contact areas needing high thermal shock resistance (like a furnace sill not protected by a cast iron plate) as well as high resistance to corundum growth at high temperatures.

In an 18-month test period, 200 tons were installed in more than 10 countries at 50 customer sites with 100% positive feedback.

DELIVERED VALUE

Saving production time: quick setting for quick installation, 48h dry-out if it is the only product used. For a typical repair of 10th in sill, belly band and spouts, metal to metal duration can be more than 6 days. The product performance exceeds other quick installation/quick drying product solutions like sol-gel castable or gunning solutions.

Saving money: immediate savings in shorter team and equipment mobilization & less gas consumption during dry-out, as well as long term savings in product lifetime in strongest conditions.

Making your life easier:

- This product can be used in all areas
- This product shows high non wetting/sticking properties that will make your drossing off and cleaning process much easier

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PRODUCT INFORMATION SHEET

ALKON® CHEM STIX PB 85
ALUMINUM INDUSTRY

PRODUCT DESCRIPTION

This product is the patch version of Calderys' new phosphate-bonded, 2-component castable for the aluminum industry, combining a state-of-the-art chemical bonding system with high phosphate content and bauxite aggregate with maximum 1mm grain size.

- Excellent resistance to aluminum corundum growth even if process temperature exceeds 1,200°C
- Excellent non-sticking properties
- High thermal shock resistance
- Good mechanical resistance
- Good bond on existing lining
- No flash but still quick setting
- No dry-out constraints

TYPICAL USE & APPLICATION

ALKON® CHEM STIX PB 85 is dedicated for small hot-face repairs and can be applied in all areas, where there is aluminum contact but not only: melting/holding/shaft furnaces hearth or walls, burner block, ladle, etc.

For a typical annual overhaul, or furnace shutdown for cleaning purposes only, the amount of the repair can be below 1 ton and you can apply this product everywhere.

DELIVERED VALUE

Saving production time: quick setting, 48h dry-out if it is the only product used, or if together with ALKON® CHEM PB 85. For low repair shutdown, metal to metal duration can be more than 5 days.

Saving money: immediate savings in shorter team and equipment mobilization & less gas consumption during dry-out, as well as long term savings in product lifetime in strongest conditions.

Making your life easier:

- This product is easier to install than other chemically-bonded patch solutions that have a longer installation time window
- This product shows high non wetting/sticking properties that will make you drossing off and cleaning process much easier

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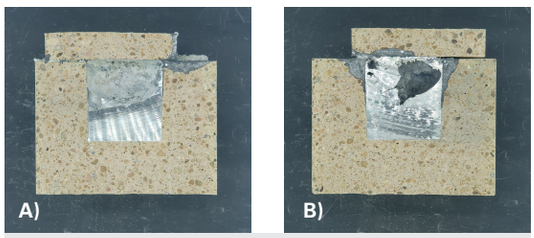
PRODUCT INFORMATION SHEET

ALKON® FD PRODUCTS
ALUMINUM INDUSTRY

PRODUCT DESCRIPTION

ALKON® FD products are hydraulically-bonded low cement castables available in fast dry quality, as well as one casting mix serving your choice of installation method.

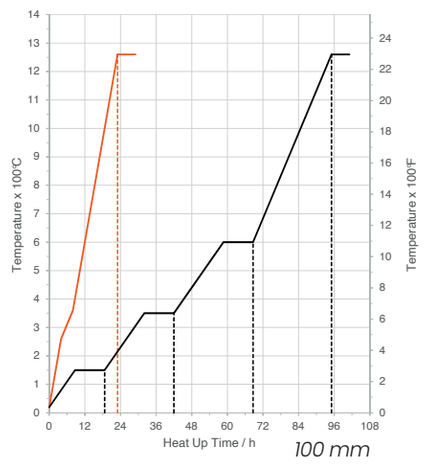
- Aluminum corrosion resistant
- Abrasion resistant right from the start
- Alkaline corrosion resistant if required
- Only addition of tapped water is needed
- Initial heat up to 1,000°C within 24 hours, without need of external dry-out burners possible



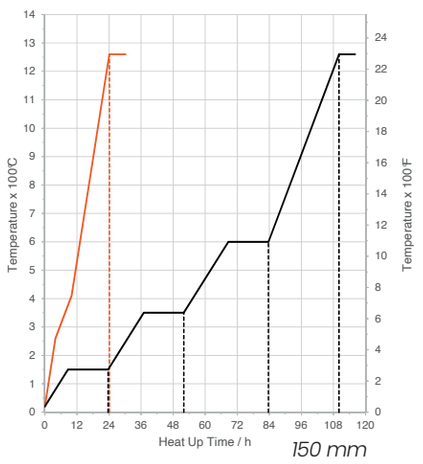
Aluminum cup test results after 1,200°C
A) ALKON® CAST LB 85 FD
B) ALKON® CAST LB 85

Comparison in thickness lining for a 1,260°C (2,300°F) initial heat-up curve (HUC)

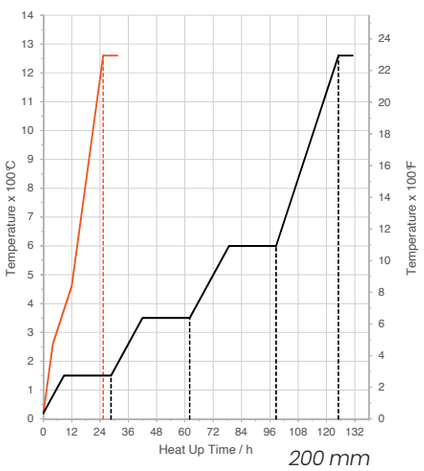
black line: standard LCC castable / **orange line:** FD castable



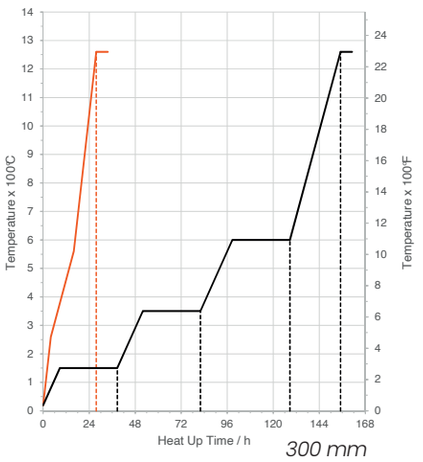
100 mm



150 mm



200 mm



300 mm

DELIVERED VALUE

Existing hydraulically-bonded low cement castable products with strong track records in the aluminum industry can be upgraded to the fast dry (FD) range without compromising their placement characteristics nor their aluminum contact corrosion resistance.

The FD product range:

- Robust enough to need only main burners for the initial heat up or drying of the monolithic lining within 24 hours to service temperature, respectively
- Allows for efficient water removal and effective spalling prevention for less CO_2 emissions during drying

TYPICAL USE & APPLICATION

- As the advantages of low cement castables of developing sufficient initial strength are conserved , the FD range can be applied in areas of application lacking high temperature and/or are subjected to severe mechanical loads such sills, furnace door, etc.
- Areas for which auxiliary burners are not likely being operated, e.g. not easily accessible furnaces
- Reduced downtimes for repairs as well as turnover projects

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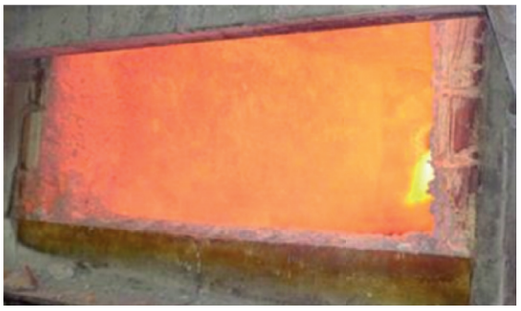
PRODUCT INFORMATION SHEET

ALKON® GUN P
ALUMINUM INDUSTRY

PRODUCT DESCRIPTION

ALKON® GUN P is a bauxite based, phosphate-bonded single component gunning mix – only water is added at the nozzle – combining the advantages of usual P-bond ramming mix with versatile and high-speed installation

- No complicated equipment
- Very low rebound
- Good bond on existing lining
- High installation rates
- No curing & dry-out constraints
- >5% P2O5 for good resistance to aluminum corundum growth even if process temperature exceeds 1,200°C
- High thermal shock resistance but low mechanical strength
- Acid resistant



TYPICAL USE & APPLICATION

- ALKON® GUN P can be used in all areas where a chemical phosphate bond ramming mix or plastic material is of interest, and with low mechanical chock/abrasion stresses
- ALKON® GUN P is especially used in full relining or partial repairs of secondary aluminum furnaces belly-bands, burner quarls and upper walls where mechanical properties are not of first importance, but resistance to corundum growth in high temperature environments is a rising need. Also such a product enables versatile & quick installation to minimize equipment immobilization for maximum return on investment

DELIVERED VALUE

Increasing furnace availability by extending lifetime in most exposed lining areas in secondary aluminum melting process: the P-bond refractory products are those showing the best chemical resistance to liquid aluminum after being fired over 1,250°C.

Increasing furnace availability via quick installation: the product can be installed quickly with a good rate and very low rebound. The product can be dried directly after installation in a very short period of time.

Making your life easier & safer:

- This product shows much less rebound, is much easier to install, and does not require pre-dampening compared to a P-bond «HYRATE» wet gunning mix
- This product does not require auxiliary respiratory equipment nor binder specific tanks like P-bond gunning mixes with chemical binder added at the lance
- This product requires standard low porosity gunning equipment and installation skills

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SIDEWELL MELTER

1 Hearth

- ALKON® CAST LB 85 ALKON® SOL CAST HT: reference solution
- ALKON® CAST HYMOR 80 AL: reference solution in strong alloy environment
- ALKON® CAST BL 80 B3: for maximum abrasion resistance, preferred in precast shapes
- ALKON® SOL CAST B 85: for quick dry solution

Balance between abrasion resistance, corrosion resistance and refractoriness to be found

2 Lower walls, Belly band and spouts

- ALKON® CAST HYMOR 80 AL: reference solution including contact with salt bath in side well
- ALKON® CAST LB 85 ALKON® SOL CAST HT: in less strong environment

3 Upper walls hotface

- ALKON® CAST F 35 C/G: reference solution with installation versatility, on top of fibre board
- ALKON® CAST MM 60 and ALKON® GUN C 75: solutions in walls subject to aluminium splashes and corundum growth like burner walls
- CALDE® CAST M 28 D HR and CALDE® CAST 1560: reference solutions in walls less exposed
- CALDE® CAST ML 55 S5/ GUN MM 55 S5: alkali resistant solution when a lot of flux are used

To check: how much the quarl is subject to aluminium projections and flame rebounds.

4 Burner quarl

- CALDE® PLAST P 85 or ALKON® GUN P: P-bond plastic material references
- ALKON® GUN C 75: versatile solution
- ALKON® CAST HYMOR 80 AL: casting solution

5 Division wall

- ALKON® CAST HYMOR 80 AL: reference solution
- ALKON® CAST LB 85 ALKON® SOL CAST HT: in less strong environment

Can be delivered and installed in precast shapes.

6 Sill & ramp

- ALKON® CAST BL 80 B3: reference solution
- ALKON® CAST HYMOR 80 AL or ALKON® CAST LB 57 Z20: for extra resistance to dross & corrosion
- ALKON® SOL CAST B 85: for quick dry solution

7 Lintel and door jambs

- CALDE® CAST LX 58 with steel fibres: reference solution with high thermal shock resistance
- CALDE® WIRE MIX: in precast shapes for great durability against mechanical abuse and thermal shocks, replacing metal protective plates not suited for high temperature environment

8 Roof

- CALDE® CAST F 60 and CALDE® CAST M 28 D HR: reference solution
- CALDE® CAST LX 58: for extra thermal cycling
- CALDE® CAST ML 55 S5: alkali resistant solution

9 Roof backlayer & anchoring

- CALDE® CAST MW 130 M: gas barrier intermediate layer
- CALDE® CAST XL 140 or 116 C/G: insulating layer references

Metallic, ceramic and cast steel anchors and preferably combination can be used.
Design adapted to furnace mobility, roof shape, hanging supports and roof accessibility.

10 Door & Exhaust

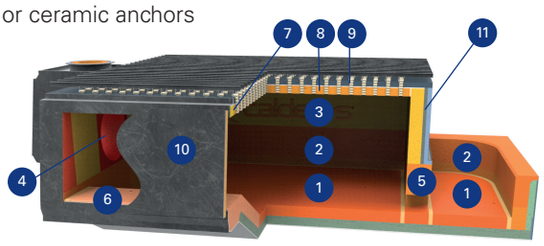
- CALDE® CAST M 28 D HR: reference solution
- CALDE® CAST MW 130 M: for lighter solution

Extra insulation can be brought via insulating fibre choice.

11 Upper wall backlayer & anchoring

- CALDE® CAST XL 116 C/G or CALDE® GUN XL 126 on top of insulating board: reference solution. Versatile and extra insulating

Metallic or ceramic anchors



Cold Repairs

- ALKON® SOL CAST B 85: fast repair reference solution in sill, ramps and hearth
- ALKON® CHEM PB 85: fast repair reference in belly-band for extra resistance to dross & corrosion, but to exclude in high flux contact areas
- ALKON® GUN C 75: fast repair solutions in all walls and roof

Specific patch or plastic solutions for small/finer repairs are also available.

Hot Repairs

- ALKON® GUN C 75: emergency hot repair solution in bath area
- ALKON® GUN F 50: emergency hot repair solution in upper area

REFRACTORY SPECIFICATIONS

Selection of products shall be done in accordance with furnace process conditions. Calderys invites you to fill in a dedicated questionnaire to confirm product selection regarding temperature level, cycling, alloys, salt/flux usage, and charging/skimming practices.

Selection of product/design shall be done in accordance with shut-down duration requirements; solutions can differ based on the importance of speed. Tailor-made solutions such as pumping/gunning, easy dry-out materials, up to full precast can be supplied to lower cost of ownership when production loss per day is of high value.

The performance of the final solution is sensitive to the installation quality, from the equipment performance to the manpower skills/respect of refractory placement procedures. Calderys invites customers to engage its supervision of the installation work, up to full turnkey solutions to control the overall quality of the project: shutdown schedule, installation, dry-out and furnace commissioning.

Please ensure any product selection and/or design is validated by your Calderys sales representative.

Product name	Main componant	Binding System	Max. Recomm. temp.(°C)	Density (g/cm³)	Ease of Dry Out	Chemical analysis (avg %)			
						Al_2O_3	SiO_2	Fe_2O_3	SiC
ALKON® GUN F 50	Chamotte	Hydraulic	1400	2.1		50.0	34.0	1.0	
ALKON® CAST BL 80 B3	Bauxite	Hydraulic	1400	3.08	(-)	83.0	7.7	0.8	
ALKON® CAST HYMOR 80 AL	Corundum	Hydraulic	1420	3.13		84.0	3.1	0.1	
ALKON® CAST LB 57 Z20	Bauxite, Zircon	Hydraulic	1400	3.11		57.0	18.0		
ALKON® CAST LB 85 ALKON® SOL CAST HT	Bauxite	Hydraulic	1300	2.9		84.0	8.0	0.7	
ALKON® CAST MM 60	High alumina raw materials	Hydraulic	1450	2.5		61.0	26.0	0.9	
ALKON® CHEM PB 85	Bauxite	Chemical Inorganic	1400	2.93	(+)	85.0	2.4	0.8	
ALKON® GUN C 75	Corundum	Hydraulic	1420	2.73	(++)	78.5	1.8	0.2	
ALKON® GUN P	Bauxite	Chemical Inorganic	1600	2.63	(+)	83.0	8.2	0.9	
ALKON® SOL CAST B 85	Bauxite	Mineral Reaction	1200	2.95	(++)	85.0	8.4	0.5	2.8
CALDE® CAST 1560	Andalusite	Hydraulic	1650	2.45		59.0	36.0	1.1	
CALDE® CAST F 60	Chamotte	Hydraulic	1650	2.28		60.0	32.5	1.5	
CALDE® CAST LX 58	Andalusite	Hydraulic	1650	2.5		57.0	38.0	1.1	
CALDE® CAST M 28 D HR	Chamotte	Hydraulic	1550	2.25		45.5	47.8	1.3	
CALDE® CAST ML 55 S5	High alumina raw materials	Hydraulic	1550	2.48		55.0	35.0	0.9	5.0
CALDE® CAST MW 130 M	Lightweight chamotte	Hydraulic	1300	1.55		37.5	42.5	6.0	
CALDE® CAST XL 106 C/G	Vermiculite	Hydraulic	1060	0.56		30.0	31.0	9.0	
CALDE® CAST XL 116 C/G	Lightweight chamotte, Vermiculite	Hydraulic	1160	0.84		28.5	30.0	10.3	
CALDE® CAST XL 140	Lightweight aggregates	Hydraulic	1400	0.72		49.0	35.0	0.9	
CALDE® GUN MM 55 S5	High alumina raw materials	Hydraulic	1500	2.42		58.0	30.0	0.9	4.0
CALDE® GUN XL 126	Lightweight aggregates	Hydraulic	1260	0.95		31.0	38.0	9.3	
CALDE® PLAST P 85	Bauxite	Chemical Inorganic	1650	2.8	(+)	84.0	8.0	0.9	

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TOP CHARGING FURNACE

1 Hearth, ramp and sill

- AC 85 AP HAZAL B 85 P3/P4 (AL) or AC 80 P: P-bond brick solution for harsh environment with superheating
- ALKON® CAST BL 80 B3: for maximum abrasion resistance, better solution as precast blocks
- ALKON® CAST HYMOR 80 AL: for extra resistance to dross & corrosion

Balance between abrasion resistance, corrosion resistance to be found. Can be supplied in large precast shapes and installed with rammed expansion joints.

2 Lower walls, Belly band and spouts

- ALKON® CAST HYMOR 80 AL: reference solution
- ALKON® CAST LB 85 ALKON® SOL CAST HT: in less strong environment, can be supplied in large precast shapes
- AC 85 AP HAZAL B 85 P3/P4 (AL) or AC 80 P: P-bond brick solution for harsh environment with superheating

3 Burner quarl

- CALDE® PLAST P 85 or CALDE® RAM PB 84 or ALKON®
- GUN P: P-bond plastic material references
- CALDE® CAST UC 86 & ALKON® CAST HYMOR 80 AL: casting solutions

To check how much the quarl is subject to aluminium projections and flame rebounds if casting is required.

4 Upper Wall

- ALKON® GUN P: solutions for walls subject to aluminium splashes and corundum growth like burner walls
- CALDE® CAST LX 58 and CALDE® CAST AF 470: casting solution

5 Roof

- AC 60 A brick: arch reference solution
- CALDE® CAST LX 58: castable solution
- CALDE® CAST LX 58 or CALDE® CAST UB large precast shapes: arch solution

Best anchoring and insulating solution is to be found based on design of the steel structure if any.

6 Lintel, door pillar

- CALDE® CAST LX 58 with steel fibres: reference solution
- CALDE® CAST LX 68 or CALDE® CAST GIBRAM: upgrade solution
- CALDE® WIRE MIX: in precast shapes for great durability against mechanical abuse and thermal shocks, replacing metal protective plates (If temperature is not too high)

7 Top ring

- CALDE® CAST LX 68 or CALDE® CAST GIBRAM with steel fibres: reference solution
- CALDE® CAST LX 58

8 Upper wall backlayer & anchoring

- CALDE® CAST XL 116 C/G or CALDE® GUN XL 126 on top of insulating board: reference solution. Versatile and extra insulating

Metallic or ceramic anchors.

9 Hearth/Bath backlayer

- ALKON® CAST F 35 C/G: reference solution
- ALKON® CAST MF 44: for less insulation and better freeze point positioning

A compromise is to be found between low shell temperature (thermal efficiency), alloy freeze point position (safety) and furnace capacity (total thickness).

10 Door & Exhaust

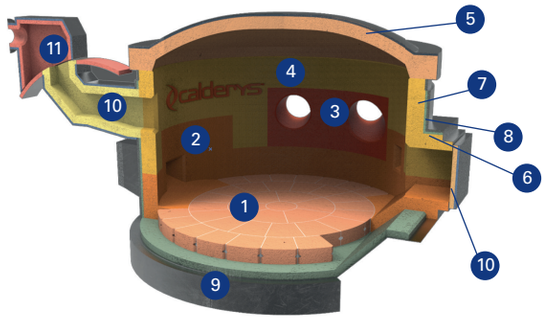
- CALDE® CAST M 28 D HR: reference solution
- CALDE® CAST MW 130 M: for lighter solution

Extra insulation can be brought via insulating fibre choice.

11 Exhaust hood and chimney

- CALDE® CAST XL 116 C/G: reference solution

Extra insulation can be brought via insulating fibre choice.



Cold Repairs

- CALDE® SOL CAST B 85: fast repair reference solution in sill, ramps and hearth
- ALKON® CHEM PB 85: fast repair reference in belly-band for extra resistance to dross & corrosion
- ALKON® GUN P: fast repair solutions in all walls and roof

Specific patch or plastic solutions for small/finer repairs are also available.

Hot Repairs

- ALKON® GUN C 75: emergency hot repair solution in bath and upper areas

REFRACTORY SPECIFICATIONS

Selection of products shall be done in accordance with furnace process conditions. Calderys invites you to fill in a dedicated questionnaire to confirm product selection regarding temperature level, cycling, alloys, salt/flux usage, and charging/skimming practices.

Selection of product/design shall be done in accordance with shut-down duration requirements; solutions can differ based on the importance of speed. Tailor-made solutions such as pumping/gunning, easy dry-out materials, up to full precast can be supplied to lower cost of ownership when production loss per day is of high value.

The performance of the final solution is sensitive to the installation quality, from the equipment performance to the manpower skills/respect of refractory placement procedures. Calderys invites customers to engage its supervision of the installation work, up to full turnkey solutions to control the overall quality of the project: shutdown schedule, installation, dry-out and furnace commissioning.

Please ensure any product selection and/or design is validated by your Calderys sales representative.

Product name	Main componant	Binding System	Max. Recomm. temp.(°C)	Density (g/cm³)	Ease of Dry Out	Chemical analysis (avg %)			
						Al_2O_3	SiO_2	Fe_2O_3	SiC
AC 60 A	Andalusite	Ceramic	1550	2.57		61.8		1.2	
AC 80 P	Bauxite	Chemical/ Ceramic	1550	2.80		78.0		1.6	
AC 85 AP HAZAL B 85 P3/P4 (AL)	Bauxite	Chemical/ Ceramic	1500	2.90		85.2		1.4	
ALKON® CAST BL 80 B3	Bauxite	Hydraulic	1400	3.08	(-)	83.0	7.7	0.8	
ALKON® CAST F 35 C/G	Chamotte	Hydraulic	1280	2.00		36.0	49	3.0	
ALKON® CAST HYMOR 80 AL	Corundum	Hydraulic	1420	3.13		84.0	3.1	0.1	
ALKON® CAST LB 85 ALKON® SOL CAST HT	Bauxite	Hydraulic	1300	2.90		84.0	8	0.7	
ALKON® CAST MF 44	Chamotte	Hydraulic	1200	2.16		43.0	49	1.2	
ALKON® CHEM PB 85	Bauxite	Chemical Inorganic	1400	2.93	(+)	85.0	2.4	0.8	
ALKON® GUN C 75	Corundum	Hydraulic	1420	2.73	(++)	78.5	1.8	0.2	
ALKON® GUN P	Bauxite	Chemical Inorganic	1600	2.63	(+)	83.0	8.2	0.9	
ALKON® SOL CAST B 85	Bauxite	Mineral Reaction	1200	2.95	(++)	85.0	8.4	0.5	2.8
CALDE® CAST AF 470	Andalusite, Bauxite	Hydraulic	1650	2.60		70.0	24	1.2	
CALDE® CAST GIBRAM	Bauxite	Hydraulic	1600	2.95		85.0	10	1.0	
CALDE® CAST LX 58	Andalusite	Hydraulic	1650	2.50		57.0	38	1.1	
CALDE® CAST LX 68	Corundum	Hydraulic	1600	2.85		80.0	15	0.6	
CALDE® CAST M 28 D HR	Chamotte	Hydraulic	1550	2.25		45.5	47.8	1.3	
CALDE® CAST MW 130 M	Lightweight chamotte	Hydraulic	1300	1.55		37.5	42.5	6.0	
CALDE® CAST UB	Bauxite	Hydraulic	1680	2.85		85.0	11.5	0.9	
CALDE® CAST UC 86	Corundum	Hydraulic	1750	2.89		85.0	14	0.4	
CALDE® CAST XL 116 C/G	Lightweight chamotte, Vermiculite	Hydraulic	1160	0.84		28.5	30	10.3	
CALDE® GUN XL 126	Lightweight aggregates	Hydraulic	1260	0.95		31.0	38	9.3	
CALDE® PLAST P 85	Bauxite	Chemical Inorganic	1650	2.80	(+)	84.0	8	0.9	
CALDE® RAM PB 84	Bauxite	Chemical	1650	2.90	(+)	84.0	10	1.0	

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TRANSPORT
LADLE (SHOP FLOOR)

1 Body
- ALKON® CAST MF 44 and ALKON® CAST MF 52 HR: reference solution
- ALKON® CAST MF 40 CFM: insulating dense solution
- ALKON® CAST 204 or ALKON® FLOW LB 75: for large ladle doing alloy treatment
- ALKON® CAST MT 90: for pure aluminium handling

Can be supplied in large precast shapes.

Ladle walls can be cast as thin as 60mm with self-flowing solutions. Ladle precast piece can be delivered and installed with a dry-vibrating mix filler.

2 Spouts
- ALKON® CAST 204: reference solution
- ALKON® CAST HYMOR 80 AL: for extra resistance to strong alloys & flux
- ALKON® CAST MM 60: in less strong environment

3 Bottom / Impact area
- ALKON® CAST 204: reference in large capacity ladle with high metal free fall
- ALKON® CAST BL 80 B3

4 Lid
- CALDE® CAST MW STRONG LITE or CALDE® CAST MW 130 M: standard solutions
- CALDE® CAST XL 116 C/G: extra insulating solution

5 Hotface Coating
- ALKON® PATCH OZ 93 U: glass coating for easier aluminium skulls removal, to renew monthly

6 Back Layer
Insulating boards of various thermal insulation levels
- CALDE® CAST XL 116 C/G: in thick-walled ladles
- ALKON® DRY SF 40: dry back layer filler with precast shapes

Cold Repairs
- ALKON® CHEM PB 85 and ALKON® CHEM STIX PB 85: casting/patching 2 component quick setting solution for quick and durable repairs, showing mechanical strength and aluminium alloy high corrosion resistance.
- ALKON® STIX F 50 G1 and ALKON® STIX C 75: versatile solution by hand patching
- ALKON® PATCH PT 85 U: solution for thin repairs, ready to use

In-house Relining Solution
- In house relining turnkey solutions available with old ladle pick-up and relined one delivery

Precast Relining Solution
- Delivery of unique precast shape for fast relining at site without castable or brick installation steps, and avoiding long dry-out

On the Road Ladle
- ALKON® CAST 204 or ALKON® CAST HYMOR 80 AL: large ladle one piece casting solution
- ALKON® CAST 204: bottom impact area
- ALKON® CAST MW 16: hotface insulating solution in walls

Precast solution and/or in house relining solution.

Aluminium infiltration barriers.

Layers of insulating bricks and boards to minimize thermal loss and to prevent hydrogen pick-up. Shell temperature as low as 50°C can be reached enabling transfers > 5 hours depending on ladle size.

REFRACTORY SPECIFICATIONS

Selection of products shall be done in accordance with furnace process conditions.

For transport ladle Calderys invites you to fill in a dedicated questionnaire to confirm product selection and refractory design metal temperature loss, abrasion resistance and resistance to chemical corrosion from alloys and treatment gas.

Selection of product/design shall be done in accordance with shut-down duration requirements; solutions can differ based on the importance of speed. Tailor-made solutions such as full precast or in-house relining can be supplied to lower cost of ownership when production loss per day is of high value.

The performance of the final solution is sensitive to the installation quality, from the equipment performance to the manpower skills/ respect of refractory placement procedures. Calderys invites customers to engage its supervision of the installation work, up to full turnkey solutions to control the overall quality of the project: shutdown schedule, installation, dry-out and furnace commissioning.

Please ensure any product selection and/or design is validated by your Calderys sales representative.

Product name	Main componant	Binding System	Max. Recomm. temp.(°C)	Density (g/cm³)	Ease of Dry Out	Chemical analysis (avg %)			
						Al_2O_3	SiO_2	Fe_2O_3	SiC
ALKON® CAST 204	Bauxite	Hydraulic	1200	2.80	2.6	81.0	8.8	0.7	2.9
ALKON® CAST BL 80 B3	Bauxite	Hydraulic	1400	3.08	3.2	83.0	7.7	0.8	
ALKON® CAST HYMOR 80 AL	Corundum	Hydraulic	1420	3.13	2.9	84.0	3.1	0.1	
ALKON® CAST MF 40 CFM	Corundum	Hydraulic	1200	2.02	0.8	36.0	49.0	1.5	
ALKON® CAST MF 44	Chamotte	Hydraulic	1200	2.16	1.1	43.0	49.0	1.2	
ALKON® CAST MF 52 HR	Chamotte	Hydraulic	1420	2.36	1.3	50.0	42.0	0.8	
ALKON® CAST MM 60	High alumina raw materials	Hydraulic	1450	2.50	1.7	61.0	26.0	0.9	
ALKON® CAST MT 90	Tabular alumina	Hydraulic	1550	3.03	3.3	90.0	0.2	0.1	
ALKON® CAST MW 16	Bubble alumina	Hydraulic	1200	1.60	0.5	83.0	7.0		
ALKON® CHEM PB 85	Bauxite	Chemical Inorganic	1400	2.93	2.8	85.0	2.4	0.8	
ALKON® CHEM STIX PB 85	Bauxite	Chemical Inorganic	1400	2.70	1.9	81.0	1.4	0.5	
ALKON® DRY SF 40	Chamotte	Ceramic	1600	1.83	40.0	52.5	1.4		
ALKON® FLOW LB 75	Bauxite	Hydraulic	1200	2.70	2.1	73.5	20.0	12	
ALKON® PATCH OZ 93 U	Zirconia oxid	Chemical Organic	1700						
ALKON® PATCH PT 85 U	Tabular alumina	Chemical	1200	2.50		85.0		0.1	
ALKON® STIX C 75	Corundum	Hydraulic	1420	2.41	1.2	76.0	1.5	0.1	
ALKON® STIX F 50 G1	Chamotte	Hydraulic	1440	1.80	0.6	48.0	43.0	1.8	
CALDE® CAST MW 130 M	Lightweight chamotte	Hydraulic	1300	1.55	0.5	37.5	42.5	6.0	
CALDE® CAST MW STRONG LITE	Lightweight chamotte	Hydraulic	1320	1.58	0.5	40.0	38.0	5.5	
CALDE® CAST XL 116 C/G	Lightweight chamotte, Vermiculite	Hydraulic	1160	0.84	0.2	28.5	30.0	10.3	

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TWIN CHAMBER FURNACE

1 Hearth, melting chamber
- ALKON® CAST HYMOR 80 AL: reference solution
- ALKON® CAST BL 80 B3: for maximum abrasion resistance
- ALKON® CAST LM 68: cost effective solution

2 Bath, wall, spout, holding chamber
- ALKON® CAST 204 or ALKON® CAST LB 85 ALKON® SOL CAST HT: reference solutions
- ALKON® CAST HYMOR 80 AL: for extra resistance to strong alloys & flux
- ALKON® CAST MM 60: in less strong environment

3 Wall, melting chamber
- ALKON® CAST HYMOR 80 AL: reference solution
- ALKON® CAST MT 90: for high temperature flame impacts

4 Sill
- ALKON® CHEM PB 85: reference with high strength after thermal cycling
- ALKON® CAST BL 80 B3: vs heavy mechanical impact
- ALKON® CAST HYMOR 80 AL

5 Shaft
- CALDE® CAST MF 50: reference solution
- ALKON® CAST MF 50: attack with liq. aluminum
- ALKON® CAST BL 80 B3: heavy mechanical impact

Transition Vault
- ALKON® CAST BL 80 B3: reference solution
- ALKON® CHEM PB 85: chemical attack
- ALKON® CAST LB 57 Z20

6 Burner block
- CALDE® CAST LM 70: reference solution
- ALKON® CAST HYMOR 80 AL: compromise between heat and attack of liq. aluminum

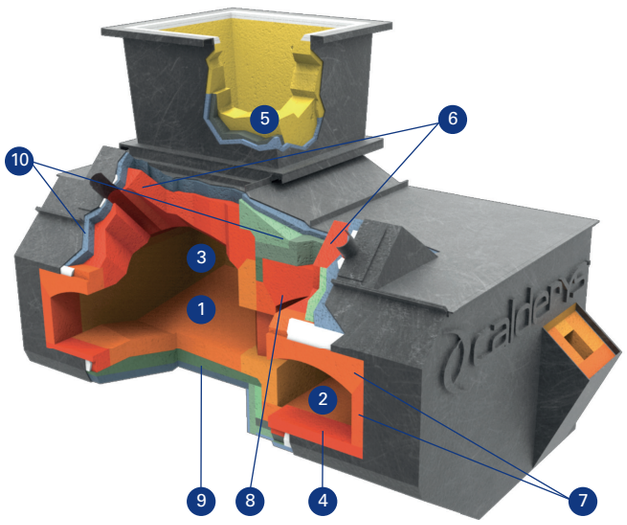
7 Lintel and door jambs
- CALDE® CAST LX 58: enforced with steel fibres: reference solution
- CALDE® CAST MF 50: cost effective solution
- CALDE® WIRE MIX: in precast shapes for great durability against mechanical abuse and thermal shocks, replacing metal protective plates.

8 Roof, holding chamber
- ALKON® CAST MF 50: enforced with steel fibres: reference solution
- CALDE® CAST MW STRONG LITE
- CALDE® GUN STRONG MIX

9 Bottom backlayer
- ALKON® CAST F 35 C/G: reference solution
- CALDE® CAST F 32 C/G: reference solution

10 Roof backlayer
- CALDE® CAST & GUN MW STRONG MIX: references
- CALDE® CAST XL 116 C/G: insulating layer

11 Door & Exhaust
- CALDE® / ALKON® CAST MF 50: reference solution
- ALKON® CAST F 35 C/G: for lighter solution
- CALDE® CAST/GUN MW STRONG MIX



Cold Repairs
- ALKON® SOL CAST B 85: fast repair reference solution in sill, ramps and hearth
- ALKON® CHEM PB 85: fast repair reference in belly-band for extra resistance to dross & corrosion
- ALKON® GUN P and ALKON® GUN C 75: fast repair solutions in all walls and roof.

Specific patch or plastic solutions for small/finer repairs are also available.

Hot Repairs
- ALKON® GUN C 75: emergency hot repair solution in bath area
- ALKON® GUN F 48 B: emergency hot repair solution in upper area
- CALDE® GUN MM 55 S5: especially shaft

REFRACTORY SPECIFICATIONS

Selection of products shall be done in accordance with furnace process conditions. Calderys invites you to fill in a dedicated questionnaire to confirm product selection regarding temperature level, cycling, alloys, salt/flux usage, and charging/skimming practices.

Selection of product/design shall be done in accordance with shut-down duration requirements; solutions can differ based on the importance of speed. Tailor-made solutions such as pumping/gunning, easy dry-out materials, up to full precast can be supplied to lower cost of ownership when production loss per day is of high value.

The performance of the final solution is sensitive to the installation quality, from the equipment performance to the manpower skills/respect of refractory placement procedures. Calderys invites customers to engage its supervision of the installation work, up to full turnkey solutions to control the overall quality of the project: shutdown schedule, installation, dry-out and furnace commissioning.

Please ensure any product selection and/or design is validated by your Calderys sales representative.

Product name	Main componant	Binding System	Max. Recomm. temp.(°C)	Density (g/cm³)	Ease of Dry Out	Chemical analysis (avg %)			
						Al_2O_3	SiO_2	Fe_2O_3	SiC
ALKON® CAST HYMOR 80 AL	Corundum	Hydraulic	1420	3.13		84.0	3.1	0.1	
ALKON® CAST BL 80 B3	Bauxite	Hydraulic	1400	3.08	(-)	83.0	7.7	0.8	
ALKON® CAST LM 68	High alumina raw materials	Hydraulic	1400	2.6		68.0	25	0.6	
ALKON® CAST 204	Bauxite	Hydraulic	1200	2.8	(-)	81.0	8.8	0.7	2.9
ALKON® CAST LB 85 ALKON® SOL CAST HT	Bauxite	Hydraulic	1300	2.9		84.0	8	0.7	
ALKON® CAST MM 60	High alumina raw materials	Hydraulic	1450	2.5		61.0	26	0.9	
ALKON® CAST MT 90	Tabular alumina	Hydraulic	1550	3.03		90.0	0.2	0.1	
ALKON® CAST BL 80 B3	Bauxite	Hydraulic	1400	3.08		83.0	7.7	0.8	
CALDE® CAST LM 70	Andalusite, High alumina raw materials	Hydraulic	1650	2.53		70.0	26	0.7	
CALDE® CAST F 32 C/G	Chamotte	Hydraulic	1280	1.85		35.0	51.0	2.7	
CALDE® CAST MF 50	Chamotte	Hydraulic	1480	2.32		52.0	42	0.7	
ALKON® CAST MF 50	Chamotte	Hydraulic	1480	2.35		50.0	42	0.8	
ALKON® CHEM PB 85	Bauxite	Chemical Inorganic	1400	2.93	+	85.0	2.4	0.8	
ALKON® CAST LB 57 Z20	Bauxite, Zircon	Hydraulic	1400	3.11		57.0	18		
CALDE® CAST LX 58	Andalusite	Hydraulic	1650	2.5		57.0	38	1.1	
CALDE® CAST MW STRONG LITE	Lightweight chamotte	Hydraulic	1320	1.58		40.0	38	5.5	
CALDE® GUN STRONG MIX	Chamotte	Hydraulic	1320	2.05		36.5	46	3.9	
CALDE® CAST F 35 C/G	Chamotte	Hydraulic	1280	2		36.0	49	3	
CALDE® CAST F 32 C/G	Chamotte	Hydraulic	1280	1.85		35.0	51	2.7	
CALDE® CAST XL 116 C/G	Lightweight chamotte, Vermiculite	Hydraulic	1160	0.84		28.5	30	10.3	
ALKON® GUN P	Bauxite	Chemical Inorganic	1600	2.63	+	83.0	8.2	0.9	
ALKON® GUN C 75	Corundum	Hydraulic	1420	2.73	++	78.5	1.8	0.2	
ALKON® GUN F 48 B	Chamotte	Hydraulic	1400	2.12		48.0	30	0.7	
CALDE® GUN MM 55 S5	High alumina raw materials	Hydraulic	1500	2.42		58.0	30	0.9	4.0
ALKON® SOL CAST B 85	Bauxite	Mineral Reaction	1200	2.95	++	85.0	8.4	0.5	2.8

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