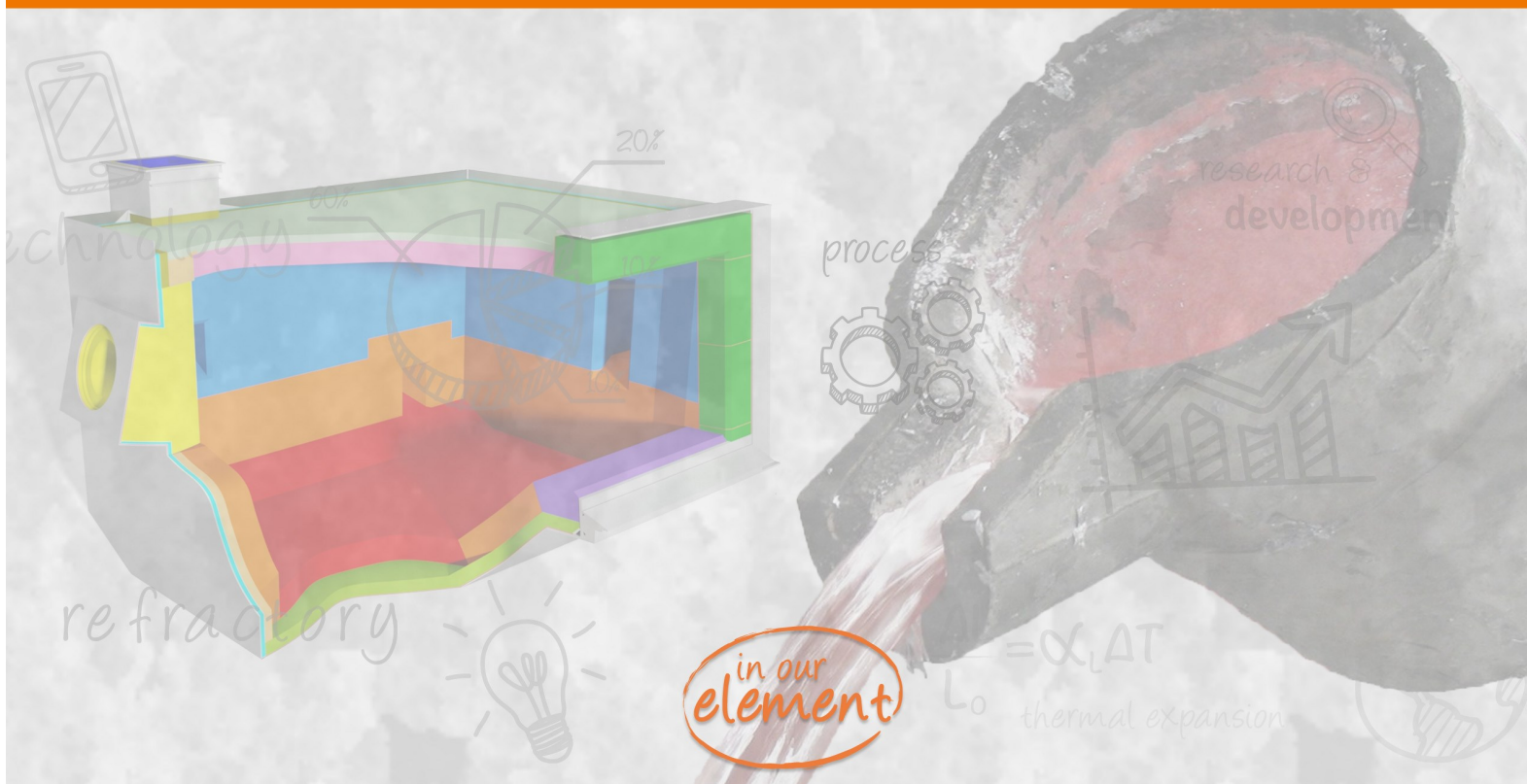




REFRACTORIES

— FOR —

ALUMINUM



ALLIED
MINERAL
PRODUCTS

Global **Refractory** Solutions



ABOUT ALLIED

Allied Mineral Products is a world leader in the design and manufacture of monolithic refractories and precast shapes. With strong sales and service teams in the foundry, aluminum, steel, heat treat/forge and industrial markets, our success is based on our dedication to *Being There Worldwide with Refractory Solutions*.

Producing quality, consistent products is top priority at Allied and we have the products to meet your refractory needs. Our extensive product line includes innovative refractory technology and longstanding refractory alternatives.

Allied's focus on quality at every stage in the production process is unparalleled. A stringent raw material standard and global quality control testing before and after each batch is produced, provides customers with consistent products. We provide quick response times to any urgent request through flexible manufacturing systems at all our manufacturing facilities.

Global **Refractory** Solutions



12 MANUFACTURING FACILITIES
OVER **160** INTERNATIONAL SALES REPRESENTATIVES
3 RESEARCH AND TECHNOLOGY FACILITIES
SALES ACTIVITY IN MORE THAN **100** COUNTRIES
7 PRECAST SHAPES FACILITIES



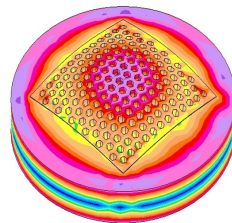
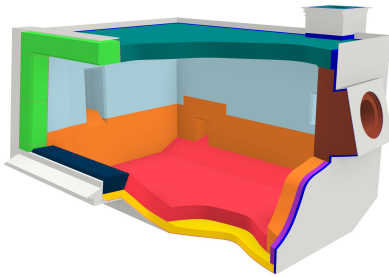
RESEARCH & ENGINEERING

After gaining a detailed understanding of your specific needs, our team evaluates operating criteria and physical design parameters to create a detailed engineered design encompassing:

- Patented technologies
- Optimized product zoning
- Thermal models to optimize and validate designs
- Proven safety lining system designs
- Unique installation properties and techniques
- Leading edge refractory system designs

We're focused on developing new products, improving existing products and perfecting installation techniques. Our product development and testing is conducted in our state of the art research and technology center. We have an on-site gunning and shotcreting lab allowing extensive testing of installation properties.

As an innovative, technology-driven supplier we're devoted to providing customized refractory solutions for various industry operations. We offer a wide variety of high performance refractory products with superior raw material quality.



FEA Thermal Analysis



Flow Testing



Contact Tests



Strength Tests





PRODUCT INNOVATIONS

QUICK-FIRE®

Product Benefits

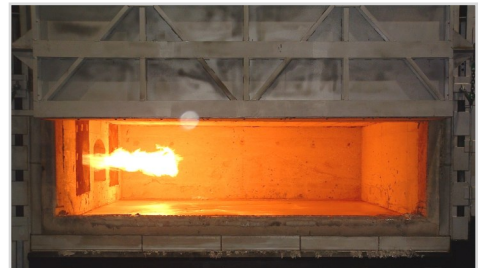
- Rapid dry-out characteristics
- Designed to bond to existing refractory
- Fast setting properties
- Excellent non-wetting characteristics
- Superior thermal shock resistance
- Available in gunning, casting and troweling formulations



MATRIFLO

MATRIFLO products are high alumina, low cement castables designed for aggressive aluminum alloys.

- Superior corrosion resistance
- High strength
- Excellent non-wetting properties
- Resistance to salt flux



	MATRIFLO 93 AC	MATRIFLO 85 ACX	MATRIFLO AL C	MATRIFLO SIC 6
Al ₂ O ₃	92.8%	85.6%	85.3%	80.6%
CaO	3.8%	2.3%	2.1%	2.5%
SiO ₂	0.4%	8.5%	8.4%	6.9%
Density	3.17 g/cm ³ (198 lb/ft ³)	2.74 g/cm ³ (171 lb/ft ³)	2.82 g/cm ³ (176 lb/ft ³)	2.88 g/cm ³ (180 lb/ft ³)
Grain size	7 mm (3 mesh) and finer	8 mm (5/16 inch)	25 mm (1 inch)	8 mm (5/16 inch)



REVERBERATORY

ROOF

MATRIPUMP AR 61
MATRIPUMP 50
MATRICAST 3110C

UPPER SIDE WALLS

MATRIPUMP AR 61
MATRIPHOS 85AC
QUICK-FIRE® 88

BURNERS

LCF 798A
KAST TECH 60
QUICK-FIRE® 88
MATRIPHOS 85AC

JAMBS / LINTELS

QUICK-FIRE® 88
QUICK CAST® 62
ARMORMAX® 70SR
TUFF-FLO 608

RAMP / SILL

MATRIFLO 70 ACX COARSE
MATRIFLO AL C
QUICK-FIRE® 90
MATRIFLO 85 ACX

SUBHEARTH

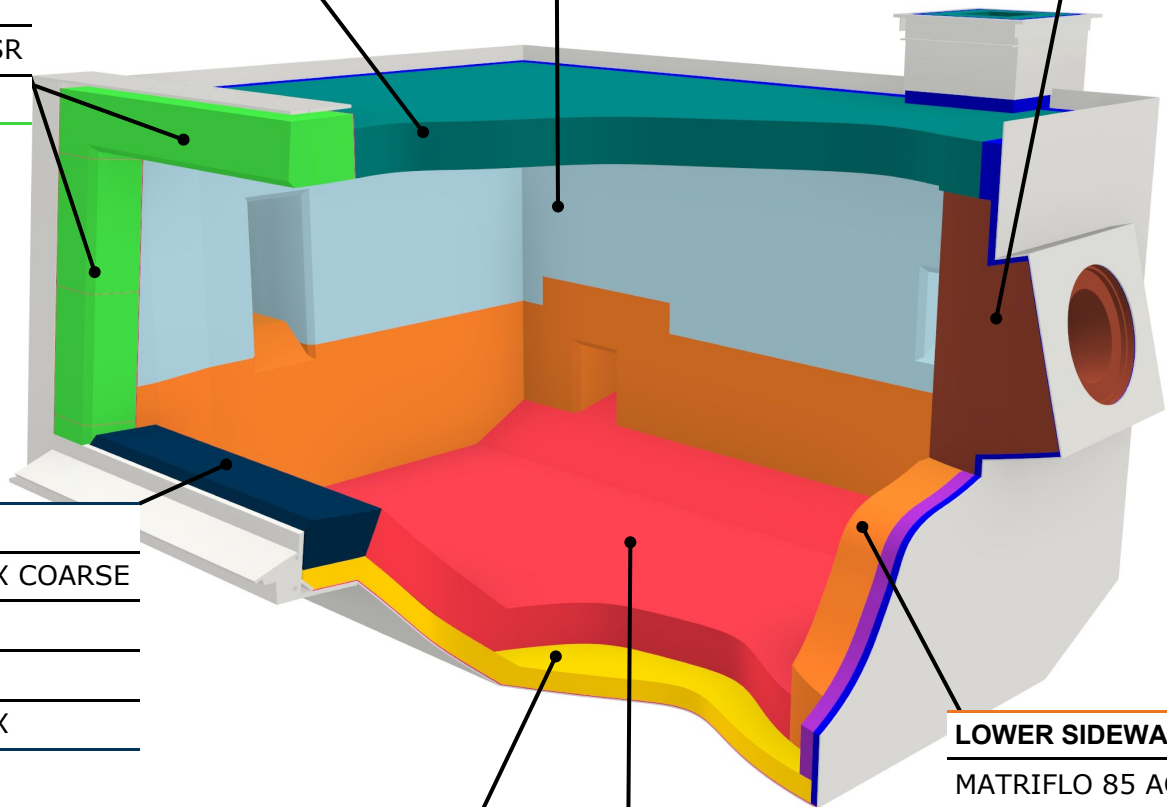
MATRICAST 2600 AC
MATRIGUN 25 ACX
MATRIPUMP 45 AL
BETAMAX® 24 LT

HEARTH

MATRIPUMP 63 ACX
MATRIPUMP 70 ACX
MATRIPUMP 72 ACX
MATRIFLO 85 ACX

LOWER SIDEWALLS

MATRIFLO 85 ACX
MATRIPUMP 72 ACX
QUICK-FIRE® 88



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STACKMELTER

STACK

ARMORMAX® 70 SR (upper)
MATRIFLO 85 ACX
MATRIFLO 93 AC
MATRIPUMP 72 ACX
QUICK CAST® 61 ACX

BURNERS

KAST TECH 60
LCF 798A
MATRIPHOS 85 AC

ROOF

KAST TECH 60
MATRIPUMP AR 61
QUICK CAST® 62

WALLS / HEARTH / RAMP

MATRIFLO 85 ACX
MATRIPUMP 72 ACX
MATRIFLO 93 AC

BULL NOSE

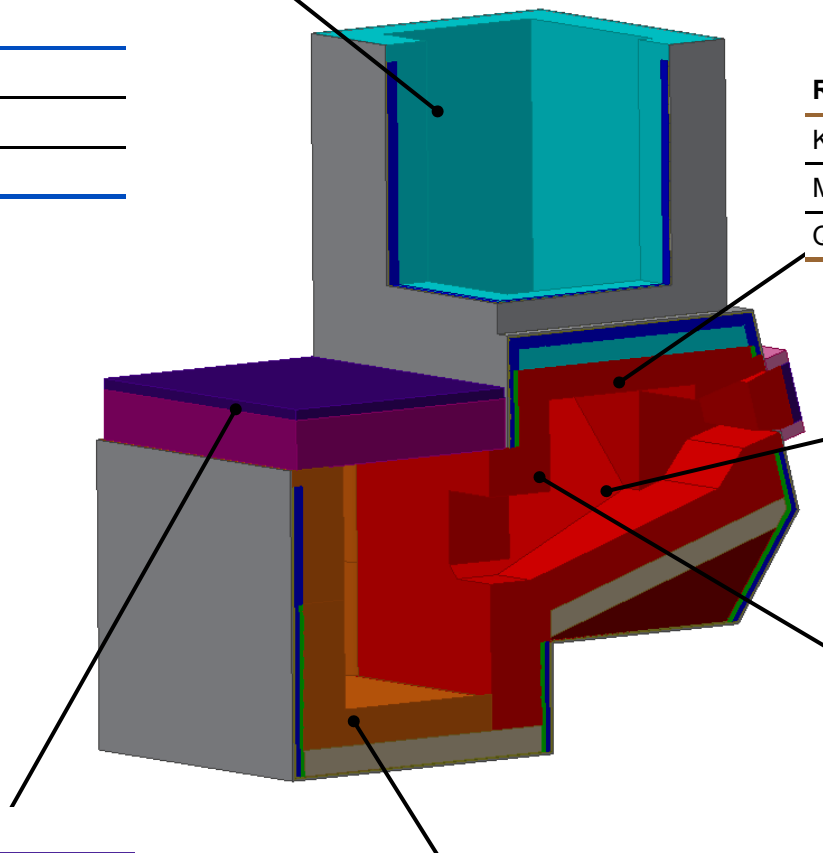
ARMORMAX® 70 AC
QUICK CAST® 81 ACX

ROOF

MATRIPUMP 50
MATRIPUMP AR 61
KAST TECH 60

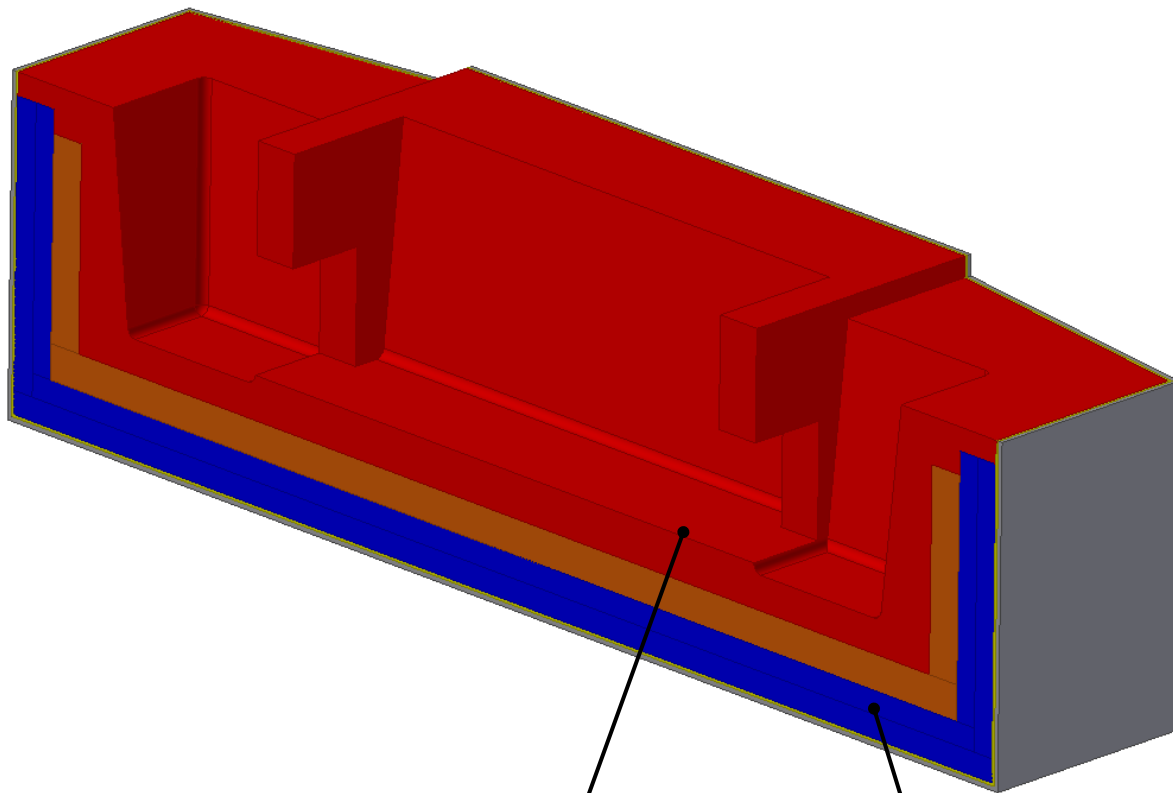
HEARTH & WALLS

QUICK CAST® 61 ACX
QUICK-FIRE® 88
MTRICAST 70 AC
WAM® AL II
WAM® AL III





DIE CASTING HOLDER



expansion



FURNACE LINING

MATRIPUMP 63 ACX

MATRICAST 70 AC

MATRIFLO 85 ACX

QUICK-FIRE® 88

WAM® AL II

WAM® AL III

SAFETY LINING

DRI-LITE® 79AL-M

BETAMAX® 24 LT



process

°C



global

ROTARY

refractory



Σ

research



IT

expansion



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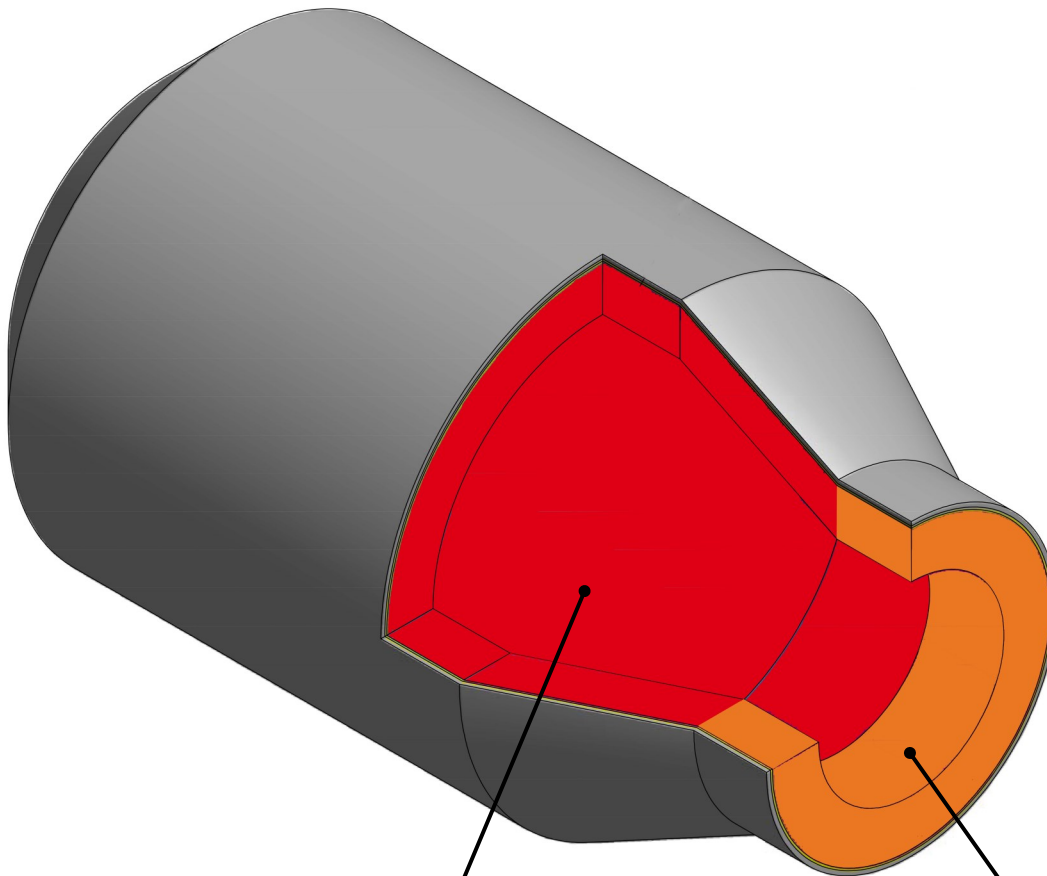


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FURNACE LINING

QUICK CAST® 61 ACX

NANO-TEK® 65 AC

MATRIPUMP 608 AL

NOSE RING

MATRIPUMP 608 AL

ARMORMAX® 70 SR



process
refractory



global

CORELESS



Σ

research

SPOUT

MATRIFIRE® 8085 ACX

MINRO-AL® PLASTIC A76

MINRO-AL® PLASTIC A85

QUICK-FIRE® 88

PRECAST SHAPES

STRUCTURAL COMPONENTS

QUICK CAST® 62

TUFF-FLO 50

PRECAST SHAPES

CRUCIBLE BACK-UP

DRI-VIBE® 88A NB

DRI-VIBE® 291A

COVER

MINRO-FIRE CAST F80

TUFF-FLO 50

SLIP PLANE MATERIALS

VAPORSHIELD

SINTERFOIL 50

GM40SRP

MINRO-WEAVE CLOTH

WORKING LINING

DRI-VIBE® 520A

DRI-VIBE® 522A-FR

DRI-VIBE® 558A-FR

PRECAST CRUCIBLES

WORKING LINING COATINGS

MINRO-Z WASH Z77

MATRIKOTE 90 AC

WASH 148A

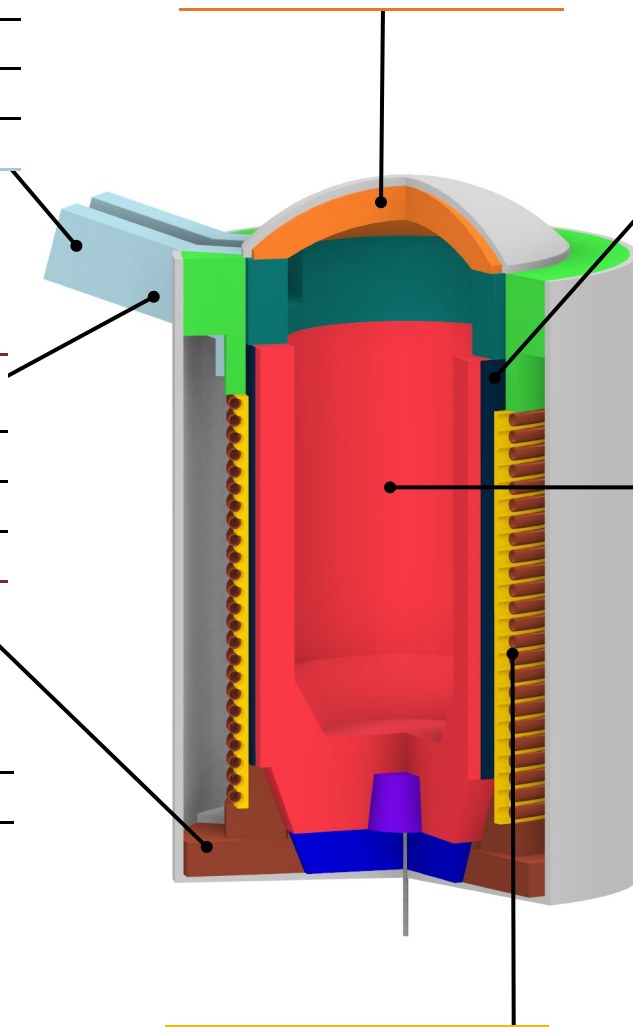
GROUT

GROUT 163 ACF

GROUT 563A

GROUT 663A

COIL-CAST 97A



$$\frac{\Delta L}{L_0} = \alpha_L \Delta T$$

thermal expansion



CHANNEL

COVER

INSULMIX® 33100

MATRIPUMP 50

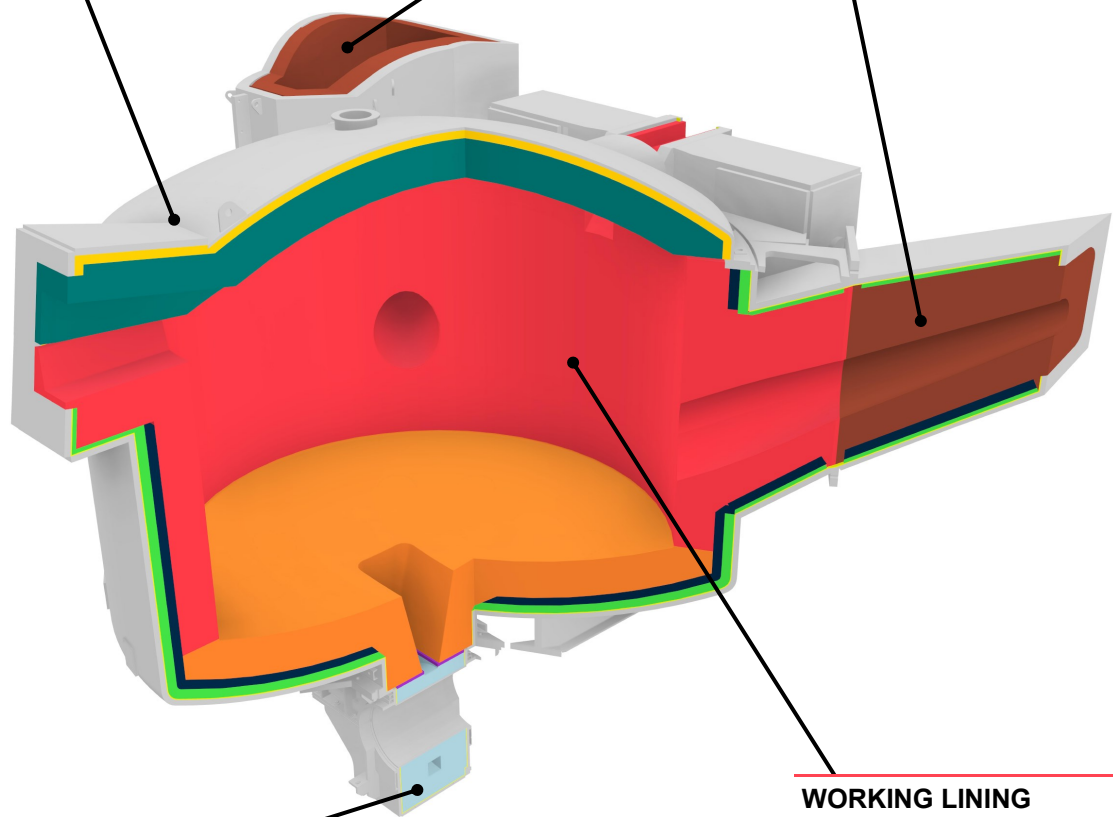
MINRO-FIRE CAST F80

RECIEVER / SPOUT

MATRIFLO 85 ACX

MATRIPUMP 72 ACX

MATRICAST SiC



INDUCTOR

DRI-VIBE® 522A-FR

DRI-VIBE® 558A-FR

WORKING LINING

MATRIFLO 85 ACX

MATRIPUMP 72 ACX

QUICK CAST® 61 ACX



TRANSFER LADLES

HEATED LAUNDER

WORKING LINING

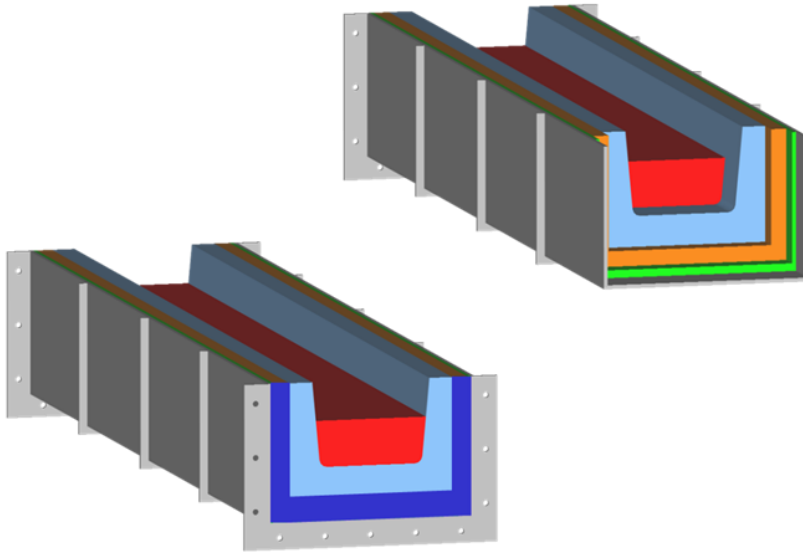
MATRIFLO 85 ACX
 QUICK-FIRE® 88
 QUICK CAST® 61 ACX
 WAM® AL II
 WAM® AL III

BACK-UP LINING

DRI-LITE® 79 AL-M
 BETAMAX® 24 LT

COVER

BETAMAX® 26 LT



UNHEATED LAUNDER

BACK-UP LINING

DRI-LITE® 65 A-L
 DRI-LITE® 79 AL-M

WORKING LINING

MATRISIL CV
 MATRISIL LC
 WAM® AL II
 WAM® AL III
 MATRIFLO FSM ACX

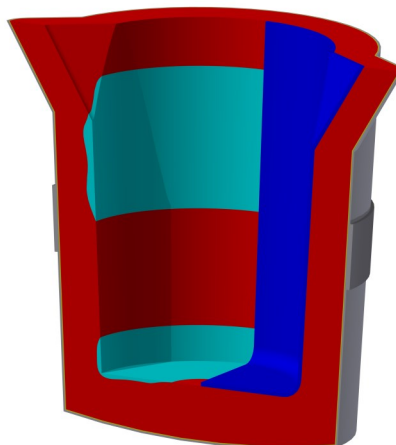
LADLES

REPAIR

QUICK-FIRE® PATCH B
 QUICK-FIRE® PATCH M

COATINGS

MATRIKOTE 90 AC
 MINRO-Z WASH Z77



WORKING LINING

QUICK CAST® 61 ACX
 MATRICAST 82 SiC
 BETAMAX® HS LT
 MATRIFLO FSM ACX



TUFFLOOR® is designed for areas exposed to extreme thermal cycling and intermittent exposure to liquid metal spills, dross and slag. This product is versatile product and can be installed as a complete floor, over existing (or new) concrete, or as precast tiles. TUFFLOOR® has over 20 years of proven performance in ferrous and non-ferrous foundries, primary metal production facilities (aluminum, steel, iron, zinc, copper, ferro-alloys), rolling mills and many other hot flooring applications.

Benefits include:

- Fast project turn around time with strength development
- Exceeds cold crushing strength of conventional concrete
- Reduced maintenance time and expense
- Safer working surfaces
- Minimized wear on mobile equipment
- Custom colors available
- Excellent freeze-thaw properties



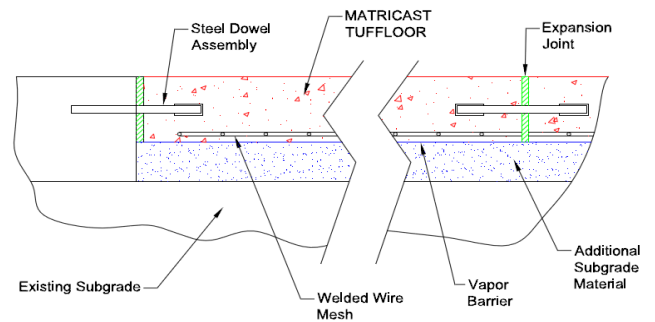
TUFFLOOR® - Headquarters Entrance



Variety of colors available



TUFFLOOR® vs Standard Concrete
Thermal Cycling to 1400°F (760°C)



Engineering Design for a High-Load Application





DRI-CAST	Dry powder product line, designed for patching fractured / worn refractory. No water required.
MATRIFLO	Specialty line of metal contact castables
MATRIGUN / BETAGUN	Gun mixes ranging from super duty to high alumina with non-wetting properties
MATRIKOTE	Zircon and high alumina coatings
MATRIPHOS	Phosphate bonded plastics that contain an aluminum non-wetting additive
QUICK-FIRE®	Two-component, phosphate bonded castables & gun mixes. Product ranges from 55% - 90% alumina.
NANO-TEK®	No cement castable that can be shotcreted and pumped
MATRIPUMP FF	Low cement castable with reduced heat up time





TECHNICAL DATA

Name	Al ₂ O ₃ %	SiO ₂ %	Density	Max. Temp
ARMORMAX [®] 70 SR	70.1	25.5	2.66 g/cm ³ (166 lb/ft ³)	1430°C (2600°F)
BETAMAX [®] HS LT	50.6	29.0	1.37 g/cm ³ (85 lb/ft ³)	1290°C (2350°F)
BETAMAX [®] 24 LT	42.4	39.7	1.23 g/cm ³ (77 lb/ft ³)	1345°C (2450°F)
BETMAX [®] 26 LT	52.9	36.4	1.27 g/cm ³ (79 lb/ft ³)	1425°C (2600°F)
COIL-CAST 97A	96.6	0.1	3.03 g/cm ³ (189 lb/ft ³)	1650°C (3000°F)
INSULMIX [®] 33100	94.5	0.4	1.60 g/cm ³ (100 lb/ft ³)	1815°C (3300°F)
DRI-CAST 581A	70	15	2.64 g/cm ³ (165 lb/ft ³)	1650°C (3000°F)
DRI-LITE [®] 65A-L	37.6	56.0	0.96 g/cm ³ (60 lb/ft ³)	1400°C (2550°F)
DRI-LITE [®] 79AL-M	42.9	49.1	1.31 g/cm ³ (82 lb/ft ³)	1370°C (2500°F)
DRI-VIBE [®] 520A	90.7	4.5	3.04 g/cm ³ (190 lb/ft ³)	1204°C (2200°F)
DRI-VIBE [®] 522A-FR	80.7	8.3	2.88 g/cm ³ (180 lb/ft ³)	1425°C (2600°F)
DRI-VIBE [®] 558A-FR	90.7	4.5	3.04 g/cm ³ (190 lb/ft ³)	1095°C (2000°F)
GROUT 163 ACF	91.0	3.1	2.51 g/cm ³ (160 lb/ft ³)	1760°C (3200°F)
GROUT 563A	86.1	4.8	2.72 g/cm ³ (170 lb/ft ³)	1760°C (3200°F)
GROUT 663A	87.6	4.4	2.72 g/cm ³ (170 lb/ft ³)	1760°C (3200°F)
KAST TECH 60	55.9	36.6	2.34 g/cm ³ (146 lb/ft ³)	1649°C (3000°F)
LCF 798A	61.5	35.0	2.64 g/cm ³ (165 lb/ft ³)	1705°C (3100°F)
MATRICAST 70 AC	69.1	25.1	2.58 g/cm ³ (161 lb/ft ³)	1540°C (2800°F)
MATRICAST 2600 AC	45.2	42.4	1.99 g/cm ³ (127 lb/ft ³)	1425°C (2600°F)
MATRICAST 3110C	60.0	32.2	2.39 g/cm ³ (149 lb/ft ³)	1705°C (3100°F)
MATRICAST SiC	63.2	20.0	2.59 g/cm ³ (162 lb/ft ³)	1760°C (3200°F)
MATRIFLO 85 ACX	85.6	8.5	2.74 g/cm ³ (171 lb/ft ³)	1540°C (2800°F)
MATRIFLO 93 AC	92.8	0.4	3.17 g/cm ³ (198 lb/ft ³)	1650°C (3000°F)
MATRIGUN 25 ACX	43.9	40.8	1.95 g/cm ³ (122 lb/ft ³)	1300°C (2370°F)
MATRIKOTE 90 AC	90.4	1.5	2.88 g/cm ³ (180 lb/ft ³)	1650°C (3000°F)
MATRIPHOS 85 AC	80.7	12.2	2.80 g/cm ³ (175 lb/ft ³)	1650°C (3000°F)



TECHNICAL DATA

Name	Al ₂ O ₃ %	SiO ₂ %	Density	Max. Temp
MATRIPUMP AR 61	60.8	34.2	2.47 g/cm ³ (154 lb/ft ³)	1650°C (3000°F)
MATRIPUMP 50	54.3	39.6	2.47 g/cm ³ (154 lb/ft ³)	1650°C (3000°F)
MATRIPUMP 63 ACX	65.6	28.5	2.59 g/cm ³ (162 lb/ft ³)	1540°C (2800°F)
MATRIPUMP 70 ACX	73.3	20.5	2.74 g/cm ³ (171 lb/ft ³)	1482°C (2700°F)
MATRIPUMP 72 ACX	78.6	15.6	2.68 g/cm ³ (167 lb/ft ³)	1540°C (2800°F)
MATRIPUMP 45 AL	47.0	46.9	2.35 g/cm ³ (147 lb/ft ³)	1370°C (2500°F)
MATRISIL CV	22.7	73.4	2.05 g/cm ³ (128 lb/ft ³)	1200°C (2200°F)
MATRISIL LC	20.3	76.3	2.05 g/cm ³ (128 lb/ft ³)	1370°C (2500°F)
MATRISIL SR	22.1	75.0	2.06 g/cm ³ (128 lb/ft ³)	1370°C (2500°F)
MINRO-FIRE CAST F80	53.2	39.3	2.24 g/cm ³ (140 lb/ft ³)	1650°C (3000°F)
MINRO-Z WASH Z77*	1.2	35.4	-	1650°C (3000°F)
QUICK CAST® 61 ACX	65.3	29.0	2.59 g/cm ³ (162 lb/ft ³)	1540°C (2800°F)
QUICK CAST® 62	66.1	27.2	2.64 g/cm ³ (165 lb/ft ³)	1705°C (3100°F)
PHOS FREE PLASTIC FINE	88.2	10.2	2.90 g/cm ³ (181 lb/ft ³)	1730°C (3150°F)
QUICK CAST® 81 ACX	76.7	18.7	2.74 g/cm ³ (171 lb/ft ³)	1540°C (2800°F)
QUICK-FIRE® PATCH B	78.5	10.0	2.53 g/cm ³ (158 lb/ft ³)	1650°C (3000°F)
QUICK-FIRE® PATCH M	62.7	26.2	2.33 g/cm ³ (145 lb/ft ³)	1650°C (3000°F)
QUICK-FIRE® 88	88.2	3.9	2.84 g/cm ³ (177 lb/ft ³)	1650°C (3000°F)
QUICK-FIRE® 90	89.2	2.1	2.90 g/cm ³ (181 lb/ft ³)	1700°C (3100°F)
TUFF-FLO 608	32.7	24.6	2.60 g/cm ³ (162 lb/ft ³)	1650°C (3000°F)
RAM MAX® 70 P FINE	69.1	22.8	2.44 g/cm ³ (152 lb/ft ³)	1760°C (3200°F)
RAM MAX® 85 P FINE	81.9	11.1	2.82 g/cm ³ (177 lb/ft ³)	1760°C (3200°F)
TUFFLOOR	35.1	42.5	2.11 g/cm ³ (132 lb/ft ³)	1040°C (1900°F)
WASH 148A	91.7	5.8	-	1700°C (3100°F)
WAM® AL II	61.4	0.7	1.73 g/cm ³ (108 lb/ft ³)	1430°C (2600°F)
WAM® AL III	75.5	0.4	1.76 g/cm ³ (110 lb/ft ³)	1200°C (2200°F)

* ZrO₂ 55.0%



Corporate Headquarters

Columbus, Ohio USA

+1 614-876-0244

info@alliedmin.com

Global **Refractory** Solutions



Scan to view our locations

alliedmineral.com

