

REFRACTORIES

— FOR —

ALUMINUM



Global **Refractory** Solutions



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



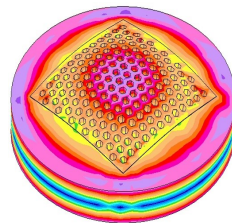
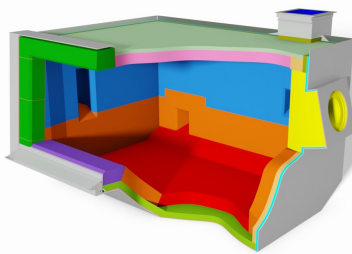
RESEARCH & ENGINEERING

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





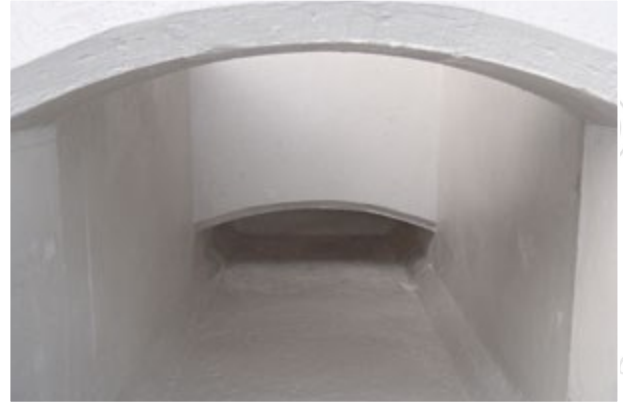
PRODUCT INNOVATIONS

process global refractory research

QUICK-FIRE®

Product Benefits

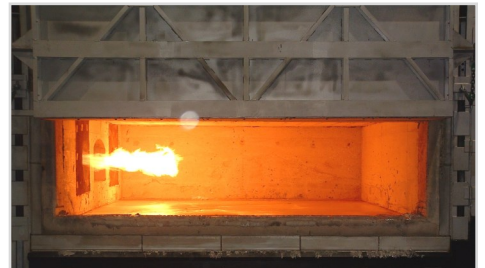
- Rapid dry-out characteristics
- Designed to bond to existing refractory
- Fast setting properties
- Excellent non-wetting characteristics
- Superior thermal shock resistance
- Available in gunning, casting and troweling formulations



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

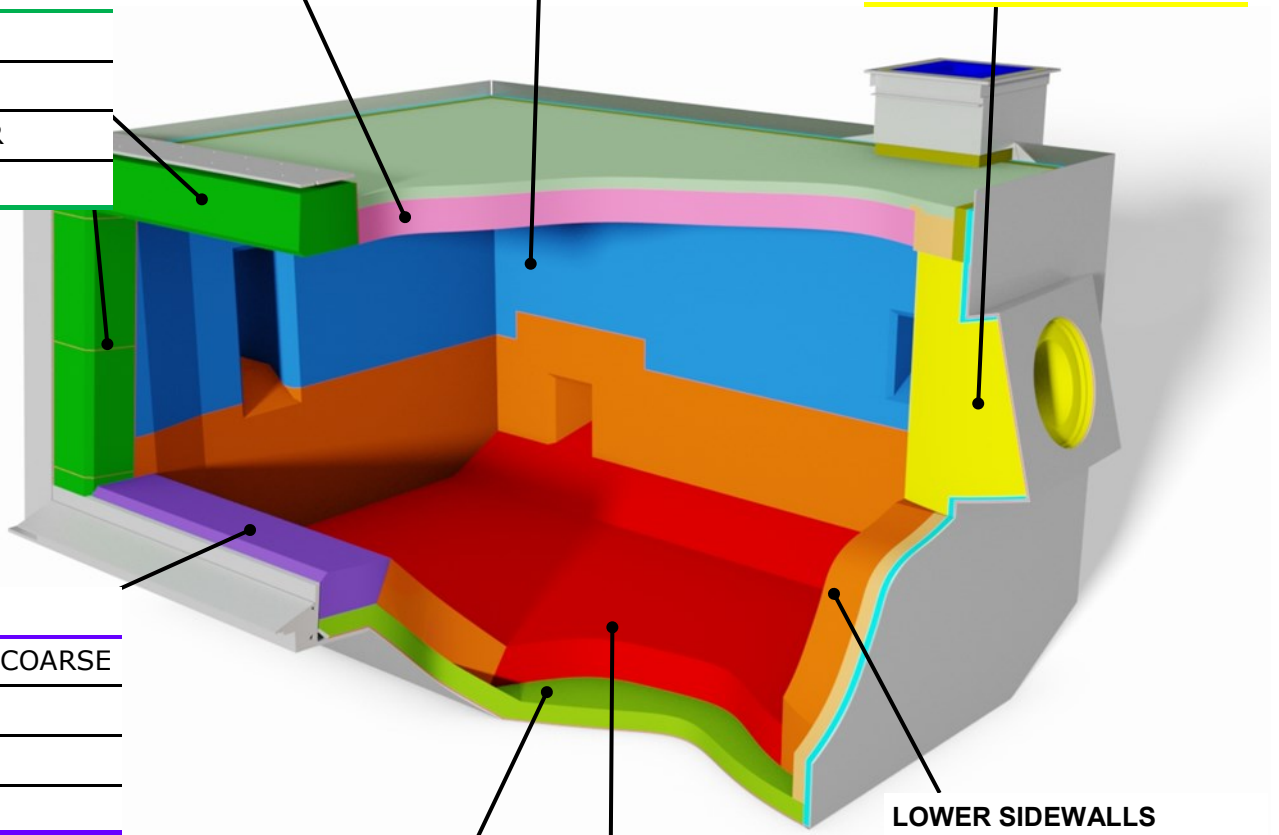
- MATRICAST 2600 AC
- MATRIGUN 25 ACX
- MATRIPUMP 45 AL
- BETAMAX® 24 LT

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

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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

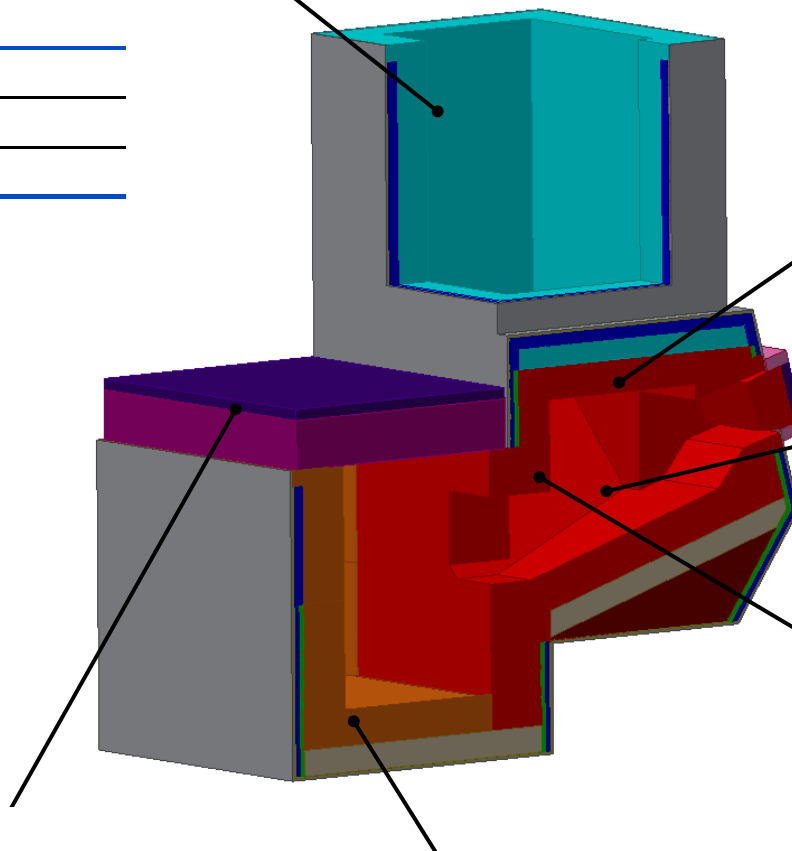
- KAST TECH 60
- MATRIPUMP AR 61
- QUICK CAST® 62

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
- MATRICAST 70 AC
- WAM® AL II
- WAM® AL III



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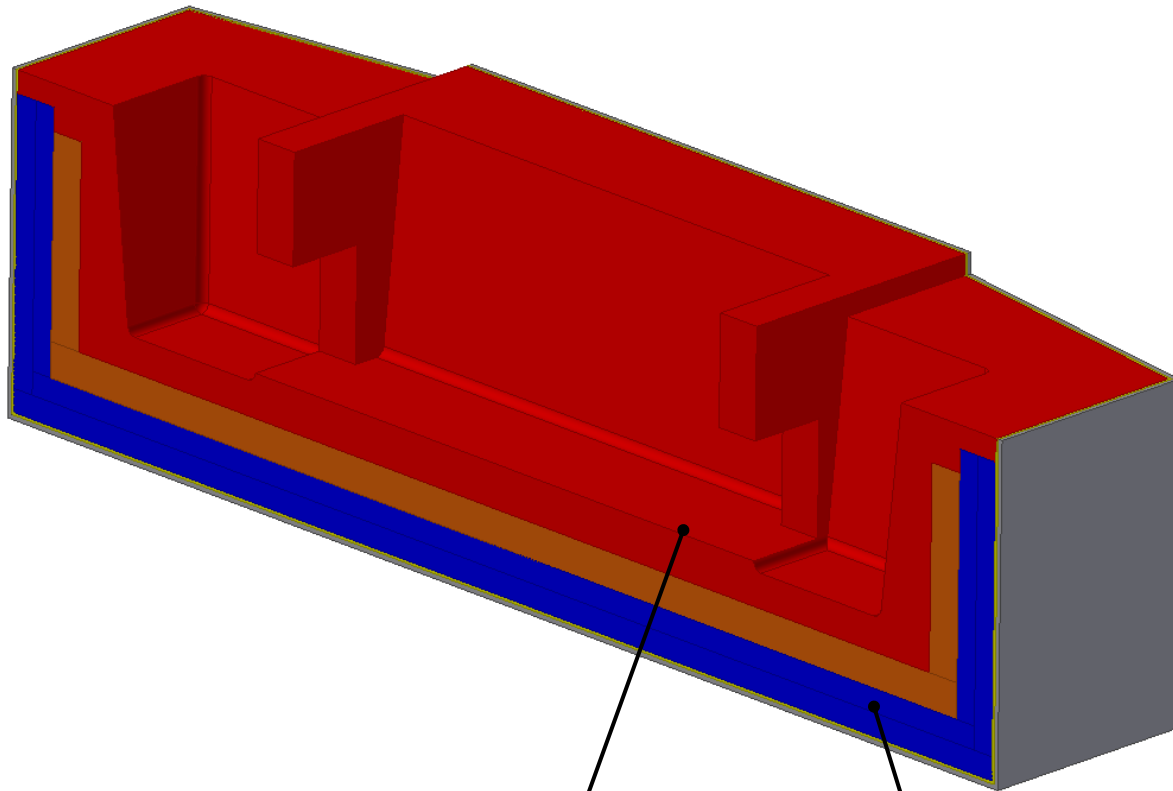
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FURNACE LINING

MATRIPUMP 63 ACX

MTRICAST 70 AC

MATRIFLO 85 ACX

QUICK-FIRE® 88

WAM® AL II

WAM® AL III

SAFETY LINING

DRI-LITE® 79AL-M

BETAMAX® 24 LT

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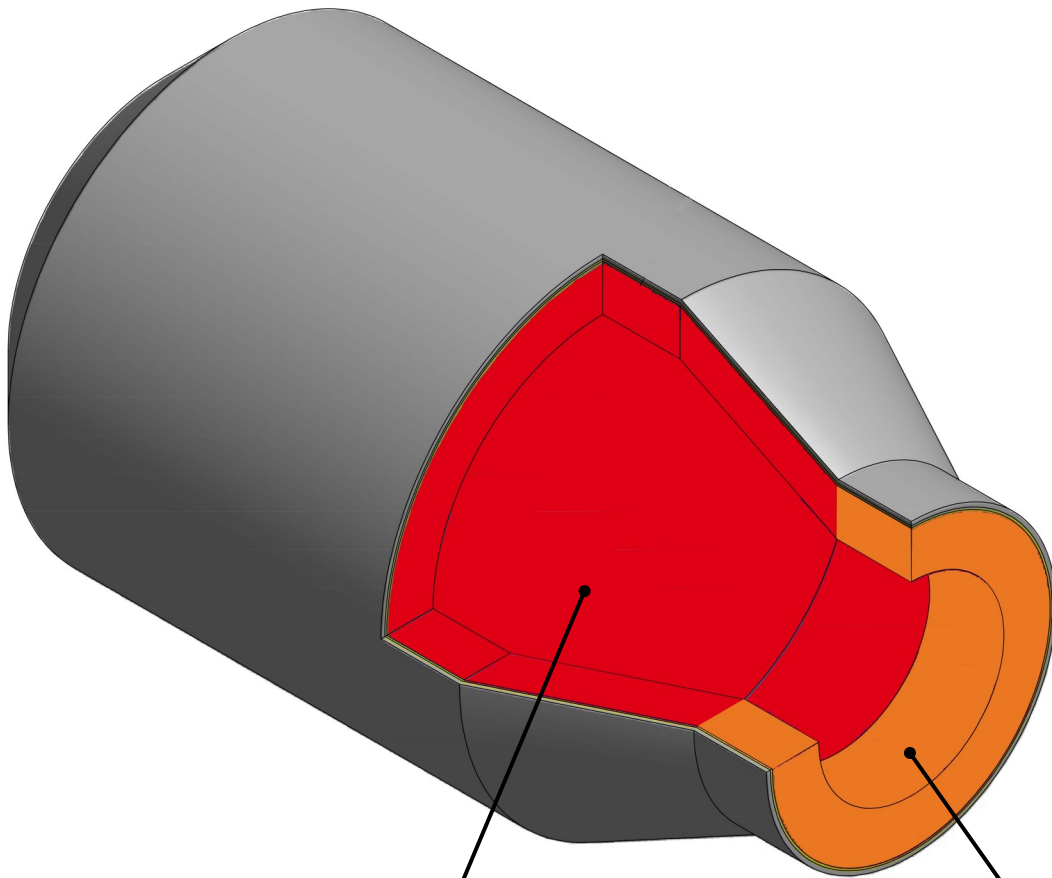
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FURNACE LINING

QUICK CAST[®] 61 ACX

NANO-TEK[®] 65 AC

MATRIPUMP 608 AL

NOSE RING

MATRIPUMP 608 AL

ARMORMAX[®] 70 SR





SPOUT

MATRIFIRE® 8085 ACX

MINRO-AL® PLASTIC A76

MINRO-AL® PLASTIC A85

QUICK-FIRE® 88

PRECAST SHAPES

COVER

MINRO-FIRE CAST F80

TUFF-FLO 50

STRUCTURAL COMPONENTS

QUICK CAST® 62

TUFF-FLO 50

PRECAST SHAPES

WORKING LINING COATINGS

MINRO-Z WASH Z77

MATRIKOTE 90 AC

WASH 148A

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

CRUCIBLE BACK-UP

DRI-VIBE® 88A NB

DRI-VIBE® 291A

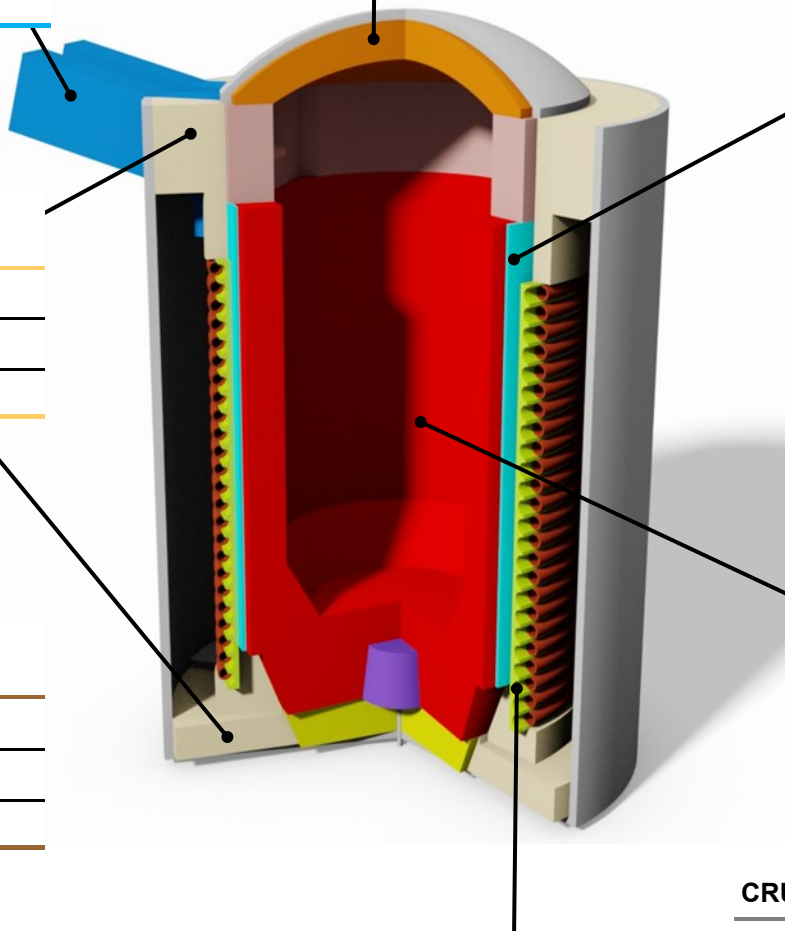
GROUT

GROUT 163 ACF

GROUT 563A

GROUT 663A

COIL-CAST 97A





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COVER

INSULMIX® 33100

MATRIPUMP 50

MINRO-FIRE CAST F80

RECIEVER / SPOUT

MATRIFLO 85 ACX

MATRIPUMP 72 ACX

MATRICAST SiC

WORKING LINING

MATRIFLO 85 ACX

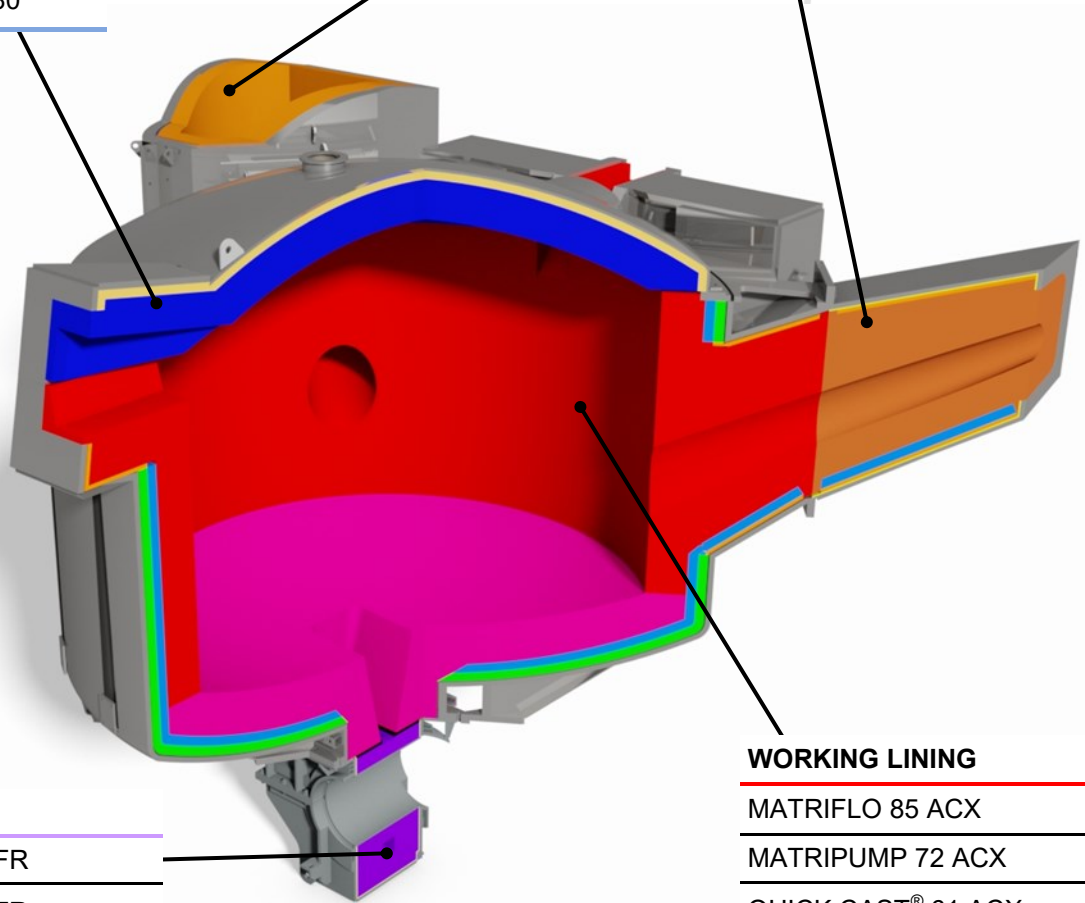
MATRIPUMP 72 ACX

QUICK CAST® 61 ACX

INDUCTOR

DRI-VIBE® 522A-FR

DRI-VIBE® 558A-FR





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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

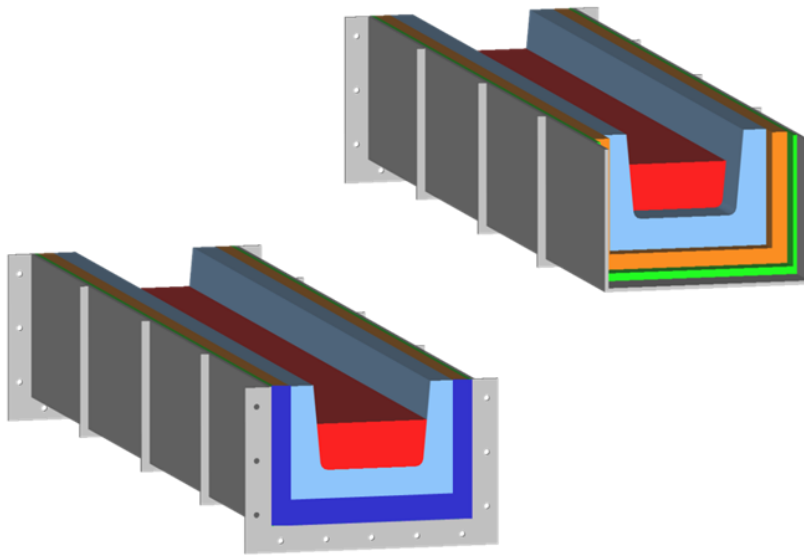
MATRISIL CV

MATRISIL LC

WAM® AL II

WAM® AL III

MATRIFLO FSM ACX



LADLES

REPAIR

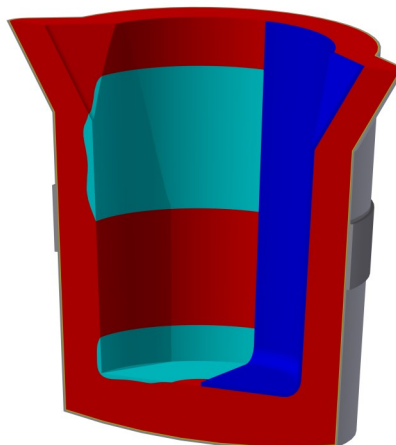
QUICK-FIRE® PATCH B

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



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FLOORING

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



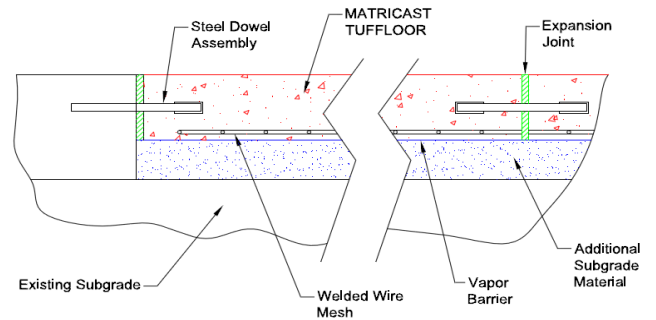
TUFFLOOR® - Headquarters Entrance



Variety of colors available



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



Engineering Design for a High-Load Application





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MAINTENANCE

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





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TECHNICAL DATA
 refractory research

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)





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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%



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Global **Refractory** Solutions



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