

# FRC Global

## Foundry Refractories





**Expert Teams.**



**Quality Products.**



**Global Networks.**

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## Who We Are

FRC Global is a leading supplier of refractories, electrodes, and high temperature combustion systems. FRC Global provides outstanding results for our clients within the iron, steel, and non-ferrous industries. Our company's reputation is built by delivering high quality products made with premium raw materials. We are more global now than ever before.

We give you a competitive advantage by offering you superior proven products that positively impact your bottom line and perform better. Our knowledgeable engineers ensure the proper application of our products to give you the maximum level of output and safety.

With over 25 warehouse facilities in the United States, Canada, Mexico, and South America we assure your products are readily available when you need them in these regions.

**Through the use of vast global resources, all of us at FRC Global are committed to being the value creators and problem solvers for our industry.**



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## Our Mission

Embrace modern technology to increase innovation, efficiency, and transparency. Inspire the next generation by driving change, promoting curiosity, and shaping sustainable solutions in the high temp world.





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# About Us

## Background Information

FRC Global is a second generation family owned company with a 30-year history.

## Global Offices

**FRC Global has offices, agents, or partners in 20 countries around the world.**

- North America: United States and Canada
- South America: Colombia
- Asia: China

We provide quality engineered products and services for all your high temperature applications.

## FRC Global facts

Our quality control employees thoroughly inspect shipments to ensure products are within specification and are properly packaged.

**Sales force and service needs are available in the following:**

- North America
- Central America
- South America
- Europe
- Middle East



# Why FRC Global?

## We show up for high-temp potential.

For over three decades, we have built strong partnerships by living up to our reputation of showing up for our customers. Our team is made up of hard-working people—many who have been in your shoes and understand the challenges you face. We are constantly thinking ahead, anticipating new barriers, and providing better solutions.

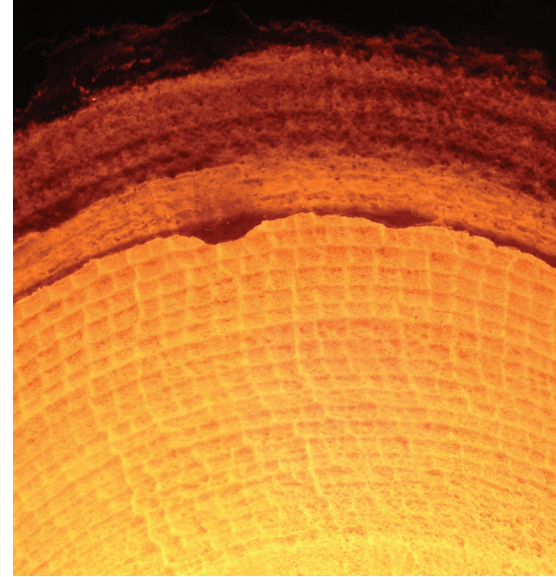
Our team knows that no two challenges are the same. When we show up to understand you and your operation, we study it to ensure we propose solutions, not just products.

As a company full of dedicated product managers and meticulous quality control teams, we travel around the

world to produce high-end products from only the best raw materials. With seasoned engineers on staff, we identify opportunities for performance and production improvements.

We are committed to excellence. Our strong relationships with global enterprises—primarily in strategic raw materials—ensure availability, performance, and consistent high quality. Our vast network serves as a cornerstone in our ability to deliver results on a global scale.

As proactive problem-solvers, we see your challenges as our own and look forward to achieving your project's greatest potential.



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# Foundry Refractories and Brick

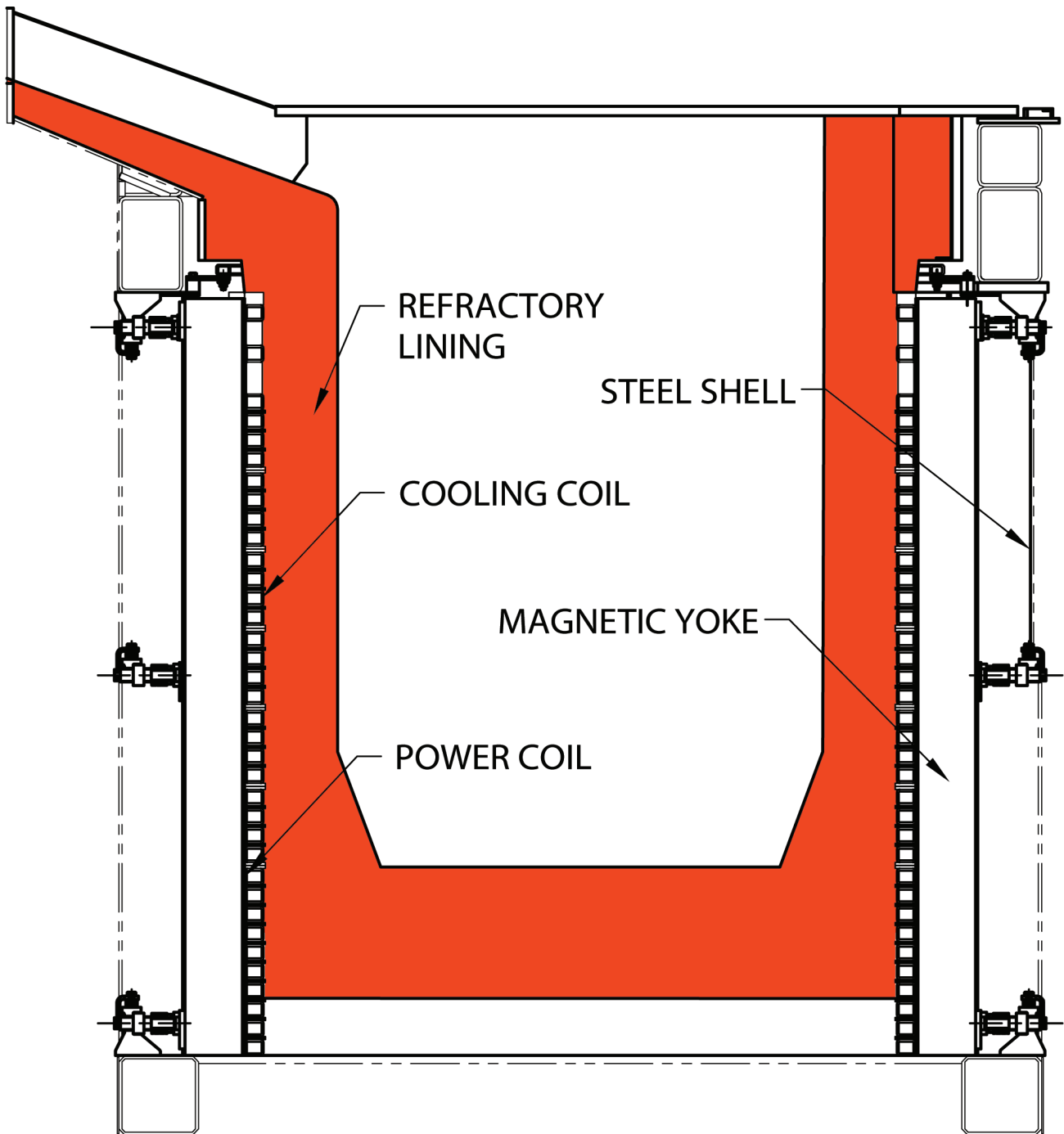
## Product Description

FRC Global has proven products for every furnace, slag or practice. Induction furnace linings are available in spinel (brick or dry vibe), alumina (brick, dry vibe and pre-cast), and magnesite-based (brick, ram and pre-cast) qualities. Electric arc furnace brick are available in silica, alumina, mag-chrome, mag-carbon, burned magnesite and burned dolomite. Ladle linings are available in ram, castable and brick in every quality (silica, alumina, spinel, alumina-chrome, alumina-carbon, alumina-magnesia-carbon, mag-chrome, dolomite, and mag-carbon).

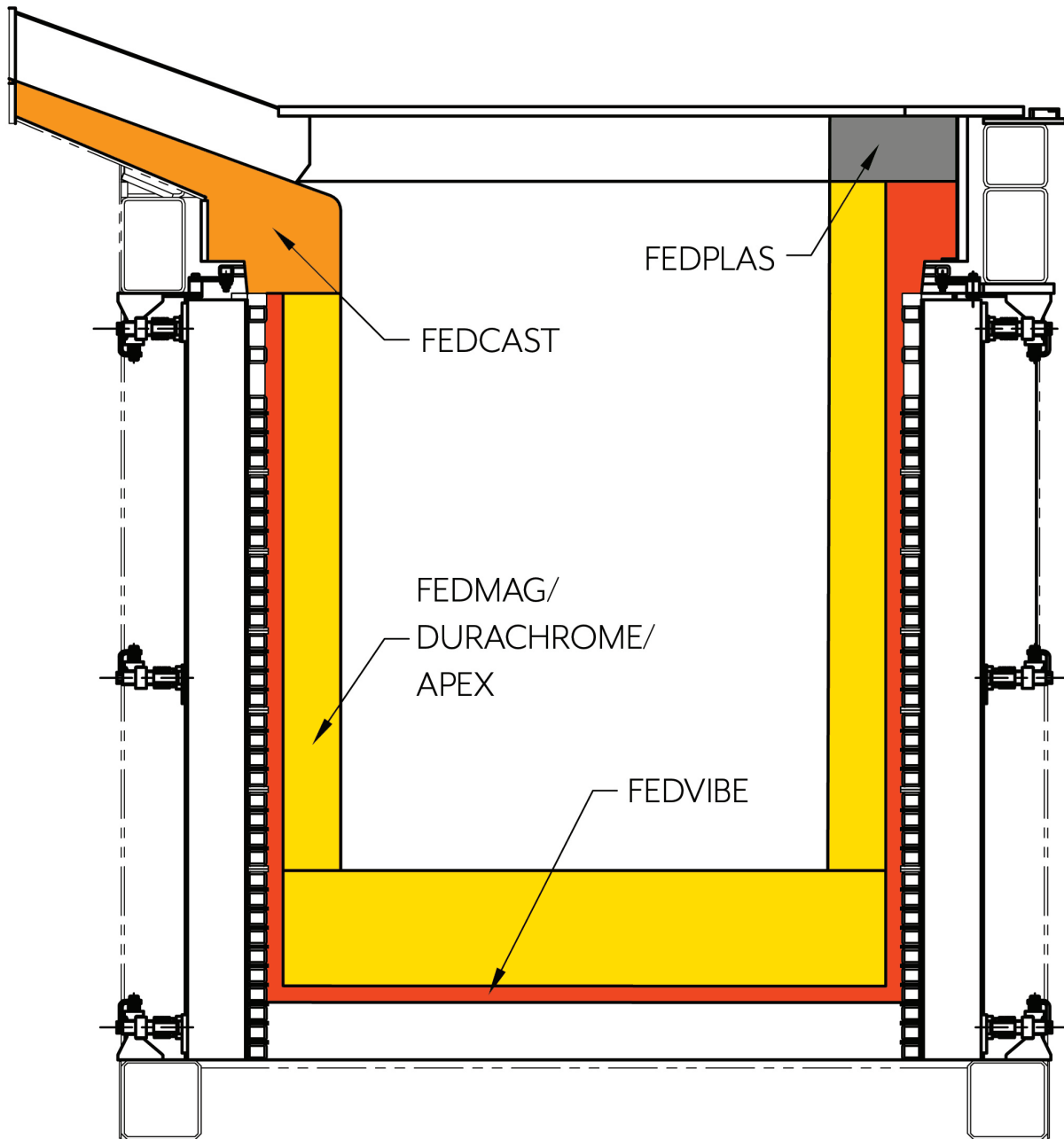
## Performance Highlights

The highest grade raw materials are processed in modern state-of-the-art facilities to provide you with the high performance refractories you need. We have full-time CAD engineers on staff as well as a dedicated force of product managers to meet with you and determine how best we can serve you. We stock products locally for drop shipment, and will consign material as necessary to satisfy your just-in-time demands.

# Induction Furnace

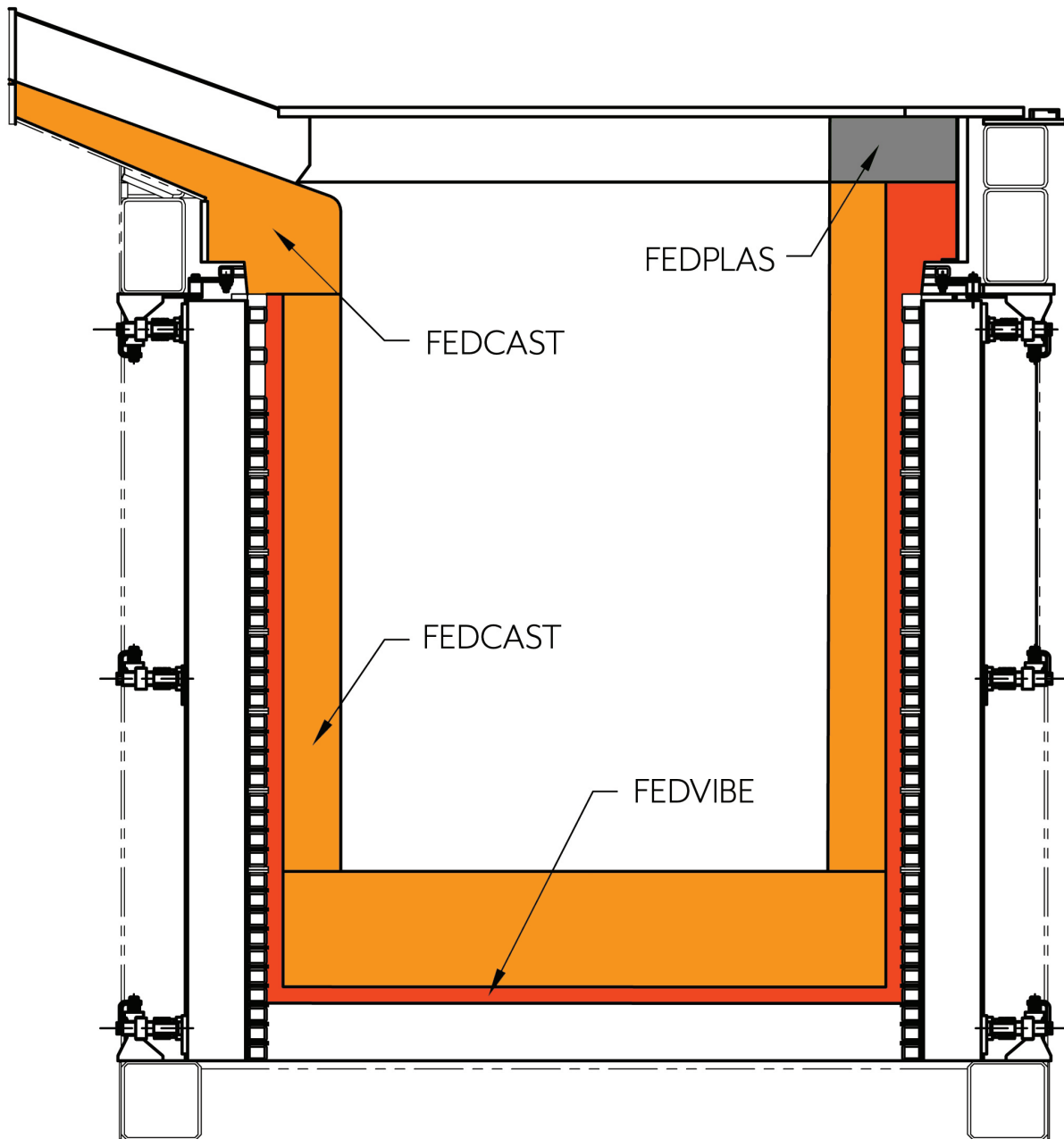


# Induction Furnace Brick Lining

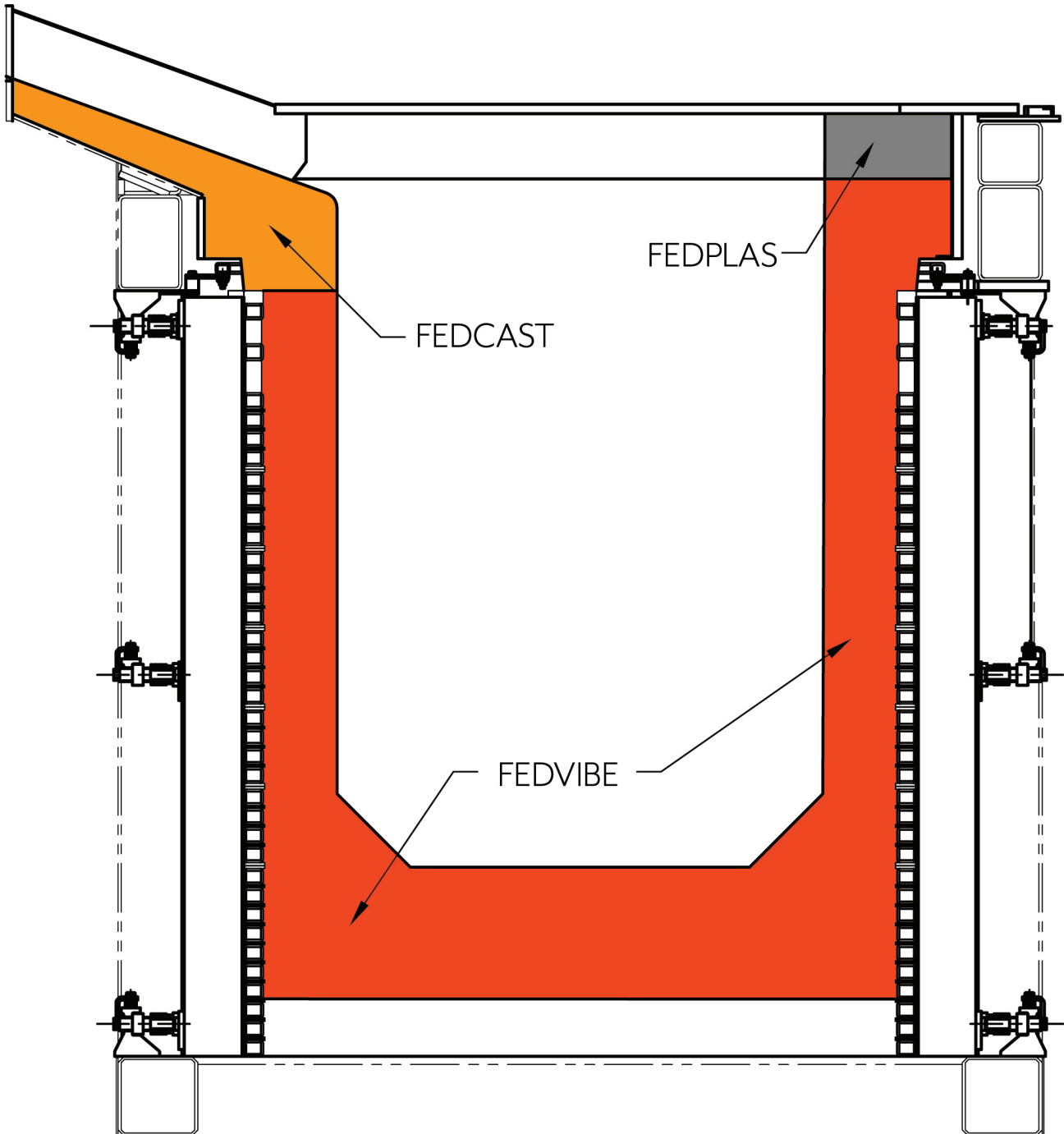




# Induction Furnace Pre-Cast Crucible



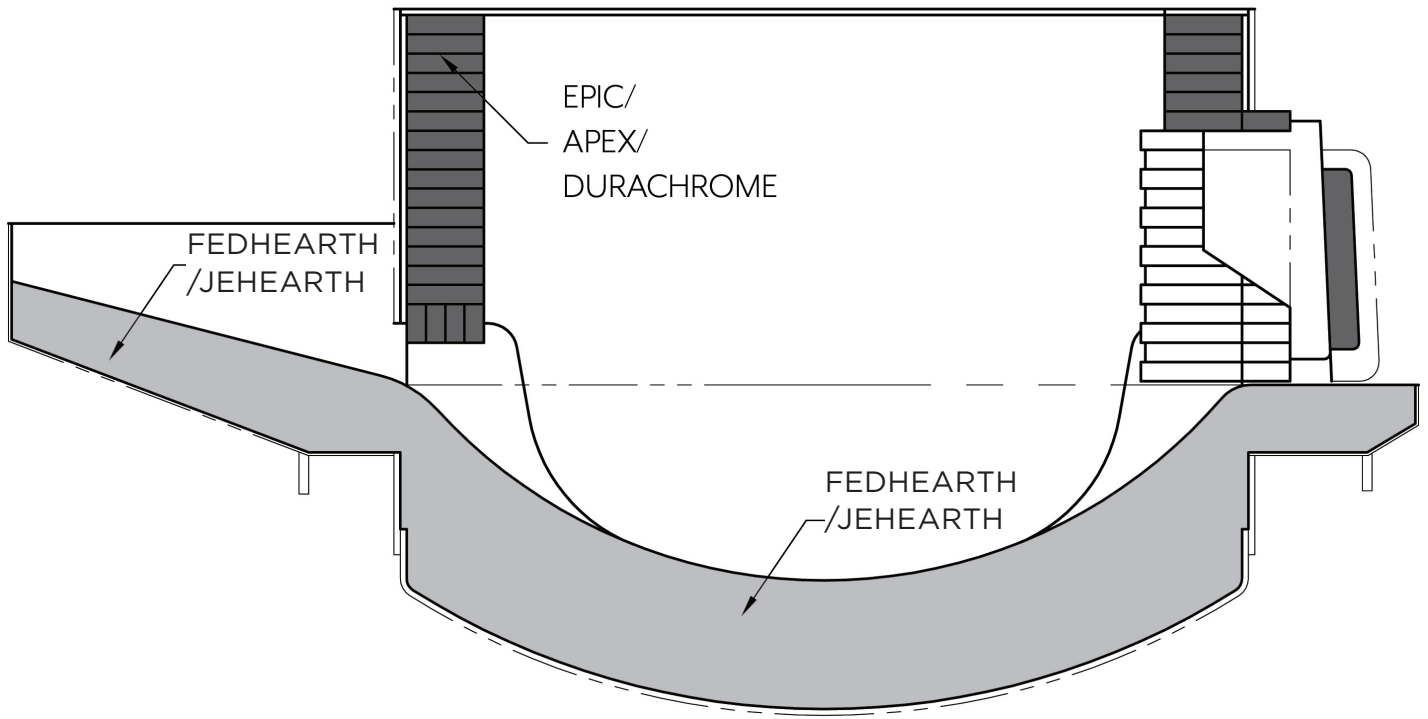
# Induction Furnace Monolithic



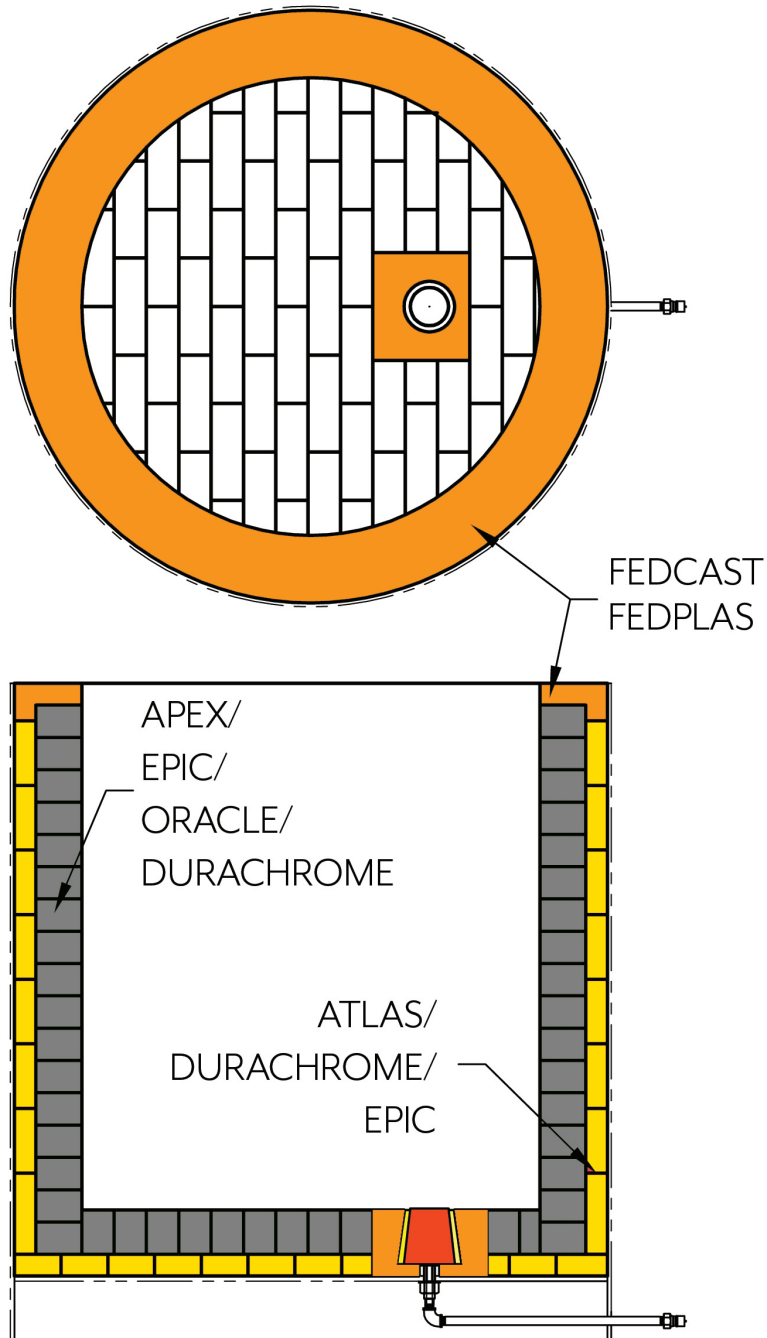
# Monolithics

Product	Chemical analysis: Approximate weight %									B. Density (g/cc)		CCS (Mpa)		Max
	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	MgO	CaO	ZrO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>	TiO <sub>2</sub>	Cr <sub>2</sub> O <sub>3</sub>	Green	Fired	Green	Fired	Temp (°C)
<b>Plastics</b>														
<b>Fedplas 50</b>	47.9	43.3	1	3.4	0	1.3	3.5	1.6	0	2.45	2.21	15	60	1400
<b>Fedplas 60</b>	62	32	0.9	0.3	0	1	3.5	1.5	0	2.45	2.38	12	46	1550
<b>Fedplas 70</b>	70	24	0.1	0.1	0	0.8	3.5	1.3	0	2.7	2.49	14	38	1700
<b>Fedplas 85</b>	85.2	8.1	0.2	0.3	0	1.1	3.5	1.2	0	2.88	2.7	12	41	1780
<b>Fedplas 92</b>	92	3	-	-	-	0.1	4.3	0.4	0	2.95	2.75	20	40	1800
<b>Dry-Vibes</b>														
<b>Fedvibe 60</b>	61	36	0.8	2	0	0.9	0	1	0	2.55	2.4	n/a	n/a	1650
<b>Fedvibe 85s</b>	86	0.2	13	0.3	0	0.2	0	0.8	0	2.8	2.5	n/a	n/a	1700
<b>Fedvibe 86s</b>	85	0.2	13	0.3	0	0.2	0	0.9	0	2.8	2.5	n/a	n/a	1700
<b>Fedvibe 90s</b>	90	0.1	7	0.1	0	1.2	0	0.7	1.6	2.85	2.5	n/a	n/a	1750
Product	Chemical analysis: Approximate weight %									B. Density (g/cc)		CCS (Mpa)		Max
	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	MgO	CaO	ZrO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Alka- lies	TiO <sub>2</sub>	Cr <sub>2</sub> O <sub>3</sub>	Green	Fired	Green	Fired	Temp (°C)
<b>Castables</b>														
<b>Fedcast 50</b>	50	41.2	0.2	3	0	1.7	2.1	1.6	0	2.23	2.2	45	78	1400
<b>Fedcast 60</b>	60	35.8	0.9	1.3	0	0.1	0.1	1.6	0	2.55	2.5	58	100	1550
<b>Fedcast 70</b>	70	24	0.2	1.7	0	1.5	0.2	2.4	0	2.74	2.71	55	105	1700
<b>Fedcast 85</b>	83.5	11.5	0.1	0.6	0	1.1	0.3	2.8	0	2.85	2.78	40	45	1780
<b>Fedcast 94sp</b>	93.8	0.1	4.2	1.6	0	0.1	0.2	0	0	3.04	3.02	95	105	1850
<b>Fedcast 94c</b>	93.5	0.3	0	1.4	0	0.1	0	1.8	3	3.04	3.01	45	40	1850

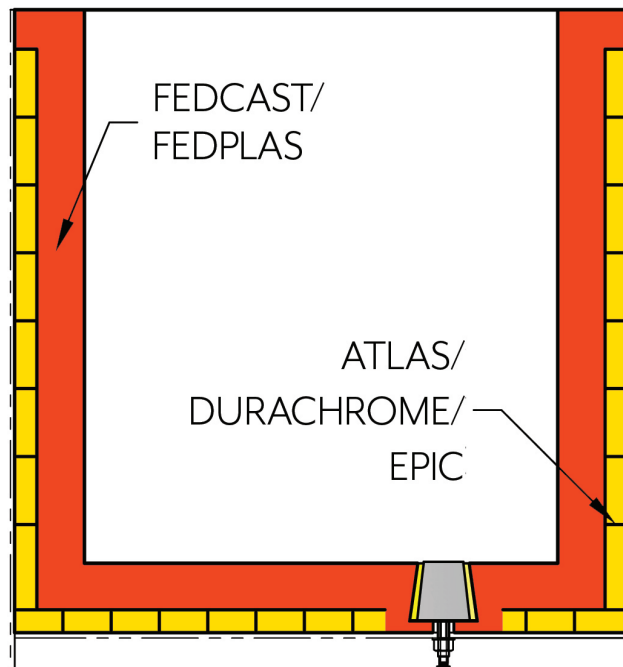
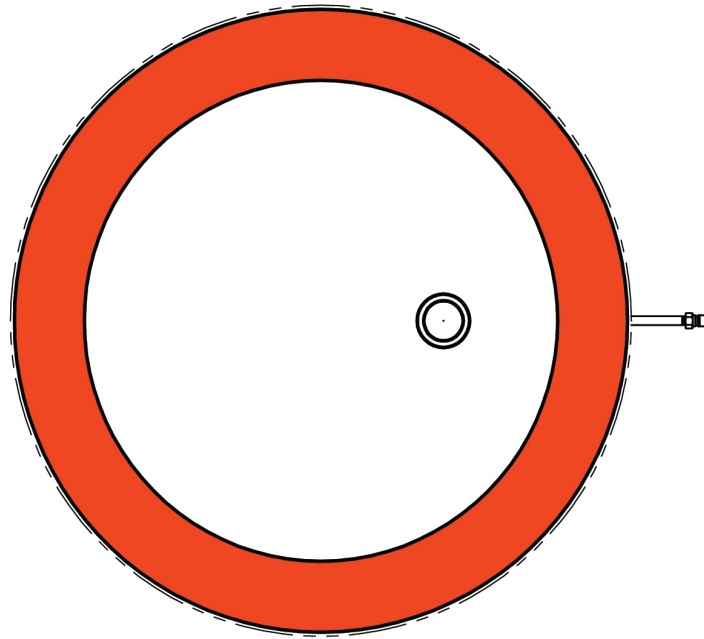
# Electric Furnace



# Ladle Lining Brick



# Ladle Lining Monolithic



# Brick

Brick	Chemical analysis: Approximate weight %							B. Density (g/cc)	CCS (Mpa)	AP %	Carbon Weight, %
	Al2O3	SiO2	MgO	CaO	Fe2O3	TiO2	Cr2O3				
<b>Mag-Carbon</b>											
Apex 8	0.1	0.4	98	1.4	0.2			3	41	2.5	5-20 as needed
Apex 7	0.2	0.7	97	1.8	0.3			3	41	2.5	5-20 as needed
Apex 6	0.7	1	96	1	0.5			3	41	2.5	5-20 as needed
Apex 5	2	1	95	1	1.9			3	41	2.5	5-20 as needed
<b>Mag-Chrome</b>											
Durachrome 60DB	6	1.5	62	1.5	12		17	3.06	40	19	0
Durachrome FG20	6.8	0.5	61	0.9	12		19	3.18	50	15	0
Durachrome FG50	9	1	57	1.6	11		19	2.26	65	16	0
Durachrome FG100	12	1.5	55	2.2	10		20	3.3	80	16	0
<b>Mag-Alumina-Carbon</b>											
Icon	10	0.1	87	1	1			3	50	5	7
Icon IP	10	0.1	78	1	1			3.05	50	5	7
<b>Alumina-Mag-Carbon</b>											
Oracle	80	4	11	1	1	1		2.94	80	5	5
Oracle IP	87	2	11	1	1	1		3.22	120	4	5
<b>Mag-Spinel</b>											
Fedmag 87	10	1	87	1.2	0.5			2.9	40	18	0
Fedmag 92	7	0.3	92	1	0.5			2.9	40	18	0
<b>Epic</b>											
Epic 60	60	20	0.2	0.8	2	4.7	0	2.35	58	22	0
Epic 70	70	24	0.1	0.6	2.4	3.5	0	2.8	60	17	0
Epic 80	80	16.6	0.1	0.1	1.8	2	0	2.8	70	19	0
Epic 90	90	10	0.1	0.1	1	1	0	3	88	16	0



# Foundry Stoppers & Nozzles

## Product Description

ISO-statically pressed carbon bonded alumina-graphite stopper-rods and nozzles, clay composition extruded sleeves, hydraulically pressed clay nozzles and clay-graphite stopper-heads. One piece stoppers are typically a single composition, but can feature some of the same design and multi-composition as those used for continuous casting. Steel rods/rigging and mortars are also available.

## Diagram

1. Conventional stopper-head, clay sleeves with optional slag resistant AG/clay sleeve.
2. One piece ISO-statically pressed Al-C sleeve with clay-graphite stopper-head.
3. One piece ISO-statically pressed Al-C stopper-rod.







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# Hybrid Plug

## Product Description

Fused Silica is used in many applications. From continuous casting of steel to foundry and non-ferrous operations. The shapes are slip cast to form shrouds, stoppers nozzles and sub-entry nozzles. For non-ferrous pressure and vacuum casting, coatings are applied to prevent air ingress.

## Performance Highlights

Steel reinforcement with argon channels is also possible with this versatile product. Free from thermal shock, it can be used directly from the crate. Fused Silica has natural insulation properties which prevents heat loss during casting and often provides a cost savings for shops with shorter casting sequences.



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## MICA & Ceramic Fiber

### MICA

**ISO-flex products prevent early leakage and costly damage to the coil.**

- ISO-combi: Laminated material made from mica and biosoluble fiber paper
- ISO-foil 'R': Phlogopite mica paper reinforced with a glasscloth in the middle
- ISO-foil 'R-MV' & ISO-foil 'R-M2V': Phlogopite mica paper reinforced with 1 or 2 glasscloth outside
- ISO-ceram: Biosoluble AES fiber paper
- ISO-foil 'S': Phlogopite mica sheets impregnated with a specific high temperature binder.

### Ceramic Fiber

FRC Global's ceramic fiber blanket presents unparalleled refractories and thermal insulation due to its long spun fiber needing technique. They offer superior insulating performance, flexibility and resilience. These products are unaffected by most chemicals (except hydrofluoric & phosphoric acids and concentrated alkali). Thermal and physical properties are retained after drying following wetting by oil, steam or water. The blankets are completely inorganic, so there are no fumes when heating for the first time. Ceramic fiber board and textile are also available.

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# Additional Foundry Products & Specialties

## Additional Foundry Products

### SAE Grade Steel Shot:

- Low Carbon
- High Carbon
- Grit
- Cut-Wire Shot

### Silicon Carbide Crucibles:

- Available to be made in custom shapes and sizes for multiple furnace requirements

## Specialties

FRC Global has proven specialty products from rams to castables. Alumina castables from 50 to 94%. Alumina chrome castables and basic castables. Mortars in every flavor and consistency.

- Induction linings of spinel (brick or dry vibe), alumina (brick, dry vibe and pre cast), magnesite based (brick, ram and pre cast).
- Electric arc lining are available in silica, alumina, mag-chrome, mag-carbon, burned magnesite and burned dolomite.





# High Temp Innovation

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