

A photograph of a large industrial facility, likely a waste-to-energy plant, featuring multiple levels of steel structures, walkways, and large cylindrical vessels. Overlaid on the image are several faint, semi-transparent icons and text elements: a smartphone icon with the word 'technology' below it, the words 'research' and 'development' in the upper left, a large upward-pointing arrow in the upper right, the word 'process' near a large cylinder, and the phrase 'in our element' circled in orange in the lower center.

# REFRACTORIES

— FOR —

## THERMAL WASTE PROCESSING

Municipal - Industrial - Hazardous



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



## 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.





# HAZARDOUS WASTE INCINERATION

## Rotary Kiln Incineration System

### KILN HEAD

TUFFCRETE® ARZ  
TUFFCRETE® 65 M  
TUFFCRETE® 608  
INSULMIX® 2460 LI

### ROTARY KILN

TUFFCRETE® 60 M ARZ  
TUFFCRETE® 65 M  
TUFFCRETE® AZS 5R  
TUFF-FLO 90-10 ULC  
DURACON® 35 LS  
INSULMIX® 2460 LI

### SECONDARY COMBUSTION CHAMBER - FLUE

TUFF-FLO 50  
TUFFCRETE® 60 M  
REZIST ABRABE 608 G  
INSULMIX® 2035 LI

### SECONDARY COMBUSTION CHAMBER

TUFFCRETE® 65M  
TUFF-FLO 50  
REZIST ABRABE 50 G  
INSULMIX® 2035 LI

### BURNER

DURACON® 34  
TUFF-FLO 60A

### KILN HEAD HOOD

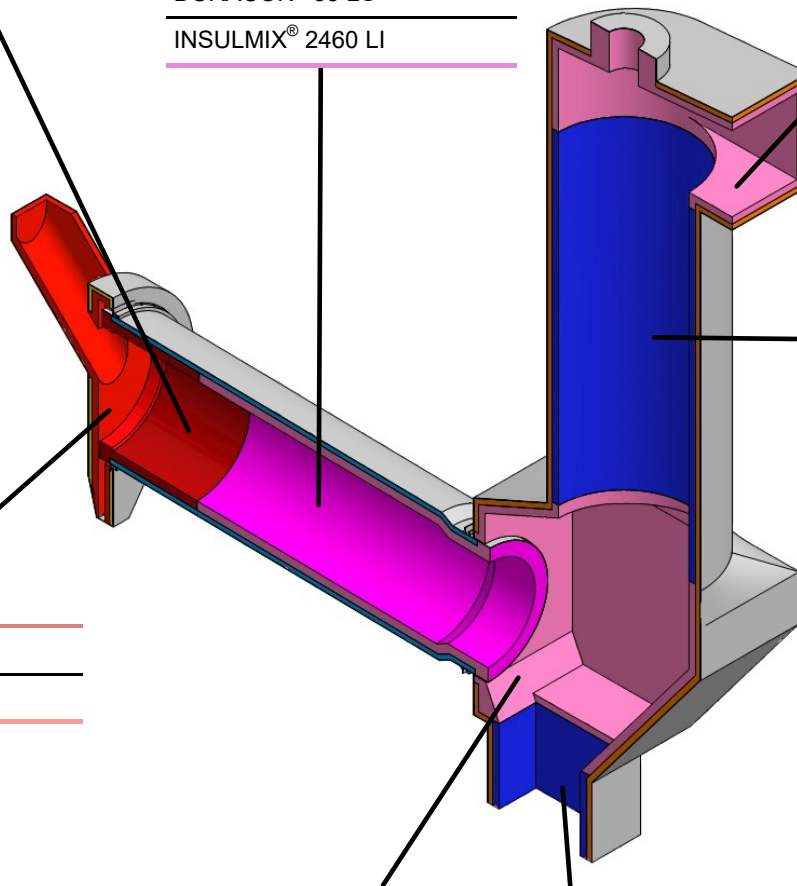
TUFFCRETE® 60 M  
TUFFCRETE® 608

### TRANSITION AREA

TUFFCRETE® 65 M  
TUFFCRETE® 47  
TUFFCRETE® 608  
INSULMIX® 2035 LI

### SLAG DISCHARGING AREA

TUFFCRETE® 47  
INSULMIX® 2035 LI





# HAZARDOUS WASTE INCINERATION

## Liquid Waste Incinerator

### UPPER AREA

TUFFCRETE® 60MARZ

FAST-TURN® 65M

TUFFCRETE® 608

NANOTEK® BZSC

TUFF-FLO 32 ARZ

INSULMIX® 2460 LI

INSULMIX® 2035 LI

### LOWER AREA

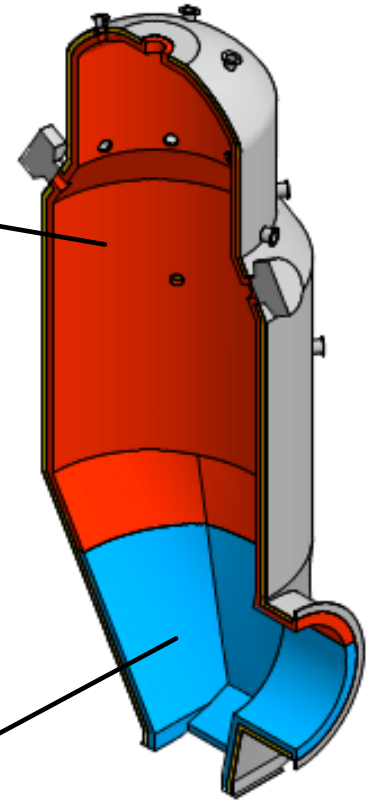
TUFFCRETE® 608

TUFFCRETE® 20SIC

TUFFCRETE® ARZ

INSULMIX® 2460 LI

INSULMIX® 2035 LI



## Cooling Tower

### UPPER AREA

TUFFCRETE® FS

STACKLINE B PC

NANOTEK® FS ULTRA

INSULMIX® 2035 LI

### MIDDLE/LOWER AREA

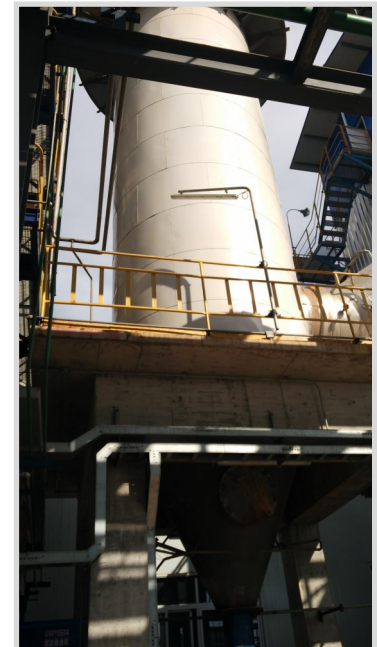
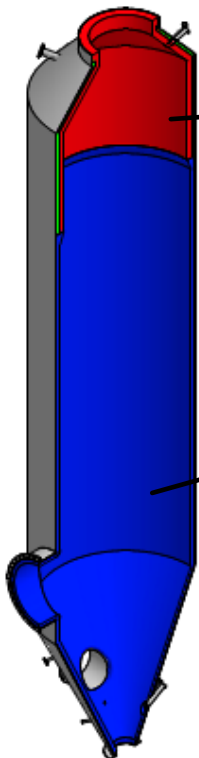
We recommend precoating the furnace shell with anti-corrosion paint.

REZIST ABRADE 50 G

NANOTEK® 55 A SR

TUFFCRETE® 47

GUNCAST® 26 LI





# ENERGY RECOVERY

## Grate Fired Boilers

### UPPER PART FIRST PASS

REZIST ABRABE 608G

ECONORAM SIC 75 TR

RAM MAX® 80 SIC

### LOWER PART FIRST PASS

REZIST ABRABE 80 SIC G

TUFFCRETE® 60 SIC F

### FUEL ENTRY BOILER WALLS

REZIST ABRABE 65G

TUFF-FLO 608

### WEAR ZONE GRATE TRANSITIONS

TUFFCRETE® 60 SIC F

TUFF-FLO 608

### HOT BOILER WALLS

REZIST ABRABE 50G

INSULMIX® 2350

### NOZZLES

TUFF-FLO 50

TUFFCRETE® 47

### COLLECTOR 2ND PASS

RAM MAX® 80 SIC P

### ASH HOPPER

REZIST ABRABE 50 G

INSULMIX® 2035 LI

### BURNERS

LCF 798

TUFF-FLO 60A

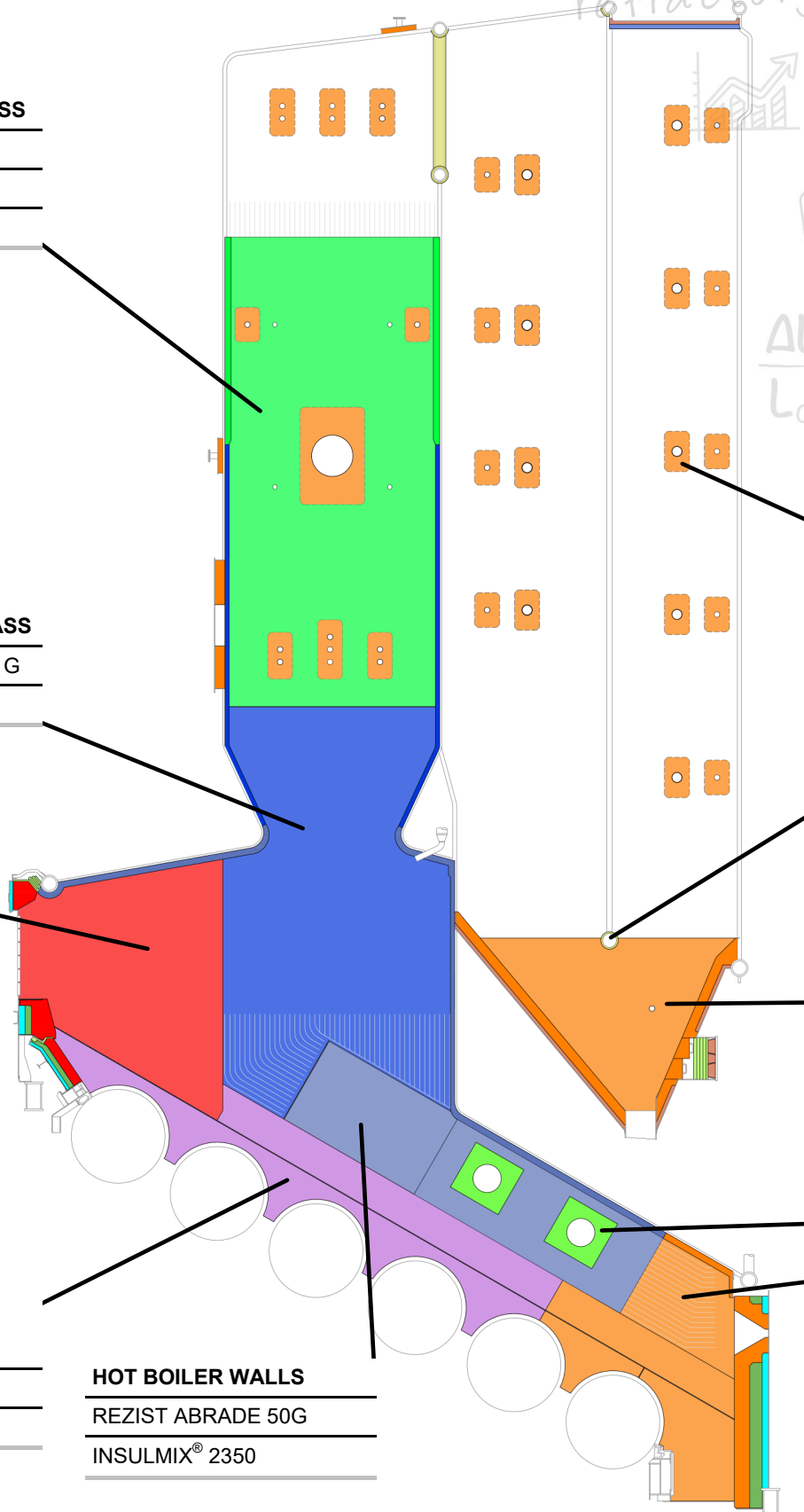
RAM MAX® BR 70P

### SLAG OUTLET

TUFF-FLO 47

TUFF-FLO 608

REZIST ABRABE 50G



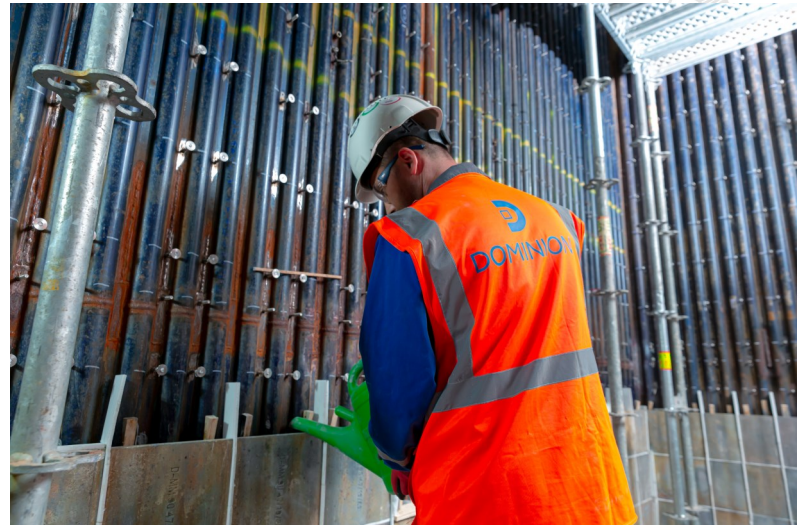
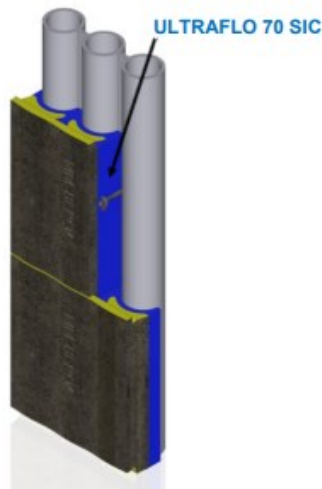


# THERMAL WASTE PROCESSING SYSTEMS

Allied has a complete list of refractory products and installation services to develop and maintain these critical processes. Allied is committed to support the market needs with new products like ULTRAFLO 70 SIC and the REZIST ABRADE family of gunning products.

## Sample products and applications in Energy from Waste Boilers

Product Name	Product Description	Application
ULTRAFLO 70 SIC	Silicon carbide based self flow castable	Backfill requiring excellent self flow, and thermal conductivity
REZIST ABRADE 80 SIC G	Silicon carbide based low cement refractory gun mix	Requiring high heat transfer, abrasion resistance, volume stability, and low rebound gunning
REZIST ABRADE 608 G	Mullite based low cement gunning mix, with alkali resistant additives	Requiring excellent abrasion resistance, and resistant to alkali attack
RAM MAX® 80 SIC P	Silicon carbide based phosphate bonded plastic	Ramming plastic for where high heat transfer is required



The thermal waste-processing market continues to develop because of the increasing focus on resource recovery and the demand for eco-friendly energy. In these application environments the dynamic process of thermal, mechanical and chemical loads is a constant challenge.

Allied's team is always actively collaborating with customers to focus on continual improvement, with a systems level approach. This mindset to technical challenges applies very well to waste-processing industry, the energy-generating industry and the industry for incinerating chemical waste.





process  
global  
PRODUCT DATA  
refractory  
research

Product Name	Al <sub>2</sub> O <sub>3</sub> %	SiO <sub>2</sub> %	Cr <sub>2</sub> O <sub>3</sub> %	SiC %	ZrO <sub>2</sub> %	Density g/cm <sup>3</sup> (lb/ft <sup>3</sup> )	Maximum Temperature
CASTMAX® 28 S HR	40.7	45.6	-	7.3	-	2.28 (142)	1535°C (2800°F)
DURACON® 34	98.6	0.1	-	-	-	3.12 (195)	1870°C (3400°F)
DURACON® 3450CR	89.2	-	9.2	-	-	3.29 (205)	1870°C (3400°F)
FAST-TURN® 65 M	64.8	30.5	-	-	-	2.58 (161)	1700°C (3090°F)
GUNCAST® 26 LI	45.9	41.1	-	-	-	2.07 (129)	1425°C (2600°F)
INSULMIX® 2035 LI	36.7	42.5	-	-	-	0.60 (37)	1100°C (2010°F)
INSULMIX® 2460 LI	44.8	34.9	-	-	-	1.0 (62)	1315°C (2400°F)
METAL-ROK® 70 M*	70.2	25.4	-	-	-	3.06 (191)	1350°C (1500°F)
MINRO-AL® PLASTIC A89	85.3	9.1	-	-	-	2.93 (183)	1700°C (3090°F)
NANO-TEK® BZSC	62.5	15.4	-	7.9	10.6	2.87 (179)	1538°C (2800°F)
NANO-TEK® 91 HS	91.3	6.0	-	-	-	2.88 (180)	1705°C (3100°F)
RAM MAX® 80 SIC P	11.5	5.3	-	77.6	-	2.68 (167)	1500°C (2732°F)
REZIST ABRAD 50G	69.7	23.4	-	-	-	2.39 (149)	1650°C (3000°F)
REZIST ABRAD 608G	58.9	27.0	-	7.9	-	2.38 (149)	1650°C (3000°F)
REZIST ABRAD 80 SIC G	8.6	5.3	-	81.1	-	2.55 (159)	1500°C (2730°F)
TUFFCRETE® ARZ	41.3	46.7	-	4.1	1.5	2.32 (145)	1650°C (3000°F)
TUFFCRETE® FS	10.5	86.8	-	-	-	2.00 (125)	1315°C (2399°F)
TUFFCRETE® 20 SIC	41.8	31.7	-	21.4	-	2.32 (145)	1650°C (3000°F)
TUFFCRETE® 47	47.1	46.5	-	-	-	2.16 (135)	1540°C (2800°F)
TUFFCRETE® 608	59.3	28.3	-	7.9	-	2.60 (162)	1650°C (3000°F)
TUFFCRETE® 60 M	64.6	30.2	-	-	-	2.53 (158)	1700°C (3090°F)
TUFFCRETE® 65 M	65.8	28.1	-	-	-	2.58 (161)	1700°C (3090°F)
TUFFCRETE® 60 M ARZ	54.0	38.5	-	4.2	1.5	2.48 (155)	1700°C (3090°F)
TUFF-FLO 32 ARZ	75.4	10.9	-	4.2	3.4	3.00 (187)	1760°C (3200°F)
TUFF-FLO 50	49.7	44.7	-	-	-	2.32 (145)	1700°C (3090°F)
ULTRAFLO 70 SIC	15.3	4.8	-	69.2	-	2.48 (154)	1650°C (3000°F)

\*Stainless Steel Fibers are not included in the chemical analysis.



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