



# FONDU FYRE®

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TECHNOLOGY FOR LAUNCH APPLICATIONS



**ALLIED**  
**MINERAL**  
PRODUCTS

Global **Refractory** Solutions

*Image by NASA*

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# FONDU FYRE<sup>®</sup> HISTORY

FONDU FYRE<sup>®</sup> was developed in the early days of the Space Race. There was a need for material that could withstand the harsh conditions of repeated rocket blasts. After evaluating many materials for this application, FONDU FYRE<sup>®</sup> was chosen for its superior performance.

FONDU FYRE<sup>®</sup> proved it could take the punishment of extremely rapid temperature excursions, high velocity flame impingement, rapid cooling from aqueous sound suppression, and chemical attack associated with high performance rocket engine fuels and igniters.

**From early launch missions of the Mercury program through the entire Space Shuttle program, FONDU FYRE<sup>®</sup> was NASA's material of choice.**

The technology and design concepts of FONDU FYRE<sup>®</sup> has remained unchanged for over sixty years. It continues now under ownership of Allied Mineral Products, who obtained the technology through the acquisition of Pryor Giggey Co.

Allied brings technological strength to the product line, as well as a worldwide presence of consistent, high-quality supply of very specialized material.





# PRODUCT TECHNOLOGY

FONDU FYRE® products are designed specifically for the space launch industry and the rigorous conditions associated with launch pads, flame deflectors, and flame trenches. FONDU FYRE® can be installed in outdoor environments without any pretreatment and does not require protection prior to or after use.

## Benefits:

- Successful in all rocket blast and space launch applications
- Withstands all weather conditions as well as vehicle traffic
- Proven viable for many years of service in a variety of severe conditions
- Preferred choice for short and long burn rocket engine test facilities

Product	Description
FONDU FYRE® WA-1	Erosion resistant concrete designed for exposure to rocket engine exhaust for launch or engine test stand applications
FONDU FYRE® XB-1	Erosion resistant concrete designed for exposure to extreme conditions in rocket launch or engine test stand applications
TUFF FYRE	Erosion resistant concrete designed for exposure to less critical areas in rocket launch or engine test stand applications







# 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





# EXPERTISE & SERVICES

## AN INNOVATIVE, TECHNOLOGY-DRIVEN SUPPLIER

Allied is focused on developing new products, improving existing products, perfecting installation techniques and creating the ideal refractory system. Our products undergo extensive testing in our state of the art research and technology centers, while our engineers work diligently to understand and meet each customer's unique needs.

### RESEARCH AND DEVELOPMENT

We have extensive research capabilities allowing us to develop application-specific products and continuously make improvements. Our product development team is comprised of material science experts and our research department features:

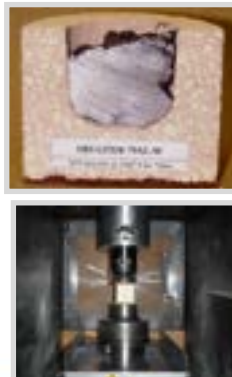
- Patent-generating research
- Shotcreting and gunning laboratory
- Modern analytical testing equipment (XRF, XRD, SEM)
- Forensic analysis capabilities
- Post mortem analysis
- Metal slag evaluations
- Flow testing
- Contact tests



### MATERIAL TECHNOLOGY

Allied supplies a large catalog of high performance refractory products for processing nonferrous and ferrous metals and industrial materials.

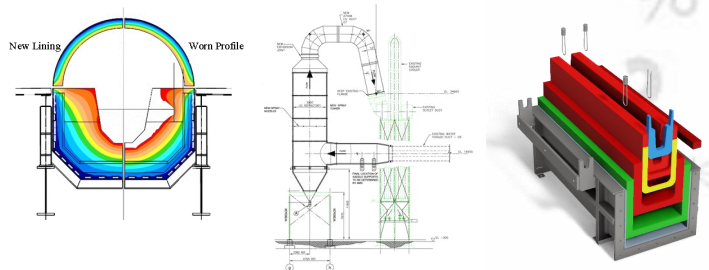
- Superior raw material quality
- Unique, tailored installation properties: vibration cast, pump cast, gunning and shotcrete
- Product mixes to meet a variety of application demands such as high temperatures, thermal cycling, abrasion and chemical attack



### DESIGN ENGINEERING

Our team evaluates operating criteria and physical design parameters to provide detailed reports and recommend the optimal refractory products and/or system. Our engineering department features:

- Optimized product zoning
- Thermal Analysis
- Thermal models to optimize and validate designs
- Proven safety lining system designs
- Innovative refractory system designs
- Detailed 3D model creation
- Comprehensive system drawings



### ALLIED MINERAL TECHNICAL SERVICES

Value added technical support for refractory systems

- Melt zone monitoring and modeling
- Data collection and analysis
- Engineering and design services
- Analysis of melt practices
- Emergency responsiveness
- On-site supervision and assistance

Markets served

- Blast Furnaces
- Coke Ovens
- Cupolas



 research

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thermal expansion



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## Being There Worldwide with Refractory Solutions

 research

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## Being There Worldwide with Refractory Solutions



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Global **Refractory** Solutions



Scan to view our locations

**alliedmineral.com**

