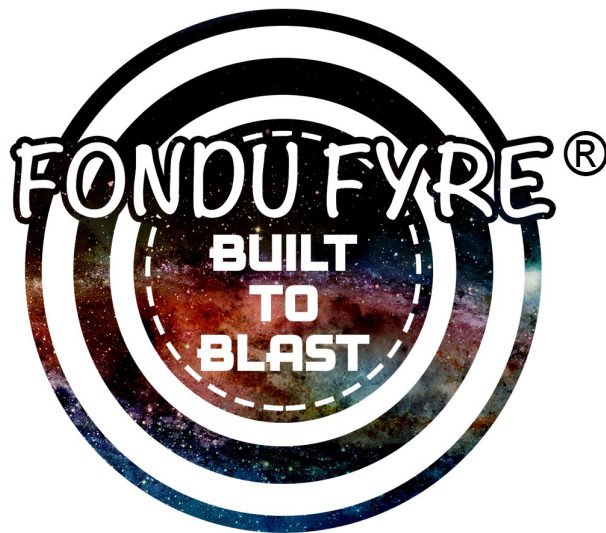




# FONDU FYRE®

TECHNOLOGY FOR LAUNCH APPLICATIONS



Global **Refractory** Solutions



# FONDU FYRE® | HISTORY

The FONDU FYRE® product line was developed in the early days of the Space Race. The need was recognized early on for a material that could withstand the harsh conditions of repeated rocket blasts. Many materials were evaluated for this application and FONDU FYRE® was shown to be superior in performance versus all other materials. FONDU FYRE® proved that 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 the early launch missions of the Mercury program throughout the entire Space Shuttle program, FONDU FYRE® was the material of choice by NASA.

The technology and design concepts for FONDU FYRE® have remained unchanged for over sixty years. That continues to be the case for this product line now under the ownership of Allied Mineral Products, who obtained the technology through the acquisition of Pryor Giggey Co. Allied Mineral Products brings technological strength to the product line as well as a worldwide presence for consistent high quality supply of these very specialized materials.





# 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.

- FONDU FYRE® has been successful in all rocket blast and space launch applications.
- FONDU FYRE® withstands all weather conditions as well as vehicle traffic.
- FONDU FYRE® has proven to be viable for many years of service in a variety of severe conditions.
- FONDU FYRE® products are the preferred choice for short and long burn rocket engine test facilities.

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





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

## WE ARE AN INNOVATIVE, TECHNOLOGY-DRIVEN

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 that allow us to develop application-specific products and continuously make improvements. Allied's product development team is comprised of material science experts. Our research department features:

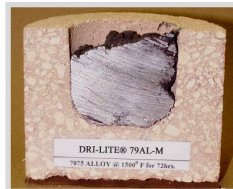
- Patent-generating research
- Shotcreting and gunning laboratory
- Modern analytical testing equipment (XRF, XRD, SEM)
- Forensic analysis capabilities
- Post mortem analysis
- Metal slag evaluations
- Flow testing
- Contact tests



## MATERIAL TECHNOLOGY

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

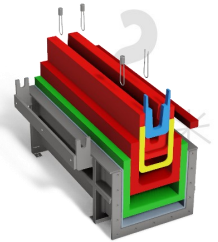
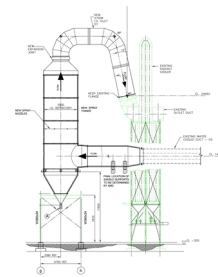
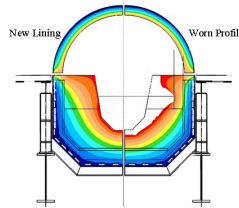
- Superior raw material quality
- Unique, tailored installation properties: vibration cast, pump cast, gunning and shotcrete
- Product mixes to meet a variety of application demands such as high temperatures, thermal cycling, abrasion and chemical attack



## 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



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The Allied Difference

Being There Worldwide with Refractory Solutions

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The Allied Difference

Being There Worldwide with Refractory Solutions

## Headquarters:

### **Allied Mineral Products, LLC**

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