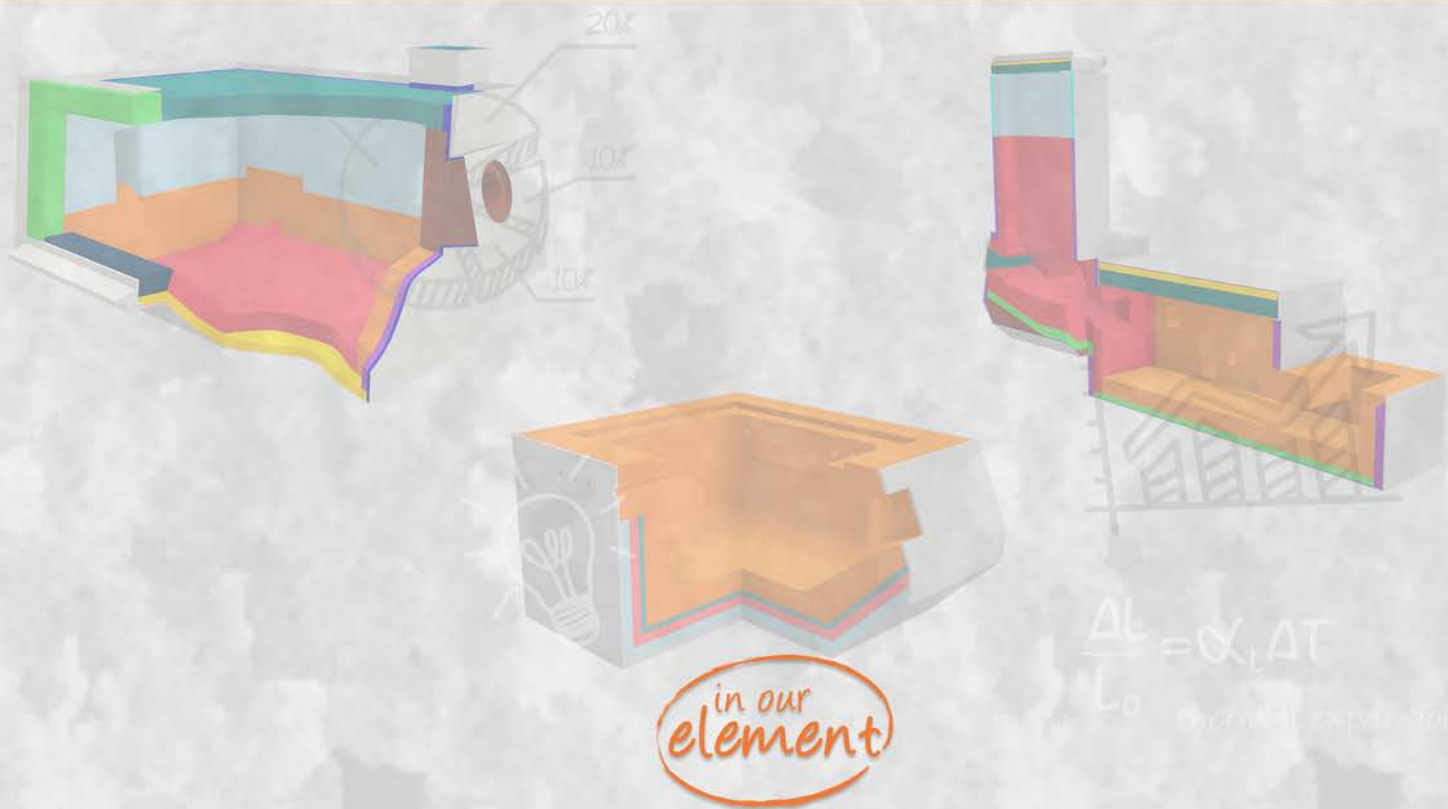




NANO BONDED PRODUCTS — FOR — ALUMINUM FURNACES

NANO-TEK®
NANO-GUN™ NANO-PUMP™



Global **Refractory** Solutions



NANO-TEK[®] for Aluminum Furnaces

Colloidal Silica Bonded Refractory

NANO-TEK[®] is a family of colloidal silica-bonded refractory products providing good strengths and thermal shock resistance and adheres well to most existing refractories. The NANO-TEK[®] AL line exhibits excellent resistance to molten aluminum and its alloys.

Benefits

- Accelerated heat-up
- Quick turnaround
- Excellent thermal shock resistance
- Abrasion resistant
- No cement
- Good mechanical strengths

Applications

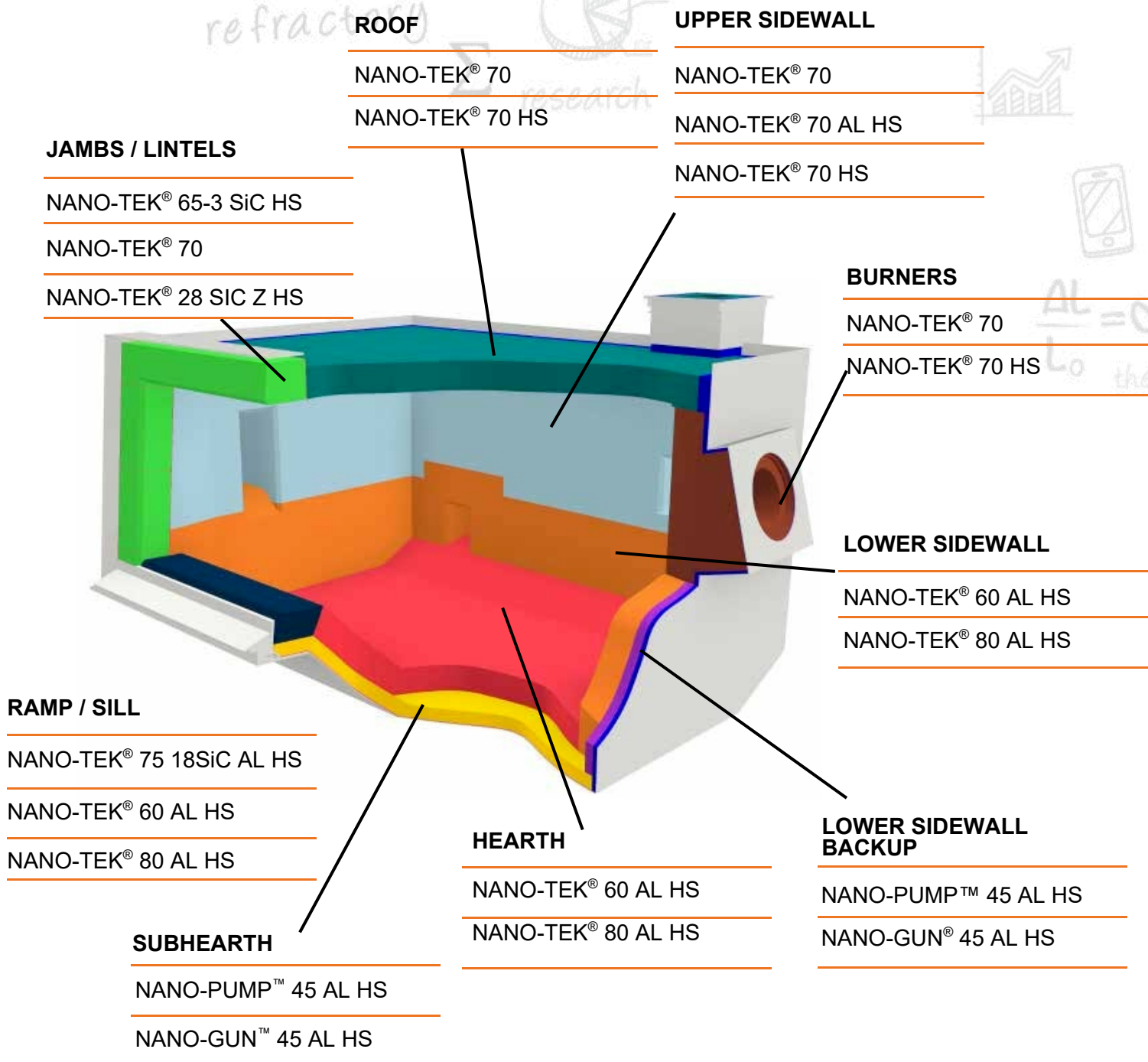
- Reverberatory Furnaces
- Diecasters
- Stackmelters
- Rotary Furnaces

Product	AL ₂ O ₃	SiO ₂	Material Required
	%	%	g/cm ³ (lb. /ft ³)
NANO-GUN™ 45 AL HS	45.0	49.6	1.94 g/cm ³ (121 lb. /ft ³)
NANO-GUN™ 84 AL HS	84.3	11.3	2.52 g/cm ³ (157 lb. /ft ³)
NANO-PUMP™ 45 AL HS	45.0	49.6	2.08 g/cm ³ (130 lb. /ft ³)
NANO-TEK [®] 60 AL HS	62.2	32.2	2.45 g/cm ³ (153 lb. /ft ³)
NANO-TEK [®] 28 SiC Z HS	42.0	24.5	2.48 g/cm ³ (155 lb. /ft ³)
NANO-TEK [®] 70	68.7	28.0	2.50 g/cm ³ (156 lb. /ft ³)
NANO-TEK [®] 70 AL HS	68.4	27.9	2.58 g/cm ³ (161 lb. /ft ³)
NANO-TEK [®] 70 HS	67.9	28.4	2.58 g/cm ³ (161 lb. /ft ³)
NANO-TEK [®] 75 18SiC AL HS	74.3	3.7	2.93 g/cm ³ (183 lb. /ft ³)
NANO-TEK [®] 80 AL HS	82.9	11.2	2.76 g/cm ³ (172 lb. /ft ³)



NANO-TEK[®] for Aluminum Furnaces

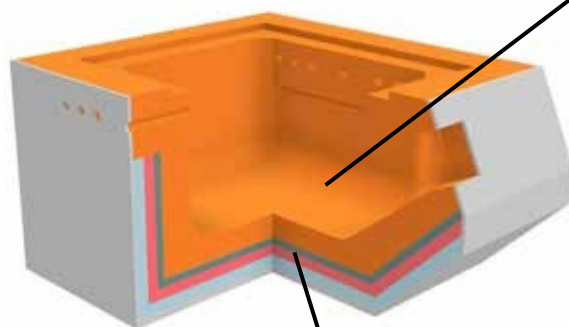
Colloidal SilicaBondedRefractory





NANO-TEK[®] for Aluminum Furnaces

Colloidal Silica Bonded Refractory



FURNACE LINING

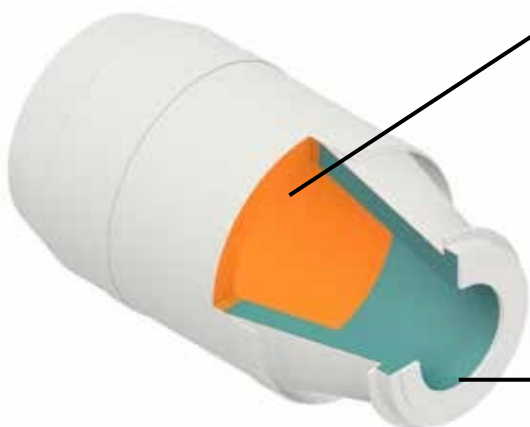
NANO-TEK[®] 60 AL HS

NANO-TEK[®] 80 AL HS

SAFETY LINING

BETAMAX[®] 24 LT

DRI-LITE[®] 79AL-M



FURNACE LINING

NANO-TEK[®] 60 AL HS

NOSE RING

NANO-TEK[®] 75 18SIC AL HS

NANO-TEK[®] 60 AL HS



NANO-TEK[®] for Aluminum Furnaces

ColloidalSilicaBondedRefractory

process



°C



global

refra

DRY HEARTH / RAMP

NANO-TEK[®] 60 AL HS

NANO-TEK[®] 80 AL HS

NANO-TEK[®] 75 18SIC AL HS

BULLNOSE

NANO-TEK[®] 70 HS

NANO-TEK[®] 70 AL HS

STACK

NANO-TEK[®] 60 AL HS

ROOF

NANO-TEK[®] 70

NANO-TEK[®] 70 HS

BURNERS

NANO-TEK[®] 70

NANO-TEK[®] 70 HS

SIDEWALLS

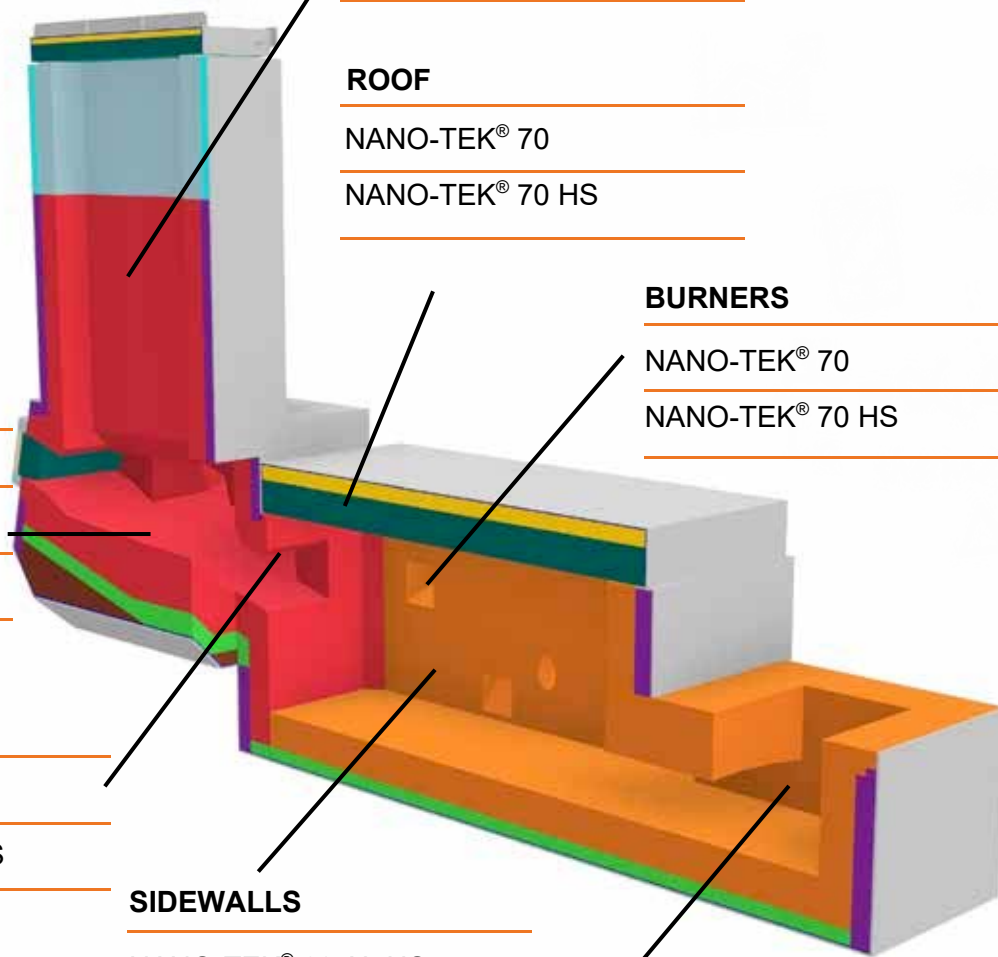
NANO-TEK[®] 60 AL HS

NANO-TEK[®] 80 AL HS

WET HEARTH

NANO-TEK[®] 60 AL HS

NANO-TEK[®] 80 AL HS





NANO-TEK[®] for Aluminum Furnaces

Colloidal Silica Bonded Refractory

The images on this page showcase NANO-TEK[®] products installed across a variety of furnace applications. Together, they highlight the versatility of the NANO-TEK[®] product line and its ability to perform reliably in different furnace environments and operating conditions.



Material being pumped



Inside furnace after forms
were pulled



Roof after heat up

NANO-TEK[®] 70 installation in a 250,000 lbs. side bay melter.



October 2020



April 2021



April 2024



The Allied Difference

Expertise & Services

WE ARE 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 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



MATERIALS TECHNOLOGY

Allied supplies a large catalog of high performance refractory products for processing non-ferrous and ferrous metals and industrial minerals.

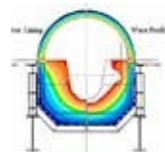
- Superior raw material quality
- Unique, tailored installation properties: vibration cast, pump cast, gunning and shotcrete
- Product mixes to meet a variety of application demands such as high temperatures, thermal cycling, abrasion and chemical attack.



ENGINEERING

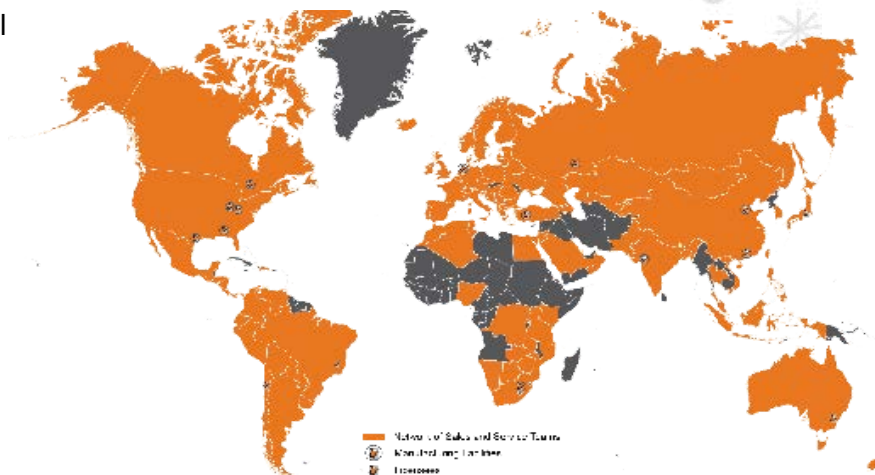
Allied's team evaluates operating criteria and physical design parameters to provide detailed reports and recommend the optimal refractory products and/or system. Our engineering department features:

- 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



MANUFACTURING CAPABILITIES

- Flexible manufacturing systems
- Multi-shift production
- 14 manufacturing locations worldwide
- Ongoing operations analysis and improvements





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alliedmineral.com

