

# FONDAG<sup>®</sup>



**The ultimate concrete  
for extreme industrial environments**

 **kerneos<sup>™</sup>**  
ALUMINATE TECHNOLOGIES

FONDAG<sup>®</sup>, characterized by a high alumina content and absence of free lime, is extremely stable at high temperature and in conditions of severe thermal cycling and thermal shock. In the same conditions, Portland cement based concrete becomes unstable and experiences spalling, expansion and eventual failure.



### Steelworks & coking plant

- > Blast furnace and furnace area floors
- > Ladle pre-heat and cooling areas
- > Cast house floors
- > Slag pit and drop-out boxes
- > Quench towers and track repairs



### Metal processing industries

- > Oxygen lance cutting areas
- > Heat resisting floors

### Cement plants

- > Pipe lining
- > Raw materials silos
- > Cyclones
- > Coolers
- > Hoods and other areas subject to high temperatures

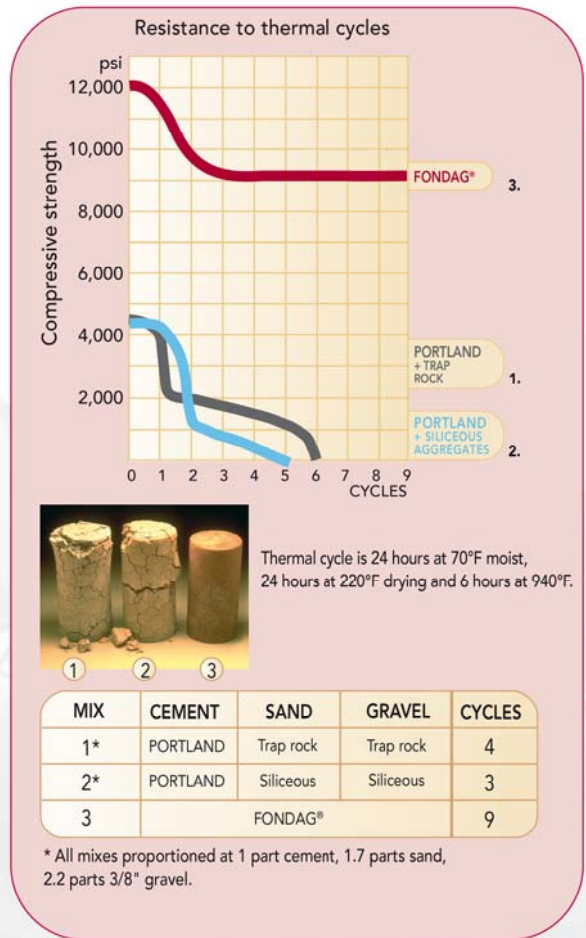
### Fire protection and fire training areas

- > Flammable products retention tank
- > Fire training areas



### Incinerators and boilers

- > Charging chutes
- > Ash boxes
- > Burning pits



# >> Resistance to abrasion, mechanical abuse

FONDAG® is a concrete with low porosity and high density, based on very hard synthetic aggregates allowing **abrasion resistance** several times better than 5,000 psi Portland cement concrete.



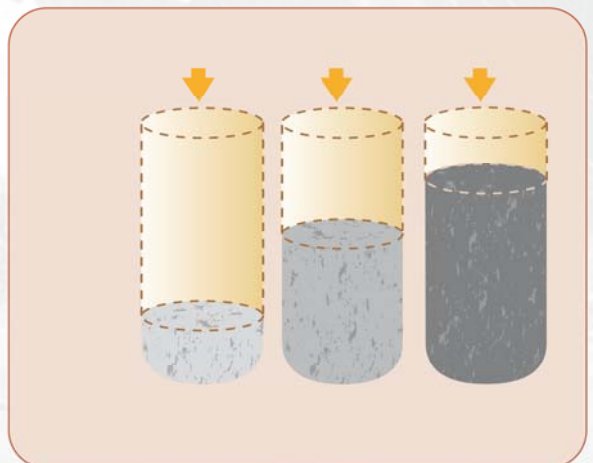
## Industrial floors

- > Heavy equipment tracks
- > Shop floors
- > Warehouses
- > Bulk material unloading areas and transfer pads



## Hydraulic structures

- > Sills
- > Screening walls
- > Spillways
- > Scouring sluices
- > Collectors
- > Jetty heads
- > Sluice beds



# and corrosion



## Abrasion from ore transfer

- > Ore pass lining
- > Ore silo lining
- > Crusher pad flooring



## Other abrasion problems in mining

- > Ore sludge channel lining
- > Track road repairs
- > Other highly abraded areas



FONDAG® specific chemistry shows an excellent **corrosion resistance** to a wide range of aggressive substances (pH 3.5-11) including several acids, sugar solutions, grease and fats, etc.



## Food industries

- > Discharge areas
- > Factory floors
- > Cold rooms
- > Freezing tunnels



## Petrochemical industries

- > Sulphur pits
- > Coke discharge areas
- > Industrial floors



## Chemical industries

- > Decantation basins
- > Effluent and sea water channels
- > Factory floors
- > Cryogenic loading and discharging areas



# >> The ultimate concrete for extreme industrial environments

FONDAG® is a ready-to-use, high strength, durable concrete. Its special characteristics are achieved by combining strong, hard, dense and non-porous synthetic aggregates which develop very strong chemical and mechanical bonds with calcium aluminate cement. FONDAG® shows the unique capacity to resist aggressive environments where high temperature, thermal and mechanical shocks, abrasion and corrosion, are all present.

In many severe industrial environments where Portland cement concrete and specialty products deteriorate rapidly, FONDAG® is the logical solution for long term durability.

## Properties



### Temperatures

Withstand temperature from -290°F to +2,000°F and thermal shocks.



### Abrasion, erosion and impact

Extremely good resistance to abrasion, erosion and impact.



### Corrosion

Resists corrosion by sulphates, oils, industrial effluents, aggressive chemicals and dilute acids for pH 3.5 – 11.



### Rapid hardening

Back in service if necessary within 6 to 8 hours after placing.



## Production



With drum-mixer



With ready-mix truck

For more information, visit us at:  
[www.kerneosinc.com](http://www.kerneosinc.com)



## Our teams at your service around the world

Kerneos plants share identical quality standards, within a quality management system that is certified according to ISO 9001 Standard requirements.

Fondag® offer is supported by the technical, commercial and marketing Kerneos network, dedicated to Technical Concrete applications.

# >> Technical details



## Mixing, placing & curing recommendations

FONDAG® is a ready-to-use pre-blend concrete. It is essential to observe the water content specified on bags to obtain expected properties.

Mixing equipment must be clean and free from concrete buildup. Mixing time required is 5 minutes minimum.

FONDAG®, in the plastic stage, appears similar to a firm Portland concrete.

If the specification requires joints, they should be done promptly because more than 60% of shrinkage occurs within 2 days after placement; saw cut joint must be done immediately after final set.

Once the initial set has occurred, FONDAG® hardens very rapidly. Within 6 hours, compressive strength of 5,000 psi is easily attained.

Like for Portland cement concrete, proper curing is essential to ensure satisfactory surface condition of FONDAG®. Proper curing method should be chosen to be effective on actual job site conditions (either application of wet burlap, water spray, plastic sheets or several layers of ASTM C 309 liquid membrane curing compound, or a combination of these).

Cold Weather Installation: provided that the fresh concrete is prevented from freezing until heat evolution begins (3 to 6 hours for Regular Set), curing temperature can be as low as 0°F. Depending of additional admixtures utilized, the time to reach this exothermic reaction can vary from few minutes to several hours.

See bags for more detailed mixing, placing and curing recommendations.

FONDAG® combines a very hard, high density, fused synthetic aggregate containing 40% alumina with calcium aluminate cement. Because the aggregate and the binder are mineralogically the same, there is an ideal chemical affinity resulting in a unique and stronger paste-aggregate bond.

Physical characteristics of the synthetic aggregate and of the cement, such as coefficient of expansion, are also the same. This explains the exceptional thermal, mechanical, and chemical properties of FONDAG®.

FONDAG® is available in two formulations, "Regular Set" (RS) and "Dry Gunning" (DG).

FONDAG® is available in 3200 lb. supersacks, intended for use in large mixers or in 50 lb. paper bags.

## Some physical properties

- > Aggregate size: 1/2" down
- > Open porosity after 28 days at 68°F: 5%
- > Mohs hardness of aggregates: 6-7
- > Working Time: around 2-3 hours for FONDAG® RS

## Mechanical properties (indicative data)

- > Water content: approximately 1/2 gallon of water per 50 lb bag.

	Compressive strength on 6"x12" cylinders 68°F moist curing
6 hours after mixing	> 5,000 psi
24 hours after mixing	8,000-9,000 psi
Long term compressive strength to consider for design purpose (converted strength*)	> 5,500 psi

\*only strength after conversion must be considered for design purpose.

	Strength after heating treatment		
	Dried at 230°F	Fired at 1,500°F	Fired at 2,000°F
Flexural (psi)	1,300	650	450
Compressive (psi)	12,000	7,500	3,300

Tests conducted on 40x40x160 mm prisms. All samples immersed in water for 24 hours then held for 24 hours at 230°F; some samples held for a further 24 hours at 1,500°F or 2,000°F and then cooled down slowly.

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