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## Toughseal

### Rigidizer that Seals in Surface Dust on Refractories While Providing a Refractory Surface Acidic pH Binder Liquid For Creating Your Own Paint

Toughseal is a water-alcohol-based liquid which can be applied by bristle-brush, foam rubber-brush, pump-sprayers to most refractory materials ... brick, blankets, foams, pulp-molded surfaces, etc. With a pH of 2-3 ... Toughseal could have some possible interactions (i.e., the surface being treated should be stable with a pH-acidic material). Toughseal can sometimes provide a good "base" for applying refractory topcoatings [i.e., when used on fibrous surfaces etc.] - working well with acidic pH coatings.

#### Key Attributes

- Water-resistant after thorough drying [150-350 C for complete water insolubility]
- Forms very tough phosphate-silicate bond
- Low Suspendability of 'filler' powders
- Forms high hardness coatings
- Good in all atmospheres, including air
- Outgassing ( $H_2O$ ,  $NO_x$ ,  $CO_x$ ) - complete by 600 C
- Safe, water-based
- No cure needed

#### Ideal Uses

- Sealer of surfaces with fibers, dust
- Rigidizer for ceramic fabrics/blankets
- Infiltrant
- Binder/Suspender

#### Possible Fillers

- Any pH-Acidic stable materials
- Consider eutectics

#### Use Notes

**As a primer/sealer:** brush or spray a layer of Toughseal and let it get dry-to-the-touch. Then it is all right to use "as is" or to topcoat with any pH-Acidic compatible coating.

#### Make your own coating:

1. Add refractory 'filler' (<10 microns preferred)
2. Start at 50wt.% powder. Mix by rolling/shaking.
3. If too thick, add water; if too thin, add powder.

After making paint above, clean substrate, apply paint, dry (with no cure needed), and place into use.



#### Specifications

Active Ingredients	>99% $Al_2O_3$ - $P_2O_5$
Max Use Temperature	1600 C
Use Atmosphere	All
Fired Composition	52.5% $P_2O_5$ - 46.5% $Al_2O_3$
Binder Phase	Aluminum Phosphate
Hardness	High
Liquid Carrier	Water/Ethanol
Water Resistance after 150-350 C	High
Ability to Suspend Solids	Low
Brookfield Viscosity (cps)	90 @2/60
Specific Gravity	1.2
Shelf Life (months)	3-6
Coating pH	2-3
H F R Ratings	1-1-0
Substrate Use	All
% Volatiles	76

#### Safety Information

- Consult SDS before use.
- Avoid breathing of spray/vapors.
- For Industrial Use only.

#### Sizes and colors

Toughseal is a pink-tinted liquid  
Standard Size: wide-mouth 1 gallon pail.

**Other Notes:** This sealant/rigidizer is not vacuum-tight/impervious.

**CAUTION: DO NOT CONTACT WET COATINGS WITH MOLTEN METAL.**

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