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HPC Binder

Water-based, Neutral pH Binder Liquid For Creating Your Own Paint

HPC Binder is a water-based binder liquid that is used for suspending many materials. Coatings produced with this binder liquid have relatively low hardness on drying and can be easily washed back off if re-wetted (i.e., have low water resistance) until they are heated to the outgassing temperature of 150 C where water is the only outgassing product. The binder has a moderate ability to suspend solids and generally produces medium viscosity coatings with most refractory powders. With a pH of 7, the binder is generally not very reactive to materials.

Key Attributes

- Water resistance generally low
- Moderate suspendability of 'filler' powders
- Forms relatively-low hardness coatings
- Good in all atmospheres, including air
- Minimal outgassing (H₂O)--complete by 150 C
- Safe, water-based
- No cure needed

Ideal Uses

- Binder/Suspender
- Infiltrant

Possible Fillers

- Most materials are compatible with this pH-Neutral binder/suspension-agent
- Useful for Rare Earth Phosphors when used alone or blended with LK binder^{1,2}
- Consider eutectics

Use Notes

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.
4. Re-mix by rolling or shaking.

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

SPECIAL NOTE: Blending HPC Binder with LK Binder increases the hardness and water-resistance^{1,2}



Specifications

Active Ingredients	>99% MgO-SiO ₂
Max Use Temperature	1500 C
Use Atmosphere	All
Fired Composition	MgSiO _x
Binder Phase	Hectorite
Hardness	Low
Liquid Carrier	Water
Water Resistance	Low
Ability to Suspend Solids	Moderate
Brookfield Viscosity (cps)	800 @3/60
Specific Gravity	0.8
Shelf Life (months)	>12
Coating pH	7-8
H F R Ratings	1-0-0
Substrate Use	All
% Volatiles	>98

Safety Information

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

Sizes and colors

HPC Binder is a cloudy, moderately-viscous liquid. Standard Size: 1 gallon Nalgene container.

REFERENCES:

1. <https://technicalreports.ornl.gov/cppr/y2001/pres/118132.pdf>
2. <https://technicalreports.ornl.gov/cppr/y2001/pres/112315.pdf>

CAUTION: DO NOT CONTACT WET COATINGS WITH MOLTEN METAL.

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