LK Binder has a moderate ability to suspend solids. It yields a ternary composition Li₂O·K₂O·SiO₂ that bonds together the ‘filler’ solids added to the binder. This water-based, pH-Alkaline/Basic binder/suspension-agent is usable to around 800-900°C in all atmospheres, but this use-limit can be extended with different filler materials. Also, when combining LK Binder with HPC Binder in any proportion, the upper use limit can be extended, for example as demonstrated to over 1400°C with rare earth phosphors. LK can be used with any powder solids that are stable in an alkaline pH medium. Coatings made with LK have the unique ability to become water-insoluble after being heated to 100-150°C at which all outgassing (water only) is also complete.

**Key Attributes**
- Water-insoluble after heating to 100-150°C
- Forms very tough silicate bond
- Moderate Suspendability of ‘filler’ powders
- Forms high hardness coatings
- Good in all atmospheres, including air
- Minimal outgassing (H₂O) complete by 150°C
- Safe, water-based
- No cure needed

**Ideal Uses**
- Binder/Suspending agent
- Infiltrant
- Sealer of surfaces with fibers, dust
- Rigidizer for ceramic fabrics/blankets

**Possible Fillers**
- Y₂O₃ and all Rare-Earth Oxides (see refs. 1, 2), TiO₂, Al₂O₃, ZrO₂, ZnO, Si₃N₄, Y-SiAlON, & many more
- 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 LK Binder with HPC Binder improves suspendability of filler material and extends the use limit well over 1000°C.

**Specifications**
- **Active Ingredients**: >99% Li₂O·K₂O·SiO₂
- **Max Use Temperature**: 900°C (extended to >1400°C if mixed with HPC Binder)
- **Use Atmosphere**: All
- **Fired Composition**: 5% Li₂O - 20% K₂O - 75% SiO₂
- **Binder Phase**: Lithium Potassium Silicate
- **Hardness**: High
- **Liquid Carrier**: Water
- **Water Resistance**: Moderate
  - After ambient-temperature drying
  - After 100-140°C
- **Ability to Suspend Solids**: Moderate
- **Brookfield Viscosity (cps)**: 15 @ 1/60
- **Specific Gravity**: 1.19
- **Shelf Life (months)**: >12
- **Coating pH**: 9-10
- **HFR Ratings**: 1-0-0
- **Substrate Use**: All
- **% Volatiles**: 79

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

**Sizes and colors**
LK Binder is a clear liquid with water-like viscosity. Standard Size: 1 gallon Nalgene container.

**REFERENCES**

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

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