



120 Valley Court
Oak Ridge, TN 37830
Ph: 865-482-5717
FAX: 865-482-1281
zypcoatings.com

Binder Comparison Table

Group 1 -- Solvent-based (Flammable) Binder/Suspension-Agent

- **BNSL Binder** [good adherence in all atmospheres; binder is unreactive with most all materials]
- **YK Binder/Thinner** [very soft “washcoating” type binder; only for inert/vacuum use]
- **SiloxoKote Binder** [high abrasion resistance and high water resistance]

Group 2 -- Water-based Binder/Suspension-Agent/Sealant/Rigidizer

- **Gel-P Binder** [Acidic pH; strong binder]
- **HPC Binder** [Neutral pH; soft “washcoating” type binder]
- **LRC Binder** [Acidic pH; moderately strong binder]
- **YAG Binder** [Acidic pH; moderately strong binder]
- **YTO Binder** [Acidic pH; moderately strong binder with high CTE]
- **LK Binder** [Alkaline pH; moderately strong binder with high hardness and high water resistance]
- **YZ Binder/ Thinner** [Neutral pH; very soft “washcoating” type binder; only for inert/vacuum use]
- **ZAP Binder** [Acidic pH; strong binder] -- 3-6 months shelf life.
- **Toughseal** [Acidic pH; strong binder] –used for sealing/rigidizing surfaces; 3-6 months shelf life.
- **Z-Primercoat** [Alkaline pH; strong binder mostly used for sealing; OK to topcoat with Acidic or Basic pH coatings generally; used to seal in residual bone-ash on used billet-casting tables]
- **Pyrrhos Binder** [Alkaline pH; strong binder with high abrasion resistance and high water resistance]
- **Zirconolite Binder** [Acidic pH; moderately strong binder for many materials, but especially lanthanide/actinide materials]

Binder	Liquid carrier	Constituents	pH	Volatiles (%)	Max. use temp (°C)	Use atmosphere	Hardness	Water resistance	Ability to suspend solids
BNSL	Ethanol Acetone	MgSiO _x	n/a	97	1600	All	Medium	High	Medium
YK	Ethanol Ethyl acetoacetate	Cellulosic	n/a	97	2000	Vac/Inert	Low	Low	Low
SiloxoKote	Ethanol	MgSiO _x SiO ₂	n/a	75	1000	All	High	High*	High
Gel-P	Water Ethanol	Al ₂ O ₃ P ₂ O ₅ SiO ₂	2-3	70	1500	All	High	High**	High
HPC	Water	MgSiO _x	7-8	>98	1500	All	Low	Low	Medium
LRC	Water	Al ₂ O ₃	2-3	97	1900	All	Low-Med	Low	High
YAG	Water	Al ₂ O ₃ Y ₂ O ₃	3-4	87	1900	All	Low-Med	Low	High
YTO	Water	TiO ₂ Y ₂ O ₃	2	82	1700	All	Medium	Low	Low
LK	Water	K ₂ O Li ₂ O SiO ₂	9-10	79	900	All	Medium	Med-High*	Low
YZ	Water	Cellulosic	7-8	97	2000	Vac/Inert	Low	Low	Low
ZAP	Water Ethanol	Al ₂ O ₃ P ₂ O ₅	2-3	76	1600	All	High	High**	Low
Toughseal	Water Ethanol	Al ₂ O ₃ P ₂ O ₅	2-3	76	1600	All	High	High**	Low
Z-Primercoat	Water	K ₂ O SiO ₂	9-10	76	900	All	High	High*	Medium
Pyrrhos	Water	K ₂ O SiO ₂	9-10	65	800	All	High	Med-High*	High
Zirconolite	Water	CaZrTi ₂ O ₇	5-6	85	1500	All	Medium	Low	High

*Water resistance after heating to 100-150°C

**Water resistance after heating to 350°C

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