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Comparison of High Temperature Coatings

YTTRIUM OXIDE

Type Y	Water-based, pH 7	Washcoating for all substrates	Most non-reactive coating	Not for Air Inert: 2000 C Vac: 2000 C Vac with C: 1500 C
Y Aerosol	Solvent-based	Low Adherence for all substrates	Easy to apply/dry	OK in Air: 1900 C Inert: 1900 C Vac: 1900 C Vac with C: 1500 C

HAFNIUM-TITANIUM OXIDE, 66.7HfO₂*33.3TiO₂

Zypcoat HTO	Water-based, pH 2-3	Good Adherence mainly for ceramics	High stability, near-zero CDE	>2000 C all atmospheres
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ZIRCONIUM DIOXIDE

Type YSZ	Water-based, pH 2-3	Good Adherence for Ceramics/Metals	Yttria stabilized	Air: 2000 C Inert: 2000 C Vac: 2000 C Vac with C: 1400 C
Type ZO	Water-based, pH 2-3	Good Adherence for all substrates	Calcia stabilized	Air: 1800 C Inert: 1800 C Vac: 1800 C Vac with C: 1400 C
Z Aerosol	Solvent-based	Low Adherence for all substrates	Easy to apply/dry Calcia stabilized	Air: 1900 C Inert: 1900 C Vac: 1900 C Vac with C: 1500 C

YAG, 3Y₂O₃*5Al₂O₃

Zypcoat YAG	Water-based, pH 3-4	Good Adherence for all substrates	High stability coating	Air: 1700 C Inert: 1700 C Vac: 1700 C Vac with C: 1400 C
YAG Bondcoat	Water-based, pH 2-3	High Adherence for all substrates	50% Phosphate bond Less stability, more erosion resistance	Air: 1400 C Inert: 1400 C Vac: 1400 C Vac with C: Not recommended

ALUMINUM OXIDE

Type A1	Water-based, pH 2-3	Good Adherence for all substrates	100% Al ₂ O ₃ coating	Air: 1800 C Inert: 1800 C Vac: 1800 C Vac with C: 1500 C
A Aerosol	Solvent-based	Low Adherence for all substrates	Easy to apply/dry	Air: 1800 C Inert: 1800 C Vac: 1800 C Vac with C: 1500 C

YTTRIA-CALCIUM ZIRCONATE

Type Y-CZ	Water-based, pH 8-9	Good Adherence for all substrates	High stability with very reactive molten metals	>2000 C all atmospheres
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CALCIUM ZIRCONATE

Zypcoat CZO	Water-based, pH 2	Good Adherence for all substrates	High stability compound 100% CaZrO ₃	all atmospheres
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ALUMINA-ZIRCONIA-SILICA

Zypcoat FZM	Water-based, pH2-3	Good Adherence for ceramics	Good with metals, slags, glass 100% FZM	>1650 C all atmospheres
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CeraSeal FZM	Water-based, pH 2	Excellent Toughness with Alumina and similar CTE ceramics	Dense sealant/surface >75% FZM	1400 C all atmospheres
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YTTRIUM PHOSPHATE (Y₂O₃ – P₂O₅)

Zypcoat YPO	Water-based, pH 2	Good Adherence for Ceramics/Metals	>90% Y ₂ O ₃ – P ₂ O ₅ Usable with metals, slags, glass	1500 C Air, Inert Vac with C: Not recommended
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