TECHNICAL BULLETIN

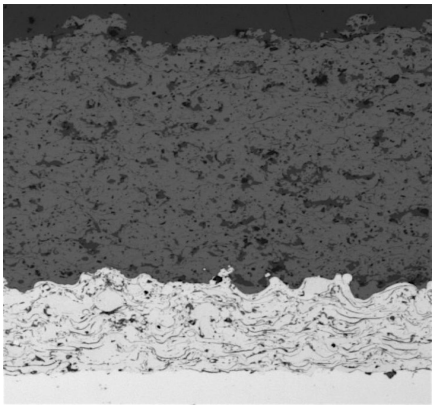
YTTRIA STABILIZED ZIRCONIUM OXIDE CT1700-1

OVERVIEW

CT1700-1 is an Yttria Stabilized Zirconium Oxide coating applied using the Plasma process. The coating is typically applied over a hot corrosion resistant bond layer of a specialized alloy called MCrAlY. The density of the CT1700-1 may be varied depending on the plasma parameters used. This is important in order to tailor the coating to a fairly wide range of operating conditions. The coatings provide thermal shock protection to the substrate as well as providing a high level of thermal insulation. These coatings are used in some of the most severe thermal resistance applications there are in gas turbines and rockets.

TYPICAL PROPERTIES

Nominal Composition:	92% ZrO_2/8% Y_2O_3
Bond Strength:	1,900 – 2,100 psi
Coating Porosity:	5-15%
Coating Hardness:	Rc 40-45
As-sprayed Surface Roughness:	300-350 Ra



FOR THE FOLLOWING APPLICATIONS

CT1700-1 is used for severe service conditions that include thermal shock and high temperature resistance. Coatings of CT1700-1 are the coatings of choice for many aero turbine and land based gas turbine blades, vanes, combustion liners, transition pieces, combustion tiles and other detail components used to construct the combustion sections of most modern land based gas turbines and many aero engines.

Thermal conductivity characteristics of the sprayed coating can be estimated as follows:

1.0 – 1.1 Watts/m • K

FINISHING

Finish CT1700-1 is not typically finished although it may be ground using diamond wheels. This coating is sometimes tumbled to improve surface finish.

SPECIFICATIONS

CTS-1700-1 meets the following specifications:

GEAE:	A50TF278
PWA:	1275
GEPS:	A50A557
EMS:	57750 TYPE 1

CTS-Midwest
5901 Creek Rd.
Cincinnati, OH 45242
(513) 793-0670 | F: (513) 793-4254

CTS-South
11766 NC Highway 210
Rocky Point, NC 28457
(910) 675-2909 | F: (910) 675-0806

CTS-East
80 Fadem Rd.
Springfield, NJ 07083
(973) 379-0003 | F: (973) 379-4066

CTS-Texas
4011 Chance Ln.
Rosharon, TX 77583
(281) 431-1629 | F: (281) 431-2179