Nickel Chrome

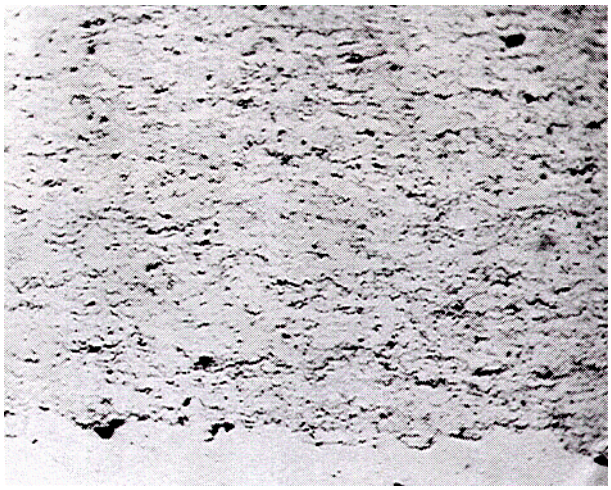
Thermo-Sealed Coating

This Chrome Carbide / Nickel Chrome based coating has good erosion wear and corrosion resistant properties over a wide range of temperatures. This coating is an intermetallic composite material which has its origin in the aerospace industry, but has resurfaced today in post treated and HVOF applications. ***Adiabatics*** has combined the technologies of High Velocity Oxygen Fuel (HVOF) sprayed coatings with thermal chemical bonding technology to generate a new hybrid coating which provides an enhanced resistance to high temperature wear and corrosion.

Nominal Chemical Composition: Chrome Carbide / Nickel Chrome (Cr_3C_2 75%, 80Ni/20Cr 25%) Chrome Oxide, and Phosphate Glass Phase Sealer.

Thermo-Sealed Cr_3C_2 / NiCr Physical Properties

Density, (g/cm^3)	7.0
Recommended Maximum Use Temperature (°C)	900
Melting Range, (°C)	1600
Mean Coefficient of Thermal Expansion x 10^{-6}m/m-°K	11.3
Thermal Conductivity (W/m-°K)	19
Hardness (Hv 300 gm) @ 950°C	1100
Average Compressive Strength (Mpa) @ Room Temp.	3400
Erosion Wear (mm^3/gm sand) @ 30° angle	2.5
Erosion Wear (mm^3/gm sand) @ 90° angle	3.2



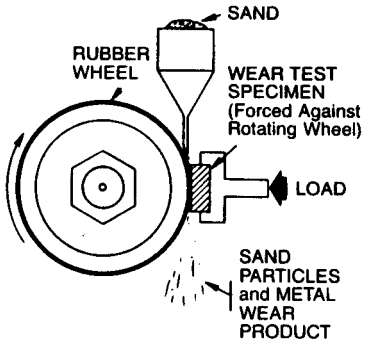
Microstructure of HVOF Cr_3C_2 / NiCr Wear Coating With Thermo-Seal Cr_2O_3 and Phosphate Glass Binder Phases.

Applications of Thermo-Sealed Cr_3C_2 / NiCr

Aircraft Turbines (High Temperature Wear)
Hydroelectric Steam Turbines (Corrosion / Erosion Wear)
Machine Parts (Corrosion and High Temperature Wear)
Boiler Tubings (Hot Erosion Wear)

Selection based upon low cost, coefficient of expansion close to steels, temperature capability of 900°C versus Tungsten Carbide coatings ability of 650°C, good corrosion reistance, and good erosion resistance.

Comparative Abrasive Wear Test Data



ABRASIVE WEAR TEST UNIT (Dry Sand)

Test for 2000 revolutions at 30lb. Load (13.6Kg), using a 9 in. (229 mm) dia. Rubber Wheel and Dry Sand

Volume Loss (mm^3)	15
Wear Coefficient	2.4×10^{-4}

For additional information, call: ***Adiabatics, Inc.*** Telephone: (812) 372-5052, FAX: (812) 372-4470, or send e-mail to: info@adiabatics.com