

CHG (Ceramic Hardened Graphite) Technical Treatment of Phenolic Graphite Parts

CHG (Ceramic Hardened Graphite) is a nanotechnology coating (formulation SiO_2), which can be deposited on any "solid" using vacuum technology. This deposit forms as a layer of oxidised Silicon Carbide on Phenolic Graphite. Since the deposit is a nanometre layer, there are no alterations to the mechanical, dimensional and electrical properties of the bulk material. It has mainly anti-corrosion and anti-sticking properties.

A CHG coating on a Graphite surfaces is easily recognizable as it produces a glassy surface with iridescence and does not release any Graphite powder when rubbed. It does not dirty your fingers.

CHG is a coating which is highly chemical resistant and it avoids adhesion of organic and inorganic substances on its surfaces; it is an ideal solution for any application where sticking problems may occur, such as the movement of vanes into rotors shaft slots in rotary vane pumps.

The coating can be applied to materials such as metals or polymers as well and can be deposited in conjunction of other surface treatments or heat treatments used to increase technical characteristics and performances of the material. Due to its chemical resistance, this treatment increases chemical corrosion resistance and it



is guaranteed to be resistant to chemical attack by acids of $\text{pH} = 2$ (HCl) or higher and chemical attack of basis up to $\text{pH} = 11$ (NaOH) and water ammonia solutions at ambient temperature. It is also not attacked by organic solvents.

The CHG layer is temperature resistance up to 500°C and it is deposited at ambient temperature. It is particularly suited for complex surfaces with critical undercuts or deep holes.

- The technology for producing CHG is ecological and does not use polluting chemical products.
- The coating process occurs at ambient temperature.

MAIN FEATURES

Increases corrosion resistance	No Carbon powder release
Anti-bacterial	Working temperature up to 500°C
Anti-sticking	Ideal for complex geometry like Graphite Cartridges for vane pumps
Anti-limescale	Suitable for contact with food in accordance to NSF-51 standard
No size variation	Suitable for use with ammonia-water solutions
Does not dirty your fingers	

TECHNICAL PROPERTIES and CHARACTERISTICS

AVOIDS ADHESION

CHC increases the life of treated parts because of its very low friction coefficient. It eliminates or dramatically reduces the need to use chemical products or mechanical methods to remove surface encrustations.

I.E. for vanes inside rotor slots of the vane pumps, it is excellent where there is a risk of limescale deposits due to the 'hardness' of the water

CORROSION RESISTANCE (ASTM8117/97)

It can be used to increase the corrosion resistance of INOX Steel, Aluminium and Brass. Corrosion tests performed for over 200 hours in a salt water mist obtained performances which were about 5 to 10 times higher.

Excellent resistance to chemical attack by acids of pH = 2 (HCl) or higher and chemical attack of basis up to pH = 11 (NaOH) and water ammonia solutions at ambient temperature. It is also not attacked by organic solvents.

FOOD CONTACT (NSF-51):

NSF-51 certified and suitable for direct food contact.

BENDING RESISTANCE (ASTMD522)

Even though the treatment increase the surface hardness (about 500Hv) it allows the treated material to show:

- good resistance to bending leading to 180° ("T" bends);
- good resistance to impact (ASTM 2794).

These properties are due to the high adhesion at the atomic level between surface and CHG treatment.

CHEMICAL RESISTANCE

Increases chemical resistance to solvents, acids, basis and additives utilised at ambient temperature within the critical Ph values.

TECHNICAL INFORMATION

Max working temperature	up to 550°C.
UV resistance	excellent.
Resistance to boiling water	excellent.
Thickness	less than 1 micron
Hardness (ASTM E18-11)	About 500Hv