

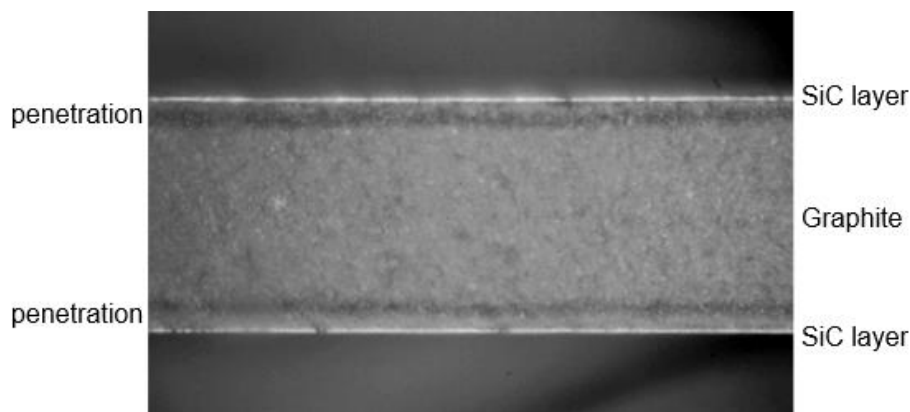
Blog 1, Coating Adhesion

Thermic Edge Coatings (TEC) deposits a high purity silicon carbide coating on various materials. The cubic, SiC^3 , coating has excellent corrosion protective properties at low, medium and high temperature. Typically the coating finds application in semiconductor industry, LED and solar production and aerospace. Materials coated are graphite, carbon composites, various ceramics and refractory metals.

The coating can only protect the underlying material effectively when the coating covers all areas visible to the environment, when it adheres well to the material and does not crack after the coating process.

A well adhering coating is therefore essential and the process carried out by TEC accomplishes this on various materials. The process is carried out at high temperature using ultrapure gases amongst which hydrogen which cleans the surface by removing oxides and other contaminants which might hinder good adhesion. During the initial stages of the process there is a trade-off between deposition and etching which further cleans the interface between underlying material and coating.

And of course in many applications graphite is used as the underlying material which has a high porosity. The TEC process penetrates the pores in the graphite very well and gives it a further enhancement for the adhesion. This is very well demonstrated in the figure below.



The adherence is measured regularly by making fracture surfaces from test plates. The method used is very destructive and would immediately show a lack of adhesion due to flaking of the coating from the area where the fracture occurs. Below are some images made by SEM which show the very good coverage of graphite and adherence to graphite.

