

Carburizing

In metallurgical processes, some surface treatments concern a very thick external layer of the materials. It is the case of carburization of steels which may affect large depth: until 5 mm.

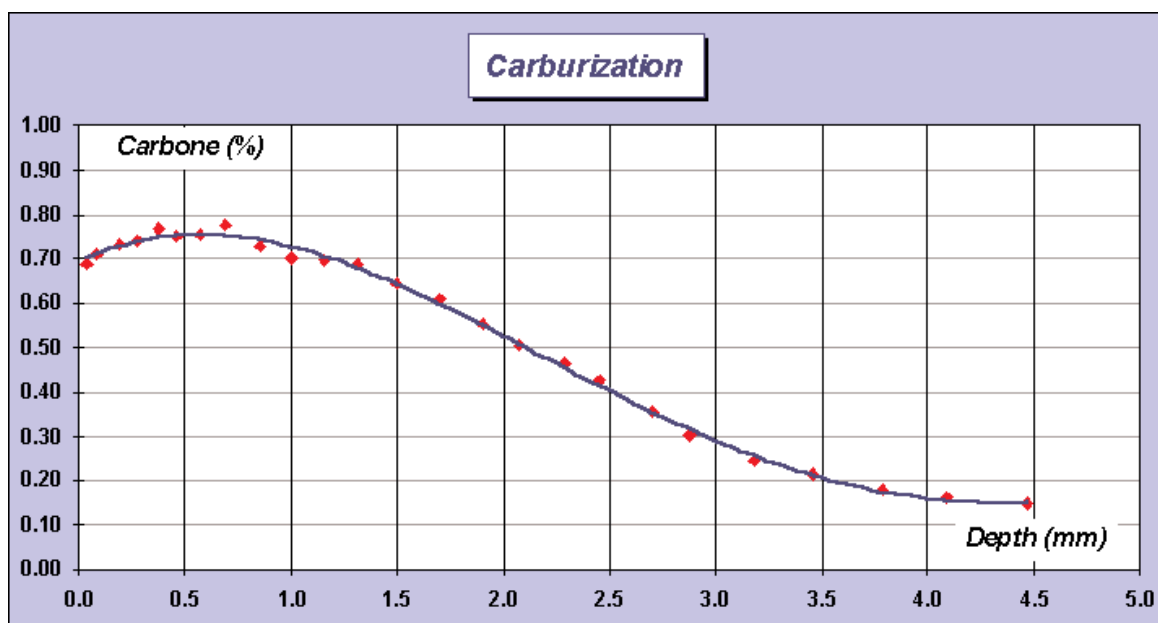
For technical arguments, the maximum depth of glow discharge craters is near by 100 μm . So, it is not possible to achieve the complete analyse in only one time.

The used protocol consists to make a first quantitative analysis on the raw material, which gives the mean concentrations of elements corresponding to the

depth of the crater (typically 10 μm). The sample is then ground in order to remove a thick layer of material (50 or 100 μm for example, exactly measured) and a new analysis is performed in the same conditions as the first one.

In this way, it is possible to get the concentrations step by step.

The incoming diagram shows an example of the results (concentration after each grinding) collected in case of a steel carburization.



In order to obtain a better definition of the curve, the thickness of grinding is lower in the external part of the sample.

Additionally, a surface analysis is generally performed on the raw material.

As the use of a polychromator allows to get simultaneously a lot of elements, this kind of analysis is often used to get at the same time the elements C and N (carbonitration processes).

www.jobinyvon.com

