

Technical recommendations Borocoat®-diffusion coatings



1. The procedure

The Borocoat®-diffusion coatings are generated by use of a thermo-chemical process according to the Borodur®-procedure. By diffusing boron into the surface an extremely hard layer, which is firmly fixed to the substrate, is formed.

The partial treatment, even where complicated contours are concerned, is possible without difficulty.

2. Materials

It is possible to treat almost any kind of steel types, nickel-based or cobalt-based alloys as well as hard metals.

3. Requirements on parts which are to be boronized

When inquiring about boronizing it is essential that an enclosed drawing of the part shows which area needs to be boronized and if applicable which area(s) is/ are not allowed to be treated. The client is responsible for supplying this information and any information concerning further heat-treatments.

As a follow-up treatment of the hard boride layer is hardly possible (except for polishing), only fully-machined parts are boronized, distortion-sensitive parts should undergo a stress relief annealing treatment **before** the final treatment.

As the boronizing procedure increases the layer thickness by approximately 25 %, the boronized parts , if applicable, must be manufactured with undersize.

The Borodur® treatment is a heat treatment with increased temperatures.

It may be necessary to modulate the required properties of a construction part by an additional heat treatment e. g. hardening, quench and tempering, precipitation hardening etc.

Hardened parts can be boronized, yet due to the increased treatment temperature, the hardness-effect disappears. Certain parts can be hardened in vacuum after boronizing.

Polished, turned and honed parts made of austenitic materials (V2A, V4A, nickel-based alloys etc.) should be electrically polished before boronizing as these materials tend to develop an imperfect surface. This smeared layer can cause unwanted damages to the surface.

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Previously nitrided or otherwise coated surfaces are inappropriate to boronize. If applicable, clarification is necessary.

4. Product feature

The achieved layer hardness and diffusion depth depends on the material alloy.

Set points on drawings, specifications, orders and other documents concerning the boride-layer thickness and surface hardness are therefore only conditionally accomplishable and should be tested beforehand by the client in case of doubt.

During boronizing, a uniform diffusion layer is formed on the part. Bore holes and gaps can be treated without difficulty.

5. Conditions of delivery

Component units must be disassembled into individual parts before delivery to BorTec.

In order to prevent transport damages, all parts must be packed in a solid packing.

The parts must be delivered with a suitable anticorrosive coating.

6. Data, documents and information to be included

It is inevitable to include order, delivery note, containing amount, description, material, drawing with information on the functional surface, that should be boronized, drawing no., draft and order no.

Treatment relevant specifications for documentation obligatory fields of application as in the aerospace and automobile industry.