

**ALDOX-P**  
HEAT TREATMENT BY HÄRTHA

**HÄRTHA**  
HARDENING INDUSTRIES

**MODIFIED NITROCARBURISING WITH SUBSEQUENT  
OXIDATION, INTERMEDIATE PROCESSING AND  
RENEWED OXIDATION**

## **CORROSION RESISTANCE OF ALDOX-P**

Corrosion resistance depends on factors such as material, roughness, contamination of the surface and component geometry. For many materials, the standard requirement for corrosion resistance, (Salt spray tests DIN EN ISO 9227 NSS: 2017-07) is exceeded. On the component surface is a 1µm to 3µm thick, dense oxide layer, which consists of iron oxide Fe<sub>3</sub>O<sub>4</sub>. The combination of the nitriding layer (white layer) and oxide layer determines the improvement of corrosion resistance.

## **DEFORMATION AND SIZE CHANGE OF ALDOX-P**

The dimensional changes are smaller than in the conventional surface hardening methods such as carburising or carbonitriding, but can be influenced by the formation of the white layer. For previous production, the dimensional change can be taken into account accordingly.

## **ALDOX-P IN AN OVERVIEW**

- All kinds of steel from low carbon till tool steel
- Reproducible oxide and nitriding layer
- High dimensional stability
- Dark grey till black color
- Less increase of the surface roughness

## **PROCESSPARAMETERS OF ALDOX-P**

- Process pressure
- Process gas composition NH<sub>3</sub>, N<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O
- Flow rate
- Treatment time
- Process temperature

## **ABOUT ALDOX-P**

The ALDOX-P process developed by HÄRTHA – Aldenhoven GmbH is a modified nitrocarburising process followed by oxidation, interim machining and another round of oxidation. Excellent corrosion protection, high-quality friction and gliding properties, increased surface hardness as well as improved fatigue strength are what make ALDOX-P stand out and guarantee its use in the automotive industry as well as the fields of machine and system engineering.

In addition to this, the ALDOX processes are an environmentally friendly alternative to the usual corrosion protection processes such as nickel plating / chrome plating and so on, and also to the conventional salt bath nitriding process. The level of the achievable resistance depends on various factors, which is why we recommend a corresponding series of tests beforehand.

## **GOAL OF ALDOX-P**

- Elevated corrosion resistance
- Elevation of wear resistance
- Improvement of the mechanical and dynamical characteristics

## **APPLICATION OF ALDOX-P**

Both individual and series parts can be treated with ALDOX-P. A big variation of material grades can be treated, including unalloyed structural steels, tempering steel, carburising steel and nitriding steels. Areas of Application include the automotive industries, the engineering and installation industries and also the hydraulic industries.

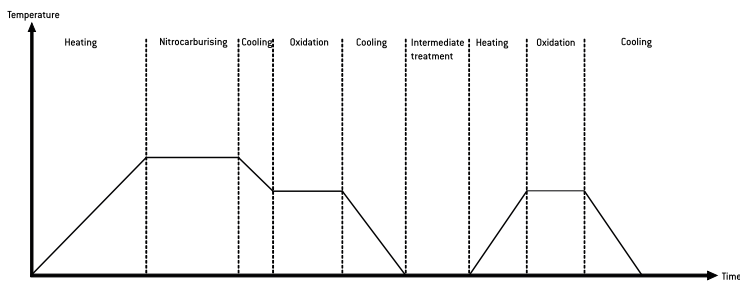
## **COLOR OF ALDOX-P**

Dark Gray till Black.

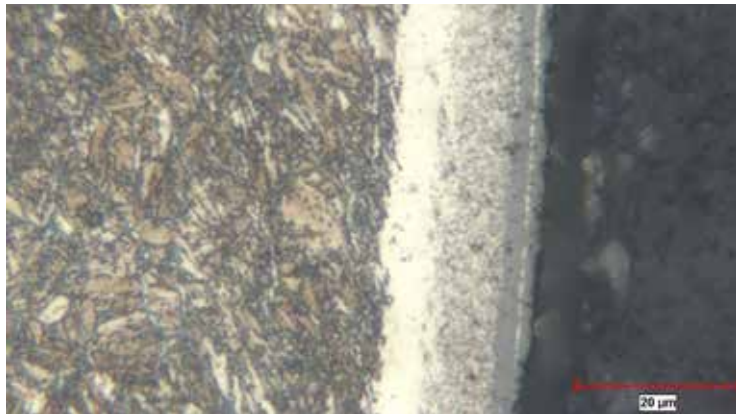




## PROCESS FLOW OF ALDOX-P



## EXAMPLE LAYERING ALDOX-P



[STEELGRADE 1.7225]



## MORE INFORMATIONEN REGARDING TO ALDOX-P

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