



# Annealing

## **Process description:**

### Stress-relief annealing

Stress-relief annealing is a heat treatment in an inert gas atmosphere whereby mechanical and thermal stress (residual stress) and stiffening are reduced without considerable structural changes.

### Soft annealing and spheroidising

Soft annealing and spheroidising are heat treatments in an inert gas atmosphere with the objective of moulding carbides and reducing hardness. With this annealing treatment, the machinability and the (cold) formability are improved. With this treatment, the structure is optimally prepared for further heat treatment (hardening).

## **This is used in the following sectors:**

→ Mechanical engineering, tool manufacturing, welding constructions, etc.

## **Materials:**

- Metallic materials (aluminium alloys, copper and copper alloys, brass, titanium, titanium alloys, etc.)
- Typical construction materials with the exception of corrosion-resistant steels

## **Key characteristics:**

- Residual stresses are reduced
- Hardness is reduced
- Special annealing methods on request
- No substantial structural change

## **What are the primary uses of these processes:**

### Stress-relief annealing

- Components with high dimensional requirements
- Components which have undergone extensive machining

### Soft annealing and spheroidising

- Components made of materials which are difficult-to-machine (high strength, high purity)
- Cold-formed parts

## **Dimensions:**

- Shaft system: Ø 800 mm x 2,000 mm

## **Cycle duration:**

- On request

## **Process specification:**

- In an inert gas atmosphere, temperature and retention time depend on material and geometry



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## **Outline of process:**

### Stress-relief annealing

- Fine machining of the component
- Annealing (possibly case hardening, nitriding according to customer requirements)
- Grinding operations (if needed)

### Soft annealing and spheroidising

- Coarse processing of the component

## **Ideal surface condition before treatment for best results:**

- Free of cinder
- Free from grease, oils, processing aids or drawing and casting marks
- No corrosion
- Clean cooling channels
- No erosion layer

## **Necessary information:**

- Material and material dimensions
- Target properties of the finished component (hardness, layer thickness, nitriding or case hardening depth, etc.)

## **Contact:**

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