

# Forging

## TOOLOX 44 for Brass forging die



### **Function**

Pressing of brass door handles.

### **Previous steel solution**

Different steel grades were used for the application; W.Nr 1.2343/1.2344/1.2365.

### **Manufacturing**

The die manufacturer experienced some problems during drilling. No similar problems reported during milling. Significant reductions in mould manufacturing time as heat treatment could be eliminated.

### **Experience**

The brass handles are pressed in one stroke at 730-750°C. After each stroke the die is cooled to 150-200°C and excess material is removed.

Surprisingly, the end user has reported that the die does not oxidise was the case with the tool steels previously used. The TOOLOX 44 surface remains in the original polished shape. Due to this, the finished pieces do not stick on to the die surface. The need for maintenance is thereby reduced improving both quality and volumes of the components produced. The die manufacturer has after these initial results ordered TOOLOX 44 for a large series of dies.

### **Contact person**

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## Steel hot forging die in TOOLOX 44



### Function

The chain link is used in high-quality ship and offshore steel chains. One chain can have thousands of links. TOOLOX 44 is used in a hot forging die in the chain production. The chain steel is heated to around 890°C before forging. Thereby the die works continuously at an estimated temperature of 400-500°C. Sometimes as long as several months without any interruptions. The forces which act on the die are small, approximately 1-2 tons.

### Chain material

Steel grade W.Nr 1.7218

### Previous die steel solution

Before TOOLOX 44, different steels were tested. The best result was obtained using W.Nr 1.2343/1.2344. The die was manufactured in soft annealed condition, thereafter heat treated to 45 HRC. Typical die life time was around 10,000-11,000 forging strokes. The end failure was, typically, surface cracks.

### Manufacturing

Using the SSAB recommendations, there were no problems with machining of TOOLOX 44. No surface engineering was carried out.

### Experience

The first TOOLOX 44 die went into service around 2002. That die has been used in approximately 50,000 strokes and, after refurbishing, still works well. The customer makes, since then introduction of TOOLOX 44, this new grade in all their forging dies. Up till today totally 10-12 tools. Besides the enhanced life time, another advantage using TOOLOX 44 is that a worn die can easily be re-used in a die with smaller dimensions.

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