

RESULTS OF METALLIC COATINGS IN METAL CUTTING AND FORMING

EXCELLENT HARDNESS AND LUBRICATION

Drawing Die	
Tool - 1.2379	Metal Sheet- ST 37

Without coating the drawing die fails after approximately 50.000 parts due to pick-up.

A TiN coated die lasts for approximately 100.000 parts, a CrN coated die lasts for approximately 150.000 parts, with a greased metal sheet.

With a duplex coating of Metallic the drawing die was able to draw more than 750.000 parts. The biggest advantage next to the increased endurance is processing without lubricants.

This does not only reduce tool cost, but also cost for lubricants and cleaning as well as reduction of waste disposal cost.

Drawing Die	
Tool - 1.2379	Deep Drawn Pot ø75mm
Wall thickness - 2mm	Height - 70mm

Without coating 10.000 parts were manufactured and the tool had to be overhauled. Maximum endurance of the tool was 40.000 parts.

Due to the duplex coating of Metallic the tool has manufactured 200.000 parts to date. No wear on the tool was noticed. The use of drawing compounds was reduced to "zero".

Drawing Die for Processing Stainless Steel	
Tool - 1.2379	3mm Metal Sheet - 1.4301

Problem was the short endurance of the tool. After approximately 100 parts (6 parts/min.) the tool was dismantled and polished because the part could no longer be ejected.

Punching Dies to break down profiles	
Punch - 1.2436	Profile - ST37

With TiN coating approximately 1.000 punches.

With CrN coating approximately 3.000 punches.

After coating with Metallic it was not necessary to clean weekly due to a considerable smaller film build-up.

After polished and coated with Metallic no further problems occurred and the tool works without lubricants for 10 months.

Punchin Draw Dies	
Drawing die, drawing punch and holding down device - 1.2379	3.5mm metal sheet 40mm deep

Without coating the tool was dismantled after approximately 30.000 parts and completely overhauled (resink die and polish drawing die).

With Metallic coating approximately 130.000 parts were manufactured without using drawing compounds.

Mould Cores
Processing of Polycarbonate (drawer for refrigerator)

Requirement was removal of the drawer without coning. For every shot a release agent was sprayed on; after every 25-30 parts the film was so thick that the parts could not be ejected and tool needed to be polished.

After Metallic coating the removal of the part from the mould is simpler with less use of release agents.

There was also a reduction in scratching the mould because the removal force was reduced and it was no longer necessary to strip by hand.