

# NEUBURG SILICEOUS EARTH IN DIE PLATING

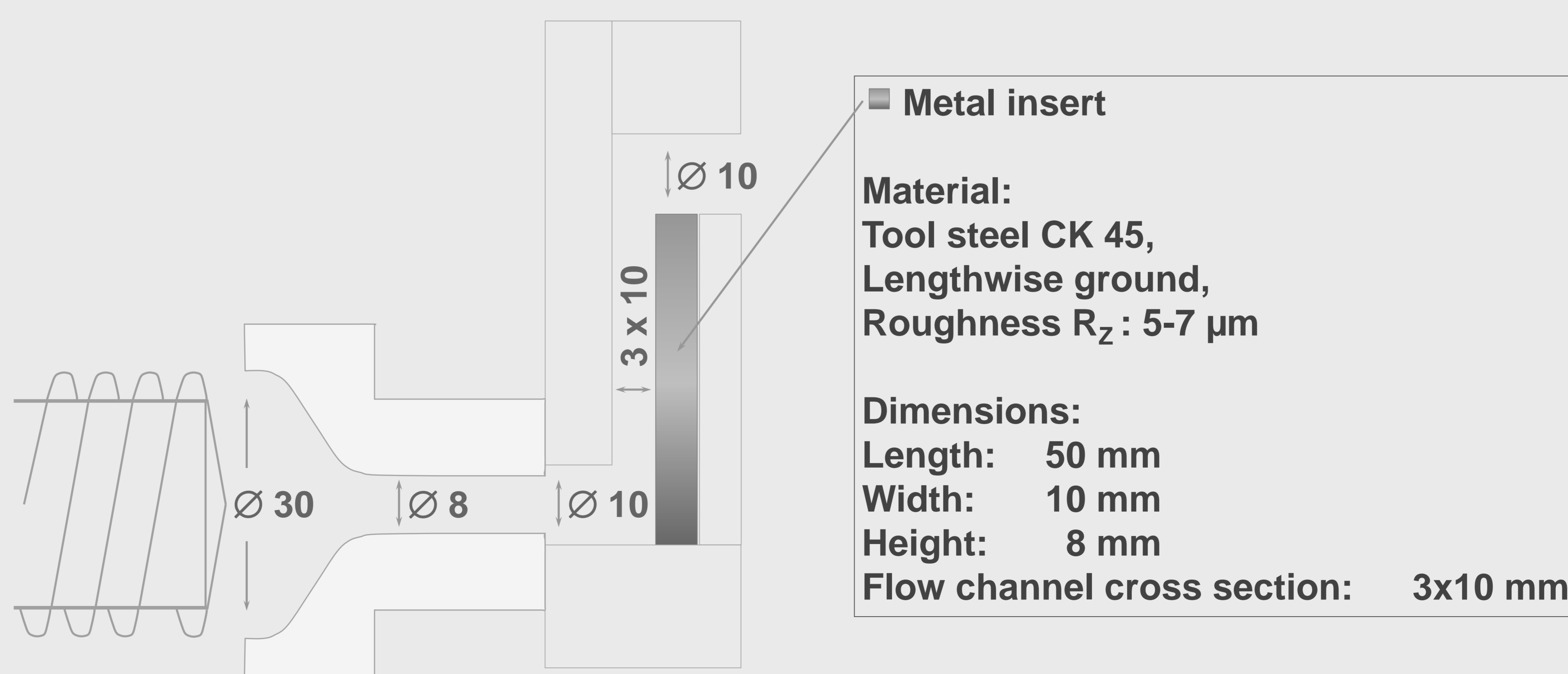
## FORMULATION

	in phr
EPDM Rubber	100
Mineral Filler	50
Carbon Black N 550	90
Paraffin Oil (plasticizer)	75

## EXPERIMENTAL PARAMETERS




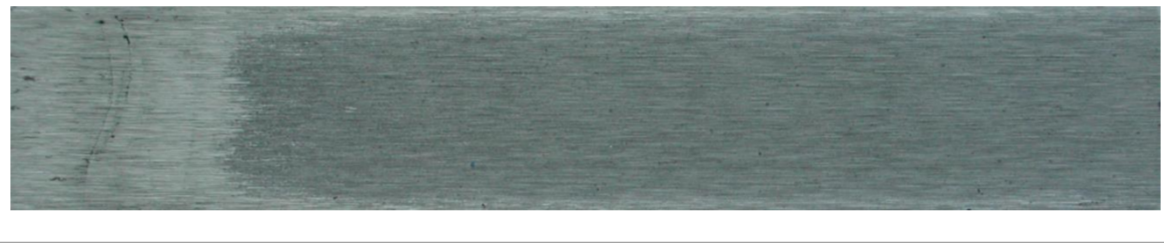



Extruder		Schwabenthan Polytest 30 R
Screw diameter	mm	30
Process length	mm	450
Temperature set point head / zone 1 / zone 2	°C	60 / 60 / 60
Cooling (zone 1 and 2)		¼ turn open
Screw speed	rpm	100
Die-plating measuring device		see drawing
Measuring channel l x w x h	mm	50 x 10 x 3
Metal insert material		Tool steel CK 45, lengthwise ground
Metal insert roughness R <sub>z</sub> (across the flow direction)	µm	5-7
Feed strips	mm	30 x 6

## MEASURING DEVICE

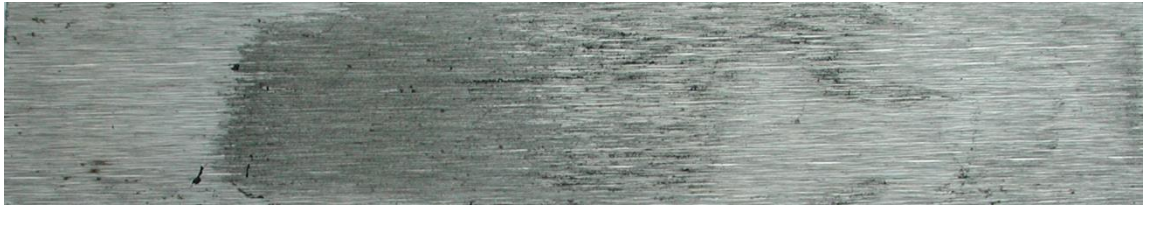
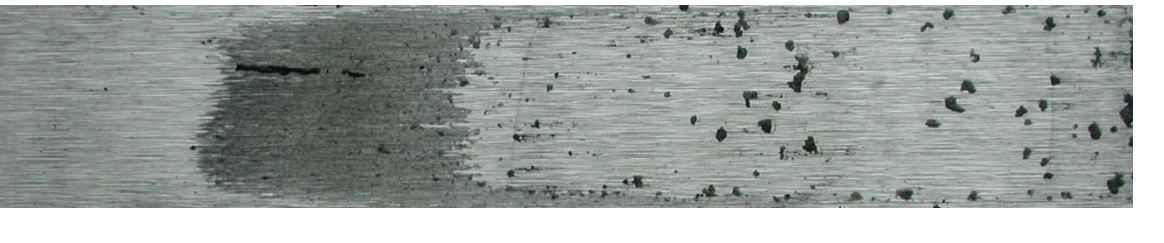




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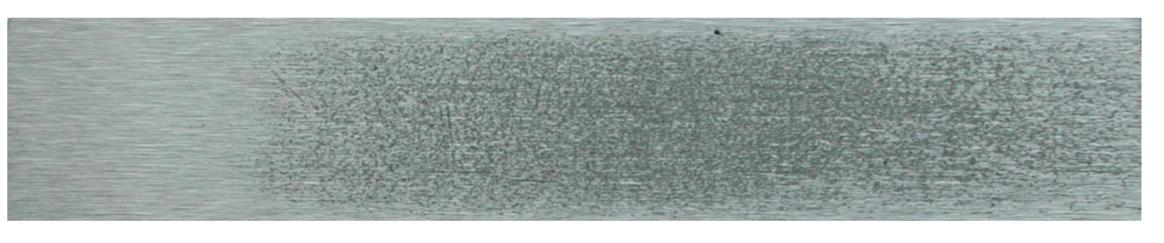



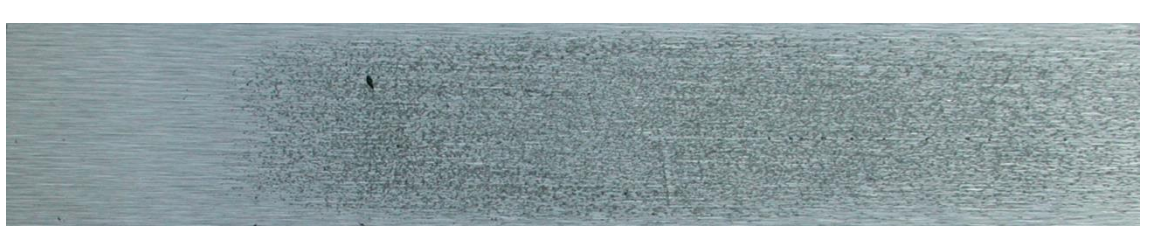


## EFFECT OF PROCESS PARAMETERS

Insert Surface	control	surface modified fluoroalkyl silane	surface polished
			
Extrusion Throughput	500 g/min.		50 g/min.
			
Extruder Head Temperature	60 °C		100 °C
			

## EFFECT OF THE USED EPDM-TYPE

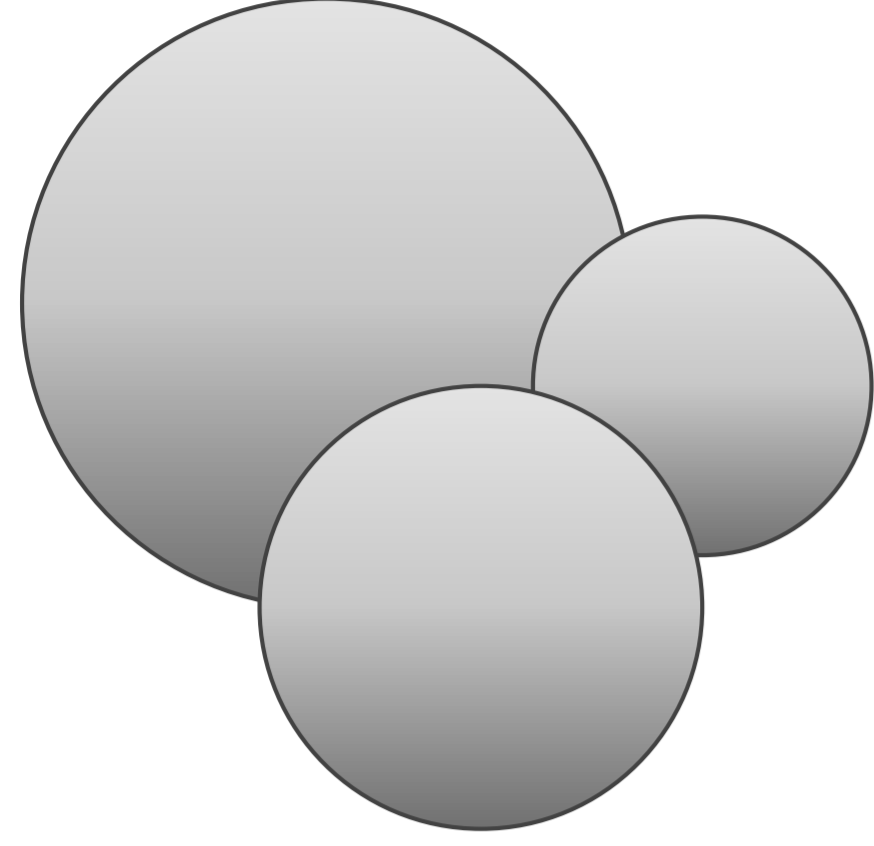



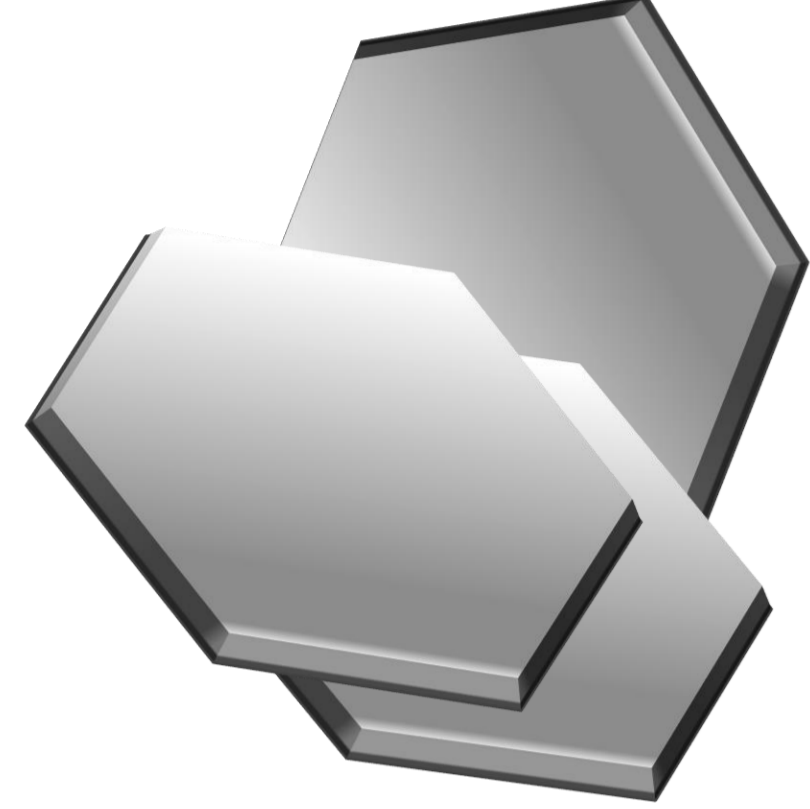

high viscosity bimodal MWD	high viscosity medium broad MWD	medium high viscosity broad MWD	low viscosity narrow MWD
			

## EFFECT OF ADDITIVES



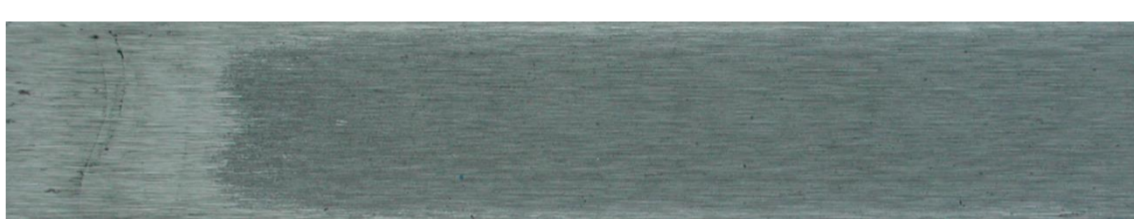
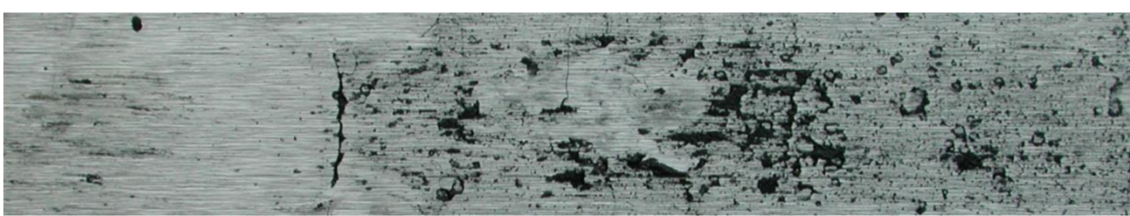

<b>Promoting die plating (5 phr additive)</b>			
control	stearic amide	polyethylene glycol	(2 phr) diethylene glycol
			
<b>Reduction of die plating (5 phr additive)</b>			
control	calcium stearate + 2 phr stearic acid	zinc stearate	silicone oil
			
<b>Selected additives</b>			
control	2.5 phr zinc oleate	5 phr lauric phosphate ester	2.67 phr lauric phosphate ester + 2.33 phr TEA
			

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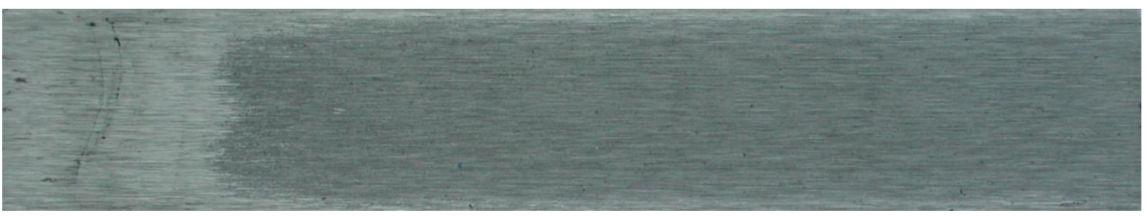

## EFFECT OF THE FILLER'S BASIC PARTICLE SHAPE

	spherical (corpuscular)	predominantly corpuscular <b>Whiting</b>	 <b>Sillitin Z 86</b> combination of corpuscular and lamellar 
			
	platelike (lamellar)		
		Talc lamellar	

## EFFECT OF THE FILLER'S PARTICLE SIZE

finer  coarser	Talc 1	<b>Sillitin Z 86</b>
		
		
	Talc 2	<b>Sillitin V 85</b>

## AVOIDING FILLER CAUSED DEPOSITS BY HEAT TREATMENT OF THE FILLER

corpuscular and lamellar portions	lamellar portions aggregated by heat treatment
	
<b>Sillitin Z 86</b>	<b>Silfit Z 91</b> Calcined Neuburg Siliceous Earth