

# Metalcoating – metal without the machining

Ideas  
to touch



You'd be surprised, what we do with your ideas.



## Description

Metalcoating is a newly developed coating process by Alphaform. It is now part of our product portfolio. By applying a defined coat of a copper and nickel composite, the assembly parts of any plastic can be substantially altered and improved. The metal coating layers present homogenous coatings in all areas even in complex structures. Before the assembly parts are produced, the required metal coating layers which are needed for strengthening are evaluated. The part is then scaled to the selected coating thickness to guarantee accuracy to size.

## Product Advantages

- Extremely high adjustable stiffness
- Elimination of flow properties
- Electric conductivity/EMV screen
- Very high temperature resistance
- Die casting substitute Mg, Al
- Metallic optic for highly demanding design products
- Utilisation in aggressive media as well as in abrasive and corrosive environments
- Realisation of any further material properties

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# Kundennutzen

Verfahren	Nachteil	Vorteil
Metalcoating	Keine Serienfertigung	Schnelle Verfügbarkeit, dünnwandige Bauteilgeometrien kombiniert mit hoher Detaildarstellung, vgl. mechanische Eigenschaften zum Serienwerkstoff, sehr hoher Freiheitsgrad
Feinguß	Zeitaufwendige, mäßige Toleranzen, dünnwandige Bauteile schwierig	Gute Materialeigenschaften, sehr hoher Freiheitsgrad
Rapid Tooling	Sehr teuer, zeitaufwendig	Vollständiger Lösungsweg
Metal Laser Sintering	Schlechte Detaildarstellung, keine dünnwandigen Bauteilgeometrien	Gute Materialeigenschaften
CNC Bearbeitung	Sehr teuer, beschränkter Freiheitsgrad	Sehr genau

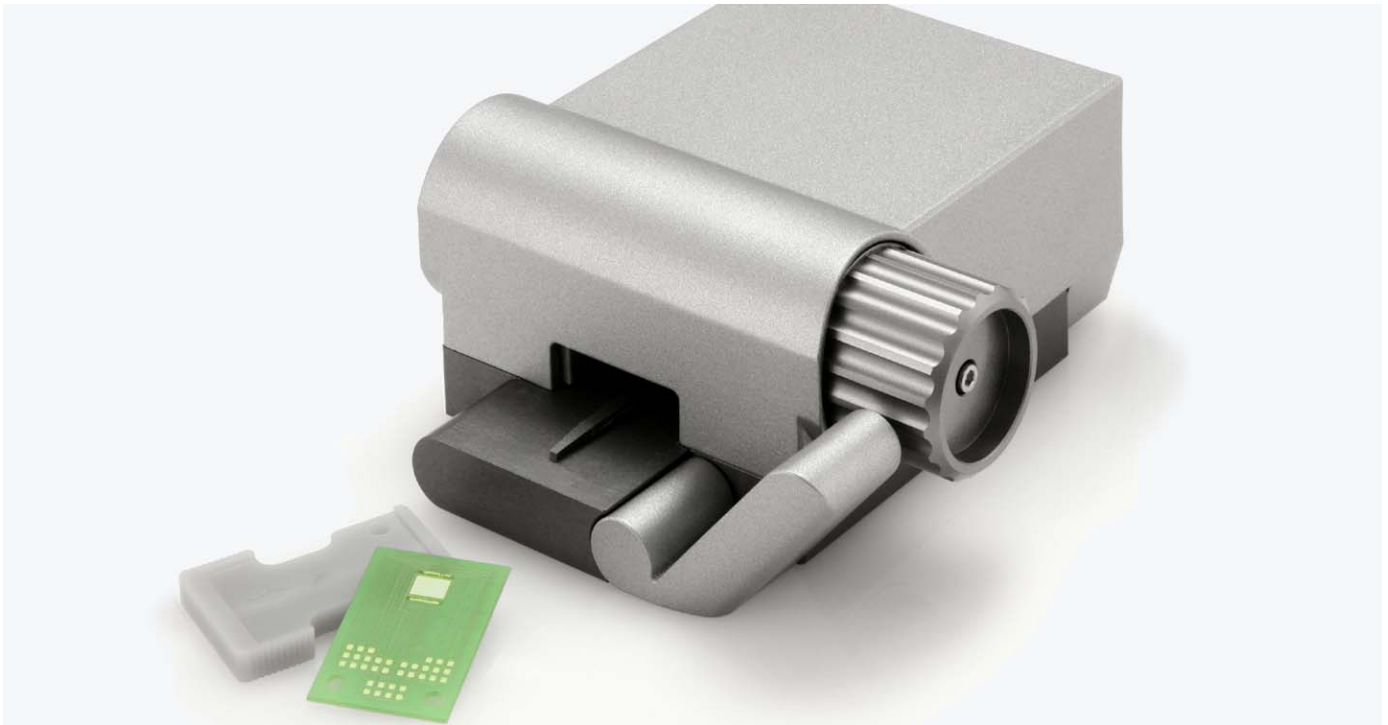
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# Metal Properties

## Mechanical properties

ASTM	Description	Metalcoating			Diecast Aluminium	Proto Tool 20L (base material)	Water Shed 11 120
		10% metal-volume	20% metal-volume	30% metal-volume			
D638M	Tensile Strength (Mpa)	100	145	200	300	78	47-53
	Elongation at break (%)	0.9	1.04	1	2-5	1.3	11-20
	Mod. of Elasticity (Mpa)	21.000	31.000	42.000	70.000	10.100	2.700
D790M	Flexural Strength (Mpa)	300	420	600	–	123	70
D648-98c	Flexural Modulus (Mpa)	28.000	44.000	54.000	–	9.510	2.150
	HDT@.46Mpa (°C)	–	–	–	–	269	50
	Density g/cm3	2.33	3.06	3.79	2.7	1.6	1.2

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## Case Study

# Device for electrical biological chips

3 parts from Stereolithography in combination with Metalcoating.  
Combined with milled construction parts.

Piece number: 5

### **Product benefits**

- Shielding of electromagnetic fields
- Freedom for functional and optically fastidious design
- No drawings necessary for the manufacturing
- Saving of individual parts
- Production „on demand“
- Time and cost saving in relation to conventional manufacture: 50 %

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## Case Study

# Wind tunnel Racing

Stereolithography with Metalcoating-surface

Piece number: 1

### **Produktvorteile**

- Sehr hohe Steifigkeit
- Excellente Oberfläche
- Umsetzung komplexer Freiformen

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