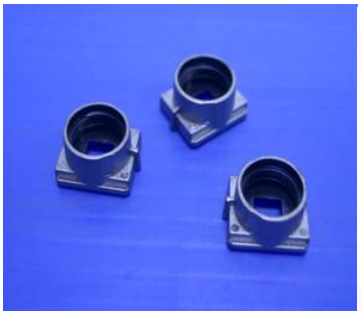
Max-Plate Physical Vapor Deposition

CREASHIELD


Description:

Electromagnetic shielding is one of the most important measures and must be ensured especially for plastic cases which are increasingly used. Consequently, it is imperative necessary to have a cost-saving metallization of plastic cases and coverings for electric and electronic devices which is also compatible with the environment. Vapour deposition of shielding layers by vacuum technology meets these requirements and is an innovative future-oriented technology.

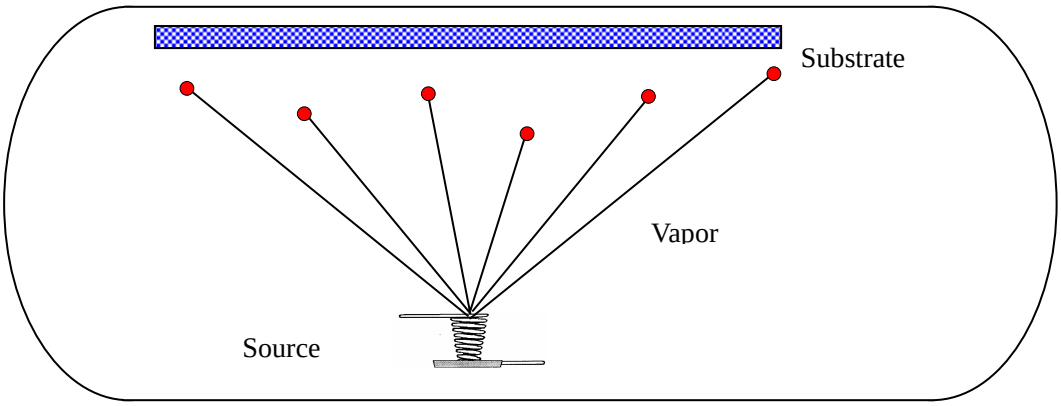
The vacuum vapor deposition plant CREAMET EMI is preferably intended for metallization of plastic cases by vacuum technology. CREASHIELD is the technology invented by CREAVAC GmbH by using CREAMET 1201 coating equipment, and TennVac is a joint venture by CREAVAC in Taiwan and China who is authorized to use the technology for EMI Shielding industry.

Introduction:

Metallization is understood as the process where a metallic layer is deposited on a non-metallic (plastics, glass, ceramics, paper, cardboard) or metallic substrate. The aim is to improve the usefulness of a product by coating (surface refinement)

The metallization by vacuum technology uses the condensation of a metal vapor on the object to be coated. This vapor is generated within vacuum, and diffuses within vacuum. The thickness of the metallic layer is between some 10 nm and some micrometers.

1. Principle:



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2. Characteristics

Plastic Selection

Common Plastics	Max. Temperature °C		Coating Behaviour		
	Short	Long	Good	Moderate	Fair
ABS	95	85	✓		
ABS/PC	110	95		✓	
PA-66	190	120	✓		
PBT	165	100	✓		
PC	150	130		✓	
PEEK	240	240		✓	
PEI	200	180	✓		
PES	190	190		✓	
PET	200	100	✓		
PI (Polyimide)				✓	
PMMA	95	85		✓	
PP	140	100		✓	
PPA	185	180	✓		
PTFE (Teflon)	300	250		✓	
PVC	75	65	✓		

Metal Selection:

Metals	Cu/Ni-Cr	Cu/Ni-Cr/Sn	Cu/SS	Al	Al/CVD	Ni-Cr
Applications	General plastic enclosures	Antenna	Camera Lens Mount	Automotive	Stringent Applications	Heater
Products	Mobile Devices, FPC, GPS	Mobile Devices	Mobile Phone, Broad Band	GPS, Display	Automotive, Samsung	Copier
Thickness	2 µ	>3.0 µ	2 µ	2 µ	2 µ	< 1 µ
Features	General	Solderable	Finger Print Resistance	General	Salt spray resistance	Precision Resistivity
Cost	Low	High	Moderate	Low	Moderate	High

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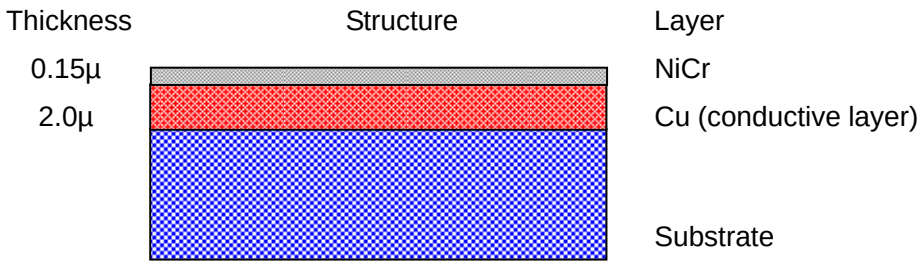
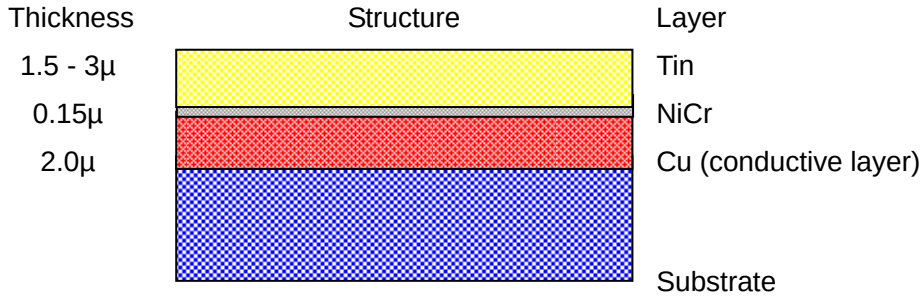
3. Coating Structures:





4. Shielding Effectiveness of Cu and Al:

Layer Material	Specific Electrical Resistance µΩcm	Layer Thickness µm	Sheet Resistance mΩ	Shielding Effectiveness dB	
Copper	1.7	1.0	17	100 MHz	75
				1 GHz	81
Copper	1.7	2.0	8.5	100 MHz	82
				1 GHz	87
aluminum	2.7	2.0	27	100 MHz	77
				1 GHz	83
aluminum	2.7	3.5	13.5	100 MHz	82
				1 GHz	88

5. Quality Parameters:

Test Item	Test	Test Condition
Adhesion	Tape peeling test, including temperature cycle test	Per ASTM D3359-93 & UL746C
	Temperature and humidity test	60 °C/95 %RH/1 week
Electrical Resistance	Electrical resistance between two points	Mostly < 0,5 Ω or < 1 Ω
	Surface resistance	< 25 m Ω

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