Polytec PT
Polymere Technologien

Product Information Sheet

Polytec PT Test Inks

Description

Preparation of the substrate surfaces prior to adhesive bonding is mandatory step of the bonding or coating process! All substrate surfaces must be thoroughly cleaned and degreased. It is strongly recommended to run a simple wettability test prior to applying any adhesive, coating or paint on your substrates!
Using Polytec PT test inks (with defined surface energy) is a very decent and quick method to evaluate the surface tension (surface energy) of your substrates. It is a very easy-to-use tool for surface determination for quality assurance and production to determine whether the surface has to be pre-treated or not.

For this purpose Polytec PT offers 8 different test inks which cover the range from 25 mN/m - 66 mN/m.

Polytec PT Item	Surface Energy	Recommendations
PTT 25	25 mN/m	For highly hydrophobic surfaces, such like polyolefins, PE,PP, PTFE
PTT 38 **PTT 40** PTT 42 PTT 44 PTT 48 PTT 54	38 mN/m 40 mN/m 42 mN/m 44 mN/m 48 mN/m 54 mN/m	The 38 mN/m to 54 mN/m test inks are designed for a more precise adjustment of the surface energy on glass, ceramics, metals and most plastics. Polytec PTT 40 is the most recommended test ink for a first-time test to determine surface energy on a wide range of materials. It is the ideal ink if you are going to apply epoxy and polyimide adhesives. The 40mN/m surface energy fits very well to the surface energy of typical epoxy and polyimide adhesives and coatings.
PTT 66	66 mN/m	For all substrates which have a very high surface energy, mainly hydrophilic surfaces such as chromated or phosphated metals.

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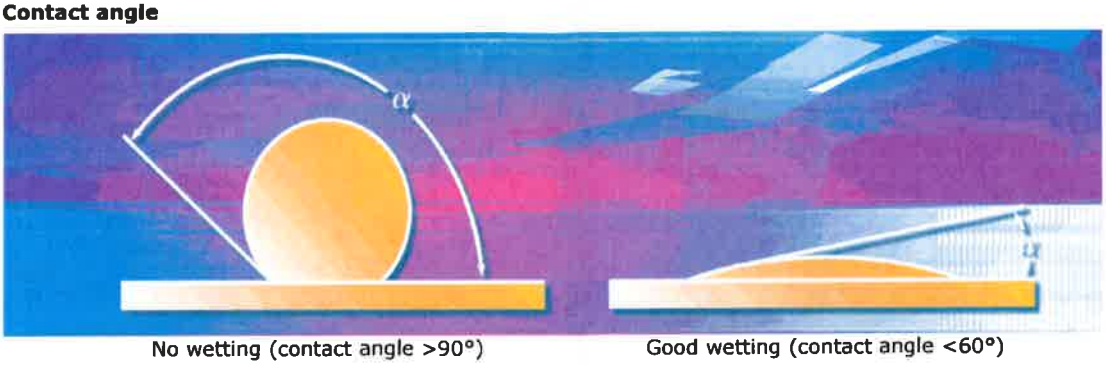
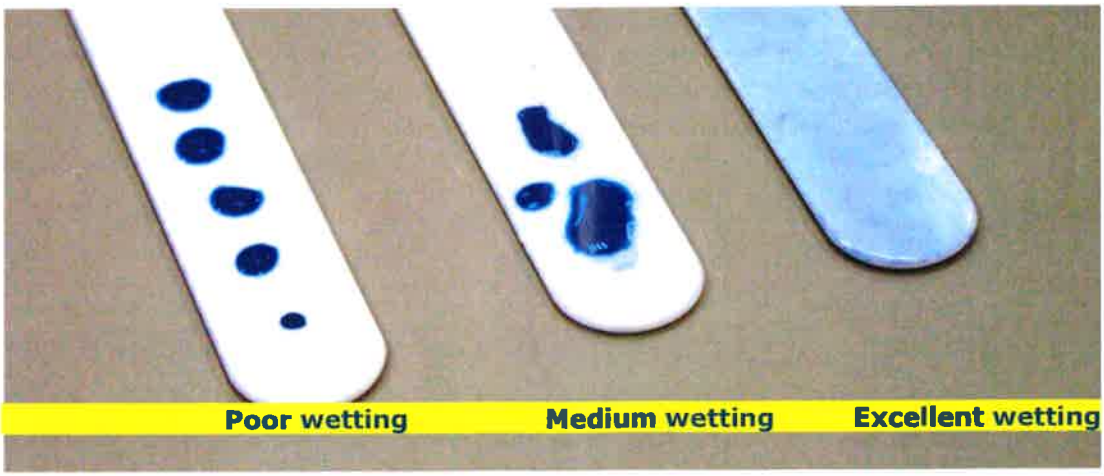
Application of Polytec PT Test Inks

A drop of the Polytec PT test ink is applied to the surface by the dropper. It should be tested prior and after pre-treatment to evaluate the effects regarding surface energy and wetting on the substrate. Please watch the drops for a view seconds and compare the shape of the drops to the following pictures:

Contact angle



No wetting (contact angle >90°) Good wetting (contact angle <60°)



If the wetting of the polymer is insufficient, a surface pre-treatment (mechanical, chemical or physical) is inevitable.

Delivery form

Polytec PT test inks are available in 10ml dropper bottles (also see price list)

Storage

Pot life at room temperature is 1 year

Please note the MSDS for Polytec PT test inks and work safely!

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Surface Energy

Material	Abbreviation	Surface Energy [mN/m]
Polydimethyldisiloxane	PDMS (silicone)	14,1
Polytetrafluorethylene	PTFE	18 – 20
Praffin wax		19 - 25
Polypropylene	PP	29 - 32
Polyethylene	LDPE	31
Polyethylene	HDPE	33
Polystyrene	PS	33-35
Polymethylmethacrylate	PMMA	33 – 44
Polycarbonate	PC	34 - 37
Polyvinylchloride	PVC	39 - 40
Polyethylenterephtalate	PET	43
Polyamide	PA	46
Glass (soda)		47
Epoxy	ER	30 – 47
Water	H_2O	72,6
Phenol resin	Bakelite	78
Metal oxides		> 100
Glass	Pyrex	170
Lead	Pb	610
Mercury	Hg	610
Tin	Sn	710
Zinc	Zn	1020
Aluminium	Al	1200
Silver	Ag	1250
Gold	Au	1550
Copper	Cu	1850
Titanium	Ti	2050
Chrome	Cr	2400
Nickel	Ni	2450
Iron	Fe	2550
Tungsten	W	6800

All values depend essentially on the purity and cleanliness of the surface.

Water, oil, gliding agents, additives, oxidation etc. can have a strong impact on the surface energy of these materials.