P84® Polyimide Solution

Technical Information
THERMAL PROPERTIES

P84 POLYIMIDE COATING

Glass transition point: 315 °C
(TG)

Decomposition temp.: > 550 °C
(Onset)

10 % loss of weight:
in air: 525 °C
in nitrogen: 570 °C

No melting point

Limiting Oxygen Index (LOI): 38 % O₂
(ASTM D2863)
(25µ film without substrate)
CHEMICAL PROPERTIES

- Fully imidized
- Excellent chemical resistance to acids reaching to the natural side of the pH scale
- Excellent resistance to all normal organic solvents, oils and fuels
  e.g.: Nitric acid, Hydrochloric acid, Acetic acid, Formic acid, Oxalic acid,
  Ethylene glycol, Acetone, Benzene, Diglycolic methyl ether,
  Methylene glycol, Perchloroethylene, Tetrachloroethane, Toluene,
  Trichloroethylene
- Contact with caustic or base media should be avoided
- Solubility in high polar solvents such as dimethylformamide (DMF),
  N-Methylpyrrolidone (NMP)

P84 Polyimide

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P84 HT Polyimide

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TYPICAL VISCOSITY

• Solutions in DMF

Type 70: 25 % (+ 2 %) solid content in DMF
Delivery viscosity: 60 – 80 Pa. s

Type 50: 25 % (+ 2 %) solid content in DMF
Delivery viscosity: 10 – 20 Pa. s

• Solution – Grade – Granulate

Solid P84 polyimide for dissolving in NMP, DMSO, Dmac

Viscosity versus solid content in NMP
(Typical Solution-Grade-Granulate)

Solution in NMP

Available 5 – 35 % solid content in NMP
TYPICAL ELECTRICAL PROPERTIES

50µ P84 – POLYIMIDE COATING

**Dielectric strength:**
- DC: 415 V/µ
- AC (50 Hz): 280 V/µ

**Dielectric constant:**
3.5
(50 Hz, absolutely dry)

**Dissipation factor:**
0.001
(1 kHz)

**Volume resistivity:**
$10^{17} \Omega \cdot \text{cm}$

**Refractive index:**
1.68
(650 – 770 nm)

Test as per DIN 53481, DIN 53483
Dissolving procedure:

Put desired quantity of granulate into clean and dry flask or container. Add accurate volume of NMP – close the container tightly and shake immediately and continuously to avoid agglomeration. Put immediately on a roll jack and dissolve at low speed for 72 hours at room temperature.

• **Recommended solvent:** N-Methylpyrrolidone (NMP)

• **Limit of possible solid content:** appr. 30 %

• **Important note:**

Do not use high speed mixers for acceleration of dissolving process. Also don’t heat solution.

• **Drawing of roll jack:**
PROCESSING

- Application by casting, dipping, spin-coating, spraying (only low viscosity) or roller coating

- Non-compatibility with non-solvents (precipitation of polymer). Since the solvents used are hygroscopic, coagulation can also be triggered off by moisture

- Do not use mixers with high shear rate to incorporate additives like fillers

- Thermal drying without chemical reaction. Temperatures around TG will induce some crosslinking
REC. DRYING CYCLE

In DMF-solution, 2 Mil-coating (dry)

SOFTENING-TEMPERATURE

Depending on residual solvent