Euremelt
Thermoplastic Polyamide Adhesives

Technology and Applications

Polyamide-Hotmelts for Product Assembly Applications

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Content:

Difference to PA plastic materials
Advantages and limitations
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Proposals for selection of Polyamid-Hotmelts
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Polyamide-Hotmelts based on fatty dimerised acids Difference to PA plastic

- Lower viscosities
- Adhesion properties
- Lower water uptake
- Due to the “adhesive” - character:
  - Lower temperature creep resistance
  - Lower strength
  - Broad softening range

Advantages of Polyamide-Hotmelts

- Good processability
- High setting speed
- Good adhesion on a wide range of substrates
- Good adhesion strength, even at higher temperatures
- Very good low temperature flexibility
- Low water absorption
- Resistance against chemicals (especially oils and fats)
- Good electrical insulating properties

Polyamide-Hotmelt
Environmental and logistic advantages

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- Solvent free technology
- Dangerous volatile substances free technology
- Better management of scrapes and wastes
- Easy storage and long shelf life

Resistance of Polyamide-Hotmelts against chemicals, water and ageing

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Polyamides based on dimerfattyacid have an excellent resistance against oils and fats. Only strong acids and premium gasoline can attack them. The water absorption of these Polyamides is very low. The hydrophobic types do not absorb more than 1 % water, even at storage time of some weeks.

Commonly water absorption of Nylon-Polyamides like PA 6 is at around 9 % under these conditions.

Weak acids	**good**
Strong acids	**low**
Salts (NaCl, Na_2SO_4)	**very good**
Alkalis	**good**
Oils and fats	**very good**
Petrol	**very good**
Premium gasoline	**low**
Plasticizer	**good**

Comparison of Hotmelt properties

Properties	PA	EVA	aPP	PES	TPE
Softening Point (° C)	85 - 210	80 - 120	85- 160	120 - 200	70- 140
Temp. creep resistance (° C)	70 - 185	65	65 - 145	80 - 140	60- 80
Low temp. flexibility (° C)	- 45 - +5	- 20 - 0	- 30 - -15	- 20 - +10	- 40 - -20
Viscosity at 180 ° C (mPas)	500 - 200.000	3.000 - 150.000	3.000 - 80.000	30.000 - 100.000	1.000- 70.000
Chem. resistance against:					
1. acids	low	good	very good	good	good
2. bases	good	good	very good	low	good
3. Alcohols / plasticizers	limited	low	very good	good	limited
4. oils and fats	very good	low	low	very good	low
5. gasoline	good	low	low	very good	low
Storage stability (months)	36	24	24	24	24
Electr. Isolation properties	very good	very good	very good	very good	very good
Processability	good	excellent	good	good	good
Setting time	short	short	short	short	short
Adhes. strength at higher temp.	good	poor	medium	good	medium
Water absorption	medium	low	low	medium	low

Processing of Polyamide-Hotmelts

Polyamide-Hotmelts are suitable for manufacturing processes with very short cycle times.

The „setting time“ generally lies between 1 and 90 seconds, so that high processing speeds can be achieved.

For adhesive application the Polyamide resins have to be melted. This is done in special units which are charged with granulate, rods or blocks.
Powder application is being used in the textile industry.
Advanced application is from hand gun up to the computer - controlled equipment
The molten adhesive is applied intermittently or continuously through a nozzle as a spot or line.
Large areas are applied by flat-sheet extruders or by gravure roll application. Special Hotmelt extruders have been developed for the application of highly viscous Dimeracid Polyamides.
Optimal processing temperatures are determined through the flow behavior of the melted adhesive.

Polyamide-Hotmelt technologies

- **Established are 2 technologies for the formulation of Polyamide-Hotmelts:**
  - **As 100% Polyamide**
  - **As a blend with other Polyamides/polymers**

- **100 % Polyamides are manufactured tailor-made by synthesis.**
  The advantage is, that only one production step (polycondensation) is necessary.

  ➔ **Euremelt product portfolio - varies in:**
  - **Viscosity**
  - **Softening point**
  - **Bonding properties**

Polyamide-Hotmelt application / markets

- **Product Assembly**
  - *Euremelt 2130, 2137, 2138, 2140, 2840*
- **Air and Oil Filters**
  - *Euremelt 2210, 2194, 2870, 2888 (Euretek 530 Adh. Promotor for oil filters PVC plastisols)*
- **White goods – Sound deadening**
  - *Euremelt 2130*
- **Cables, Cable manufacturing, Cable connecting**
  - *Euremelt 2110, 2151*
- **Connector Potting, Overmoulding, Packaging of electrical devices**
  - *TS 03413, Euremelt 2166, 2170*
- ***Shrinkable sleeves***
  - *Euremelt 2110*
- **Textile industry, Interlinings**
  - *Euremelt 2320, 2321, 2821*
- **Technical textiles – laminate flat fabrics on to a non woven barrier fabric**
- **Wood**
  - *Euremelt 930, 2130, 1155, 1174, 1175***,**
- **Packaging**
  - *Euremelt 2095, 2096, 2840*
- **Technical laminates, interior trimmings, rear shelves, tops, carpet backings**
- **Shoes**