Hotmelt Adhesives

Solutions for Fast Processing Applications

Why use a Henkel Hotmelt Adhesive?

Hotmelt adhesives are available in solid form as granules, cubes or sticks. They are based on various raw material groups, such as ethylene vinyl acetate copolymer (EVA), polyamide (PA), polyolefin copolymer (PO).

Reactive hotmelt adhesives based on polyurethane (PU hotmelt) undergo an additional crosslinking reaction after cooling.

- Hotmelts achieve rapid initial strength
- They are applied by means of special equipment or hot melt guns

Hotmelt adhesives were developed to bond a variety of substrates, including difficult-to-bond plastics. These adhesives can handle today's toughest applications in a broad range of industries. Hotmelts are ideal for applications that require high-speed manufacturing, bonding versatility, very large gap filling, fast green strength, and minimal shrinkage.

Hotmelt adhesives offer many benefits – from open times ranging from seconds to minutes, eliminating the need for clamps or fixtures, to long-term durability and excellent resistance to moisture, chemicals, oils, and temperature extremes.

Hotmelt products are solvent-free.

Advantages: Hotmelts in General

- High manufacturing speed (short setting time)
- Process can be easily automated
- Combination of adhesives and sealants

Advantages: Polyamide Hotmelts (PA)

- Good resistance against oils
- High temperature resistance
- Good flexibility at lower temperatures

Advantages: Polyolefin Hotmelts (PO)

- Good adhesion to PP (without corona or similar pretreatment)
- Good chemical resistance against acids, alcohols
- Higher temperature resistance than EVA

Advantages: Polyurethane Hotmelts (PU)

- Low application temperature
- Long open time
- MicroEmission products available

Advantages: Pressure-Sensitive Hotmelts (PSA)

- Permanently tacky
- Self-adhesive coating
- Coating and assembly can be separated

Advantages: Ethylene Vinyl Acetate Hotmelts (EVA)

- Low viscosity
- Fast melting
- High application speed

Key factors to consider for choosing thr right product

Temperature Resistance
Different hotmelt systems cover different service temperature ranges. Temperature resistance up to +150°C can be achieved.

Adhesion to Different Substrates
There are hotmelt systems providing adhesion to polar and/or non-polar substrates. They will bond different plastics, metals, wood and paper.

Chemical Resistance
Hotmelt systems also differ with respect to chemical resistance. Products are available for use in contact with oils, cleaners and even battery acid.

Strengths
Thermoplastic hotmelts reach their final strength immediately after cooling. At elevated temperatures they soften again. In addition, they can be used as resins in hotmelt moulding processes. Polyurethane hotmelts are crosslinked with moisture to form a thermoset plastic that cannot be melted and re-shaped after it is cured.

Product Safety of Reactive Hotmelts
TECHNOMELT PUR ME (MicroEmission) is a PU hotmelt adhesive innovation. These products do not need to be labelled as hazardous material.

They contain less than 0.1% of monomeric isocyanate. This is below the limit currently specified as harmful to human health under legislation of the EU member states.

TECHNOMELT PUR ME is a new PU hotmelt adhesive product line.

Surface Preparation

Surfaces should be clean and free from grease. Corona or plasma pre-treatment will improve adhesion to plastic substrates. Metal substrates can be preheated to improve adhesion.

Equipment

Glue guns for processing sticks, cartridges or granules offer simple hand-held application solutions. A wide range of different melting units are available for semi- or fully automated production environments. Drum unloaders and adhesive extruders are recommended for very high-volume applications. Roller coaters are suitable for applying hotmelt coatings.

Equipment cleaning

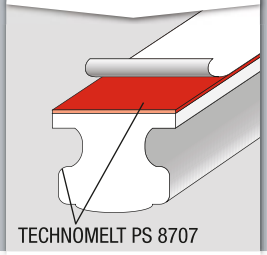
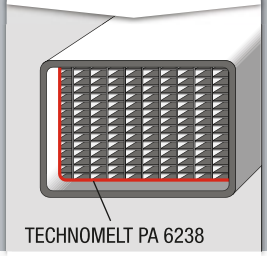
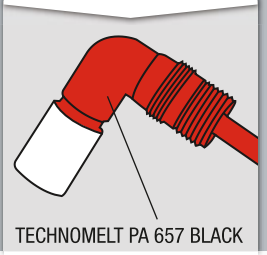
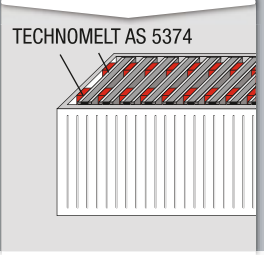
- PU and PO: TECHNOMELT PUR Cleaner (2, 3 or 4) for inside cleaning of equipment
- TECHNOMELT PA 62 for inside cleaning of equipment
- TECHNOMELT Cleaner Melt-O-Clean (PU, PO and PA) for cleaning machine surfaces, application units and general machinery

Hotmelt Adhesives

Product Table

Thermoplastic setting

Chemical base

Rubber	Polyamide		Polyolefin
Pressure-sensitive	**Wide range of adhesion**	**Low-pressure moulding**	**Primerless PP adhesion**
Solution	**TECHNOMELT PS 8707**	**TECHNOMELT PA 6238**	**TECHNOMELT PA 657 BLACK**	**TECHNOMELT AS 5374**
	 TECHNOMELT PS 8707	 TECHNOMELT PA 6238	 TECHNOMELT PA 657 BLACK	
Density	1.0 g/cm³	0.98 g/cm³	0.98 g/cm³	0.95 g/cm³
Softening temperature	+105°C to +115°C	+133°C to +145°C	+150°C to +165°C	+92°C to +104°C
Application temperature range	+150°C to +180°C	+180°C to +220°C	+180°C to +230°C	+160°C to +200°C
Open time	Pressure-sensitive	Short	Short	Long
Melt viscosity at +130°C	–	–	–	–
Melt viscosity at +160°C	–	21,000 – 33,000 mPa·s	–	–
Melt viscosity at +180°C	3,200 – 4,800 mPa·s	10,000 – 16,000 mPa·s	8,600 mPa·s	2,250 – 2,950 mPa·s
Pack sizes	Approx. 15kg carton (cushions)	20kg bag (granules)	20kg bag (granules)	Approx. 13.5 kg carton (cushions)
	TECHNOMELT PS 8707 • Solvent-free • Permanently tacky • Good adhesion to a variety of substrates • Good temperature resistance	**TECHNOMELT PA 6238** • Solvent-free • Good adhesion to metals and plastics • Suitable for plasticised PVC • Oil resistance • Based on renewable raw materials	**TECHNOMELT PA 657 BLACK** • Solvent-free • Technomelt moulding • Oil resistance • High service temperature • Based on renewable raw materials	**TECHNOMELT AS 5374** • Solvent-free • PP bonder • Long open time

Handy Hints

To improve adhesion on metal substrates we recommend to preheat surfaces. For further information please refer to the TDS.

* MicroEmission (ME) contains less than 0.1% isocyanate monomer and reduces isocyanate vapours by up to 90%.

Thermoplastic setting + Chemical post cure

Chemical base

Ethylene vinyl acetate

Polyurethane

Long open time

Short open time

MicroEmission

Standard

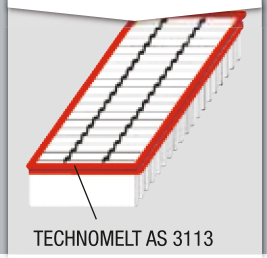
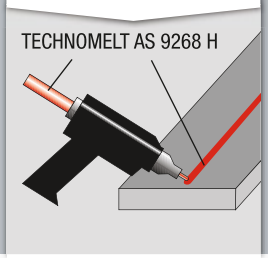
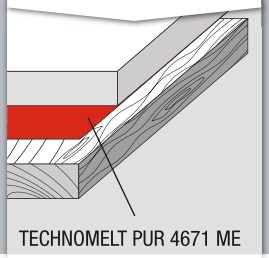
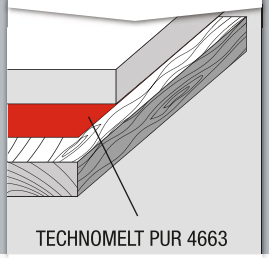
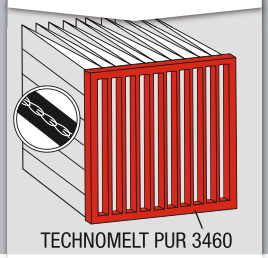
Granules

Sticks

Multi-purpose

Multi-purpose

Fast-setting

TECHNOMELT AS 3113	TECHNOMELT AS 9268 H	TECHNOMELT PUR 4671 ME	TECHNOMELT PUR 4663	TECHNOMELT PUR 3460
				
1.0 g/cm³	1.0 g/cm³	1.15 g/cm³	1.13 – 1.23 g/cm³	1.18 g/cm³
+99°C to +109°C	+82°C to +90°C	–	–	–
+160°C to +180°C	+170°C to +190°C	–	+110°C to +140°C	+100°C to +140°C
Very short	Short	Long	4 – 8 min.	1 min.
17,000 – 23,000 mPa·s	–	6,000 – 12,000 mPa·s	6,000 – 12,000 mPa·s	6,000 – 15,000 mPa·s
6,600 – 8,800 mPa·s	24,000 – 30,000 mPa·s	–	–	–
3,800 – 5,800 mPa·s	–	–	–	–
25kg	10kg carton (stick 11.3mm diameter)	Not available in the U.K.	2kg candle, 20kg pail, 190kg drum	300g cartridge, 20kg pail
TECHNOMELT AS 3113 • Solvent-free • BHT-free • Low fogging • Short setting time • Low shrinkage on cooling	**TECHNOMELT AS 9268 H** • Solvent-free • Hotmelt sticks • Wide range of adhesion • Short open time • Good impact strength	**TECHNOMELT PUR 4671 ME** • Micro Emission • Good water resistance • Good adhesion on steel and stainless steel	**TECHNOMELT PUR 4663** • Solvent-free • Long open time • Low application temperature • High temperature resistance • Flame retardant (IMO FTCP Part 5)	**TECHNOMELT PUR 3460** • Solvent-free • Medium open time • Low application temperature • High temperature resistance

Hotmelt Adhesives

Product List

Product	Chemical basis	Colour	Density (approx.)	Viscosity	Open time
TECHNOMELT 8783	Pressure-sensitive	Amber	1 g/cm³	25,000 – 45,000 mPa·s at +180°C	Permanently tacky
TECHNOMELT AS 3113	Ethylene vinyl acetate	White	1 g/cm³	3,800 – 5,800 mPa·s at +180°C	Very short
TECHNOMELT AS 3188	Ethylene vinyl acetate	White	1 g/cm³	850 – 1,200 mPa·s at +160°C	Short
TECHNOMELT AS 4203	Polyolefin	Opaque	0.89 g/cm³	32,000 – 44,000 mPa·s at +180°C	Short
TECHNOMELT AS 4209	Polyolefin	Opaque	0.89 g/cm³	27,000 – 39,000 mPa·s at +180°C	Short
TECHNOMELT AS 5374	Polyolefin	Amber	0.95 g/cm³	2,250 – 2,950 mPa·s at +170°C	Long
TECHNOMELT AS 9268 H	Ethylene vinyl acetate	White	1 g/cm³	24,000 – 30,000 mPa·s at +160°C	Short
TECHNOMELT PA 652	Polyamide	Amber	0.98 g/cm³	9,500 mPa·s at +180°C	Very short
TECHNOMELT PA 657 BLACK	Polyamide	Black	0.98 g/cm³	8,600 mPa·s at +180°C	Very short
TECHNOMELT PA 673	Polyamide	Amber	0.98 g/cm³	3,000 mPa·s at +210°C	Very short
TECHNOMELT PA 678 BLACK	Polyamide	Black	0.98 g/cm³	3,300 mPa·s at +210°C	Very short
TECHNOMELT PA 6208 BLACK	Polyamide	Black	0.98 g/cm³	3,500 mPa·s at +210°C	Very short
TECHNOMELT PA 6238	Polyamide	Amber	0.98 g/cm³	7,000 mPa·s at +200°C	Short
TECHNOMELT PS 8707	Pressure-sensitive	Amber	1 g/cm³	3,200 – 4,800 mPa·s at +180°C	Permanently tacky
TECHNOMELT PUR 3460	Polyurethane (reactive)	Light ivory	1.18 g/cm³	7,000 – 13,000 mPa·s at +130°C	Short
TECHNOMELT PUR 4661	Polyurethane (reactive)	Yellowish	1.15 g/cm³	5,000 – 13,000 mPa·s at +130°C	Long
TECHNOMELT PUR 4663	Polyurethane (reactive)	Light ivory	1.13 – 1.23 g/cm³	6,000 – 12,000 mPa·s at +130°C	Long
TECHNOMELT PUR 4665 ME	Polyurethane (reactive)	Yellowish	1.15 g/cm³	10,000 mPa·s at +130°C	Long
TECHNOMELT PUR 4671 ME	Polyurethane (reactive)	Light opaque	1.15 g/cm³	6,000 – 12,000 mPa·s at +130°C	–

	Softening point	Application temperature	Pack sizes	Comments
	+132°C to +142°C	+160°C to +180°C	Not available in U.K.	Pressure-sensitive adhesive, high temperature resistance
	+99°C to +109°C	+160°C to +180°C	25kg bag	Filtration, pleat stabilisation, sealing
	+100°C to +120°C	+150°C to +180°C	Not available in the U.K.	Filtration, sealing
	+160°C to +170°C	+180°C to +200°C	20kg bag	Filtration, high temperature resistance
	+155°C to +165°C	+180°C to +200°C	25kg bag	Filtration, high temperature resistance
	+99°C to +109°C	+160°C to +200°C	Approx. 13.5kg carton	General assembly, good adhesion to polypropylene
	+82°C to +90°C	+170°C to +190°C	10kg carton (stick 11.3 mm diameter)	Hotmelt sticks
	+155°C	+180°C to +230°C	20kg bag	Low-pressure moulding, UL-listing (V-0)
	+155°C	+180°C to +230°C	20kg bag	Low-pressure moulding, UL-listing (V-0)
	+185°C	+210°C to +230°C	20kg bag	Low-pressure moulding, UL-listing (V-0)
	+185°C	+210°C to +230°C	20kg bag	Low-pressure moulding, UL-listing (V-0)
	+155°C	+180°C to +230°C	20kg bag	Wide range of adhesion
	+139°C	+180°C to +220°C	20kg bag	Wide range of adhesion
	+105°C to +115°C	+150°C to +180°C	Approx. 15kg carton	Pressure-sensitive adhesive, good adhesion to rigid PVC
	–	+100°C to +140°C	300g cartridge, 20kg pail	General assembly, short open time
	–	+110°C to +140°C	Not available in the U.K.	Good adhesion to metal
	–	+110°C to +140°C	2kg candle, 20kg pail, 190kg drum	Panel bonding, long open time, IMO approval 653 part 5
	–	+130°C to +150°C	Not available in U.K.	Panel bonding, MicroEmission, long open time
	+110°C to +140°C	–	Not available in U.K.	Good adhesion to metal, white goods applications