

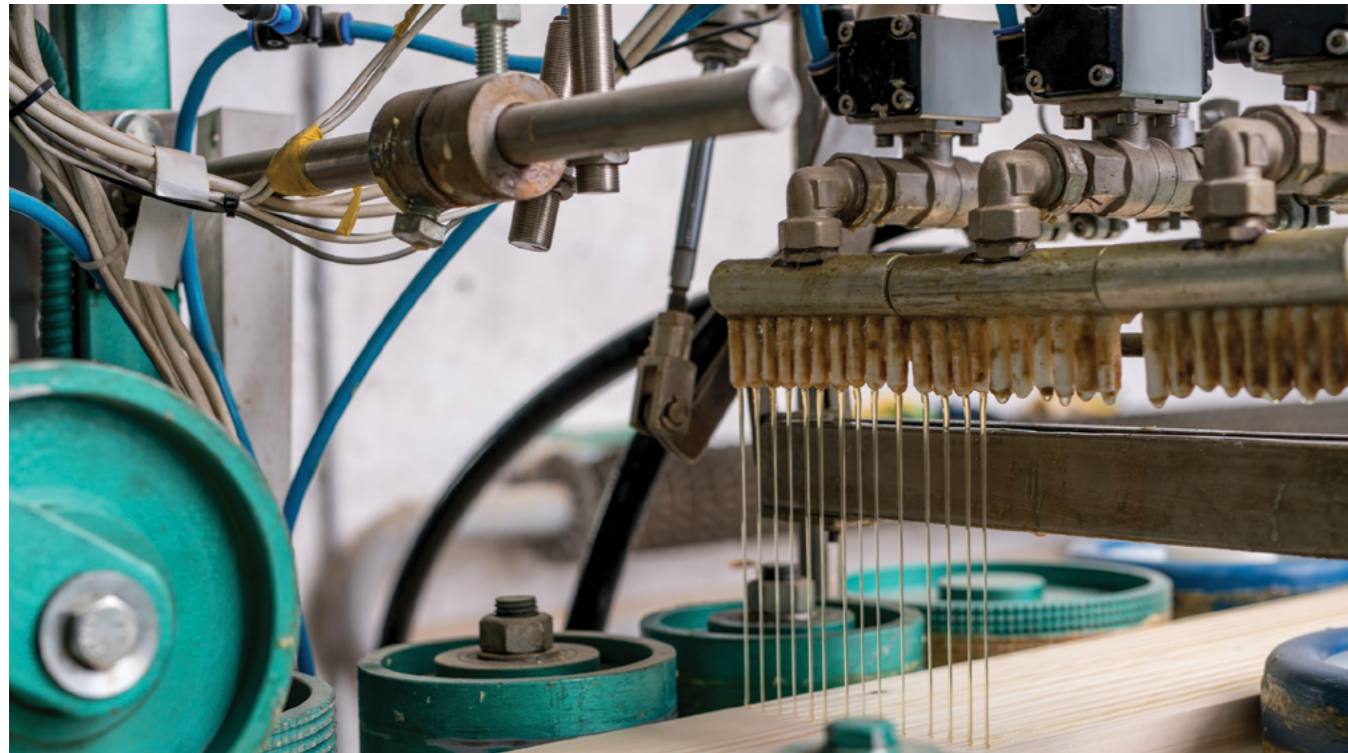
Advancing Hot Melt Adhesives

Koattro Metallocene PB-1 Materials as the preferred polymer backbone

Courtesy of SABA Dinxperlo B.V.



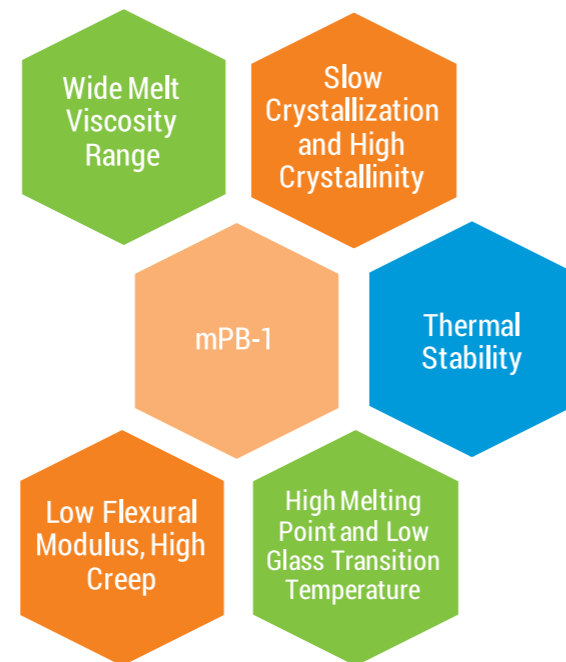
PB-1 for Hot Melt Adhesives



In advanced production environments where safe, efficient and environmentally friendly assembly processes are required, solvent free adhesive systems are enjoying a growing acceptance. LyondellBasell has developed a dedicated metallocene PolyButene-1 portfolio (mPB-1) well suited as a polymer building block in Hot Melt Adhesive formulations for automated adhesive assembly processes.

This *Koattro* portfolio offers a wide melt viscosity range with excellent wetting capabilities, extended open time, a high cohesive strength with a good stiffness/impact balance and a very good thermal stability. In addition, mPB-1 materials are phthalate-free.

These key characteristics respond to the needs of diverse HMA processes in assembly, woodworking, non-woven (hygiene) and packaging applications. Customers increasingly replace other thermoplastics by mPB-1 materials because of the exceptional property profiles and low environmental footprint.



Products and Applications

Customers choose our metallocene PB-1 material as polymer backbone for innovative HMA formulations for the following reasons:

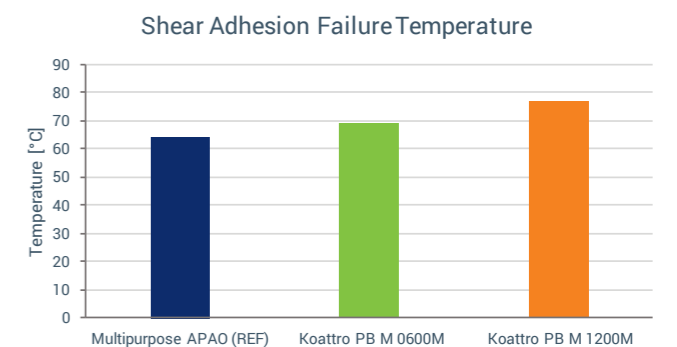
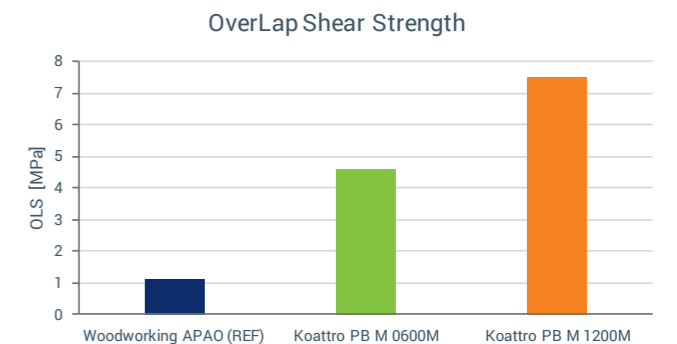
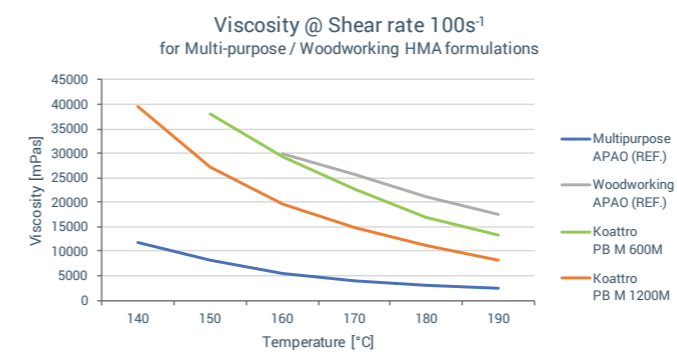
- the broad operational temperature range,
- the extended open time, as well as
- the medium to low viscosity profiles,
- the low odour and volatile organic compounds (VOC's).

Woodworking

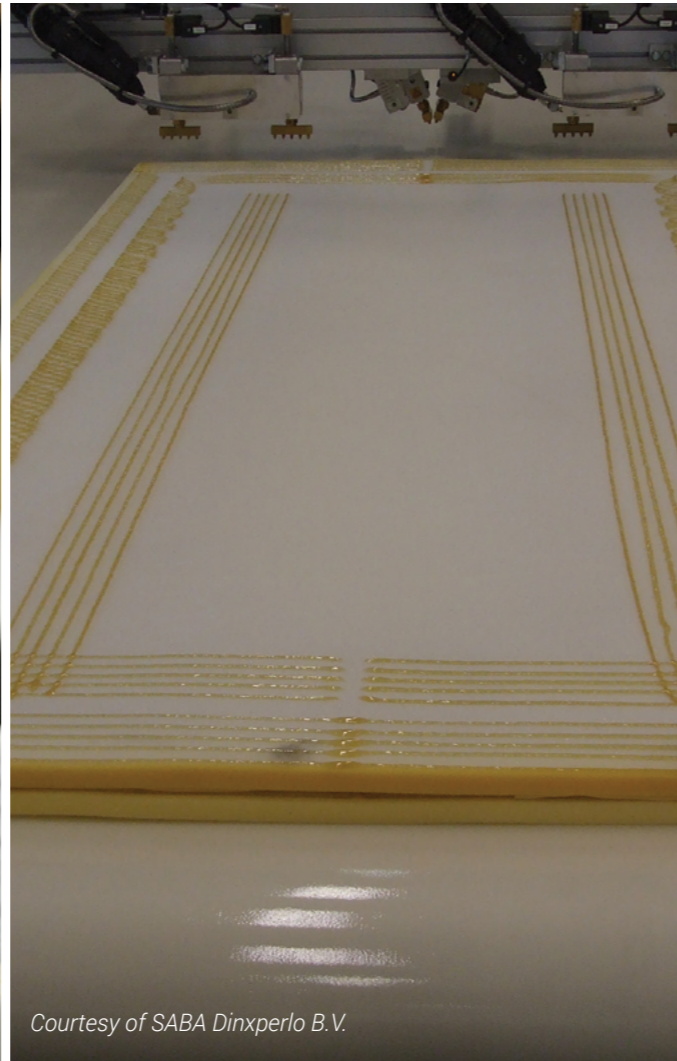


Courtesy of Unicol

In **woodworking** adhesive formulations *Koattro* PB M 0600M combines low viscosity, high flexibility and thermal resistance against shear forces (high shear adhesion failure temperature - SAFT) for advancing the durability and environmental friendliness of **furniture items**.



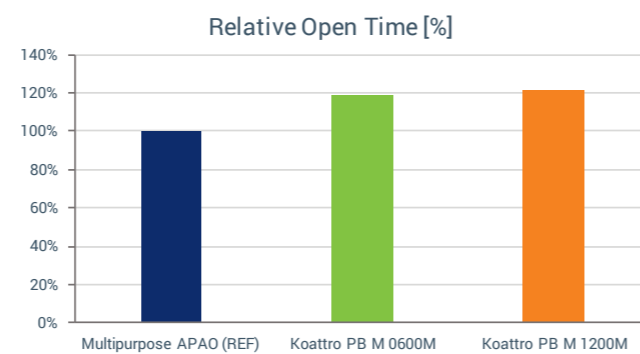
Mattress assembly



The assembly of spring-loaded mattresses requires an excellent green strength* combined with a long open time to allow a manual or automated assembly process.

Koattro PB M 1200M is used as a key component in adhesive formulations for sandwich **mattress assembly**, providing the flexibility and durability that a mattress should provide for a good night's sleep.

*hot tack

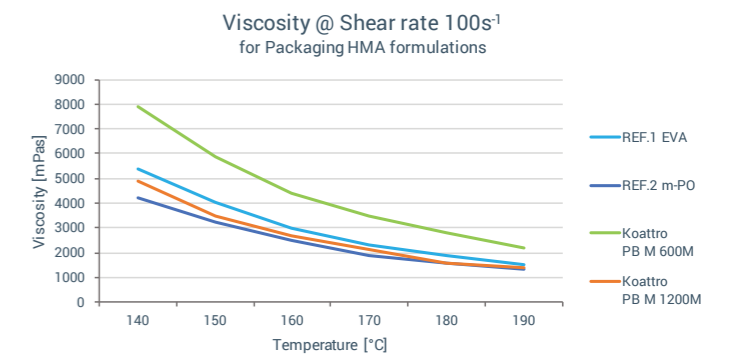


Packaging assembly



The effective wetting of porous (cardboard) and non-porous surfaces (coated paper / cardboard) is of the utmost importance in **packaging assembly** processes. Thermal stability, low viscosity and fast setting times do complete the property profile for HMA formulations to allow high production speeds used for cardboard boxes, trays and paper bags.

The use of *Koattro* mPB 1 in HMA formulations offers the right amorphous / crystalline composition balance and may allow for a reduction of the tackifier contents.



Non-woven hygiene applications



Extraordinarily high production speeds require HMA formulations that are accurately sprayable, offer excellent thermal stability and have high tackiness to allow a flawless assembly process.

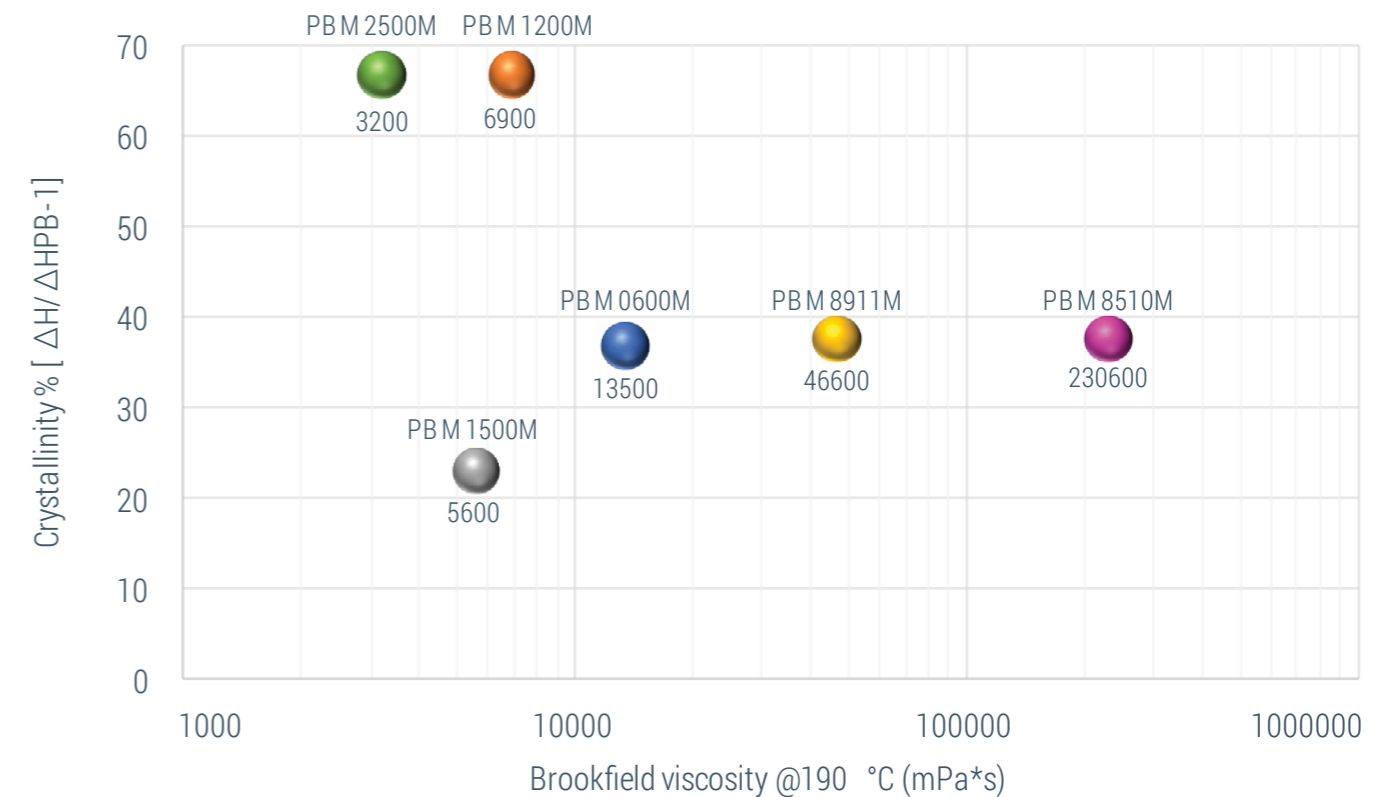
Non-woven hygiene applications typically require flexible, odourless and light-coloured adhesive solutions that preferably can be applied at low temperatures.

Koattro PB M 1500M is a flexible mPB-1 grade offering an unmatched flow / elasticity balance responding to the needs in this very demanding application segment.

Koattro Portfolio for Hot Melt Adhesives

LyondellBasell has industrialized new *Koattro* metallocene Polybutene-1 grades (mPB-1), providing an outstanding combination of properties to HMA formulators:

- melt viscosity range of 230.000 - 3.000 mPa*s @ 190°C → good wettability
- crystallinity range of 65-25% → good cohesion/adhesion – flexibility balance
- blends are possible to tailor the melt viscosity and the physical property profile



Grade Name	Melt Flow Rate (190°C/2.16kg)	Brookfield Viscosity @ 190°C	Density	Tg (via DMTA)	Tm1	Flexural Modulus
	(g/10 min.)	mPa*s	(g/cm ³)	°C	°C	MPa
<i>Koattro</i> PB M 0600M	600	13500	0.89	-26	97	100
<i>Koattro</i> PB M 1200M	1200	6900	0.91	-13	82	340
<i>Koattro</i> PB M 1500M	1500	5600	0.89	-30	97	< 100
<i>Koattro</i> PB M 2500M ⁽¹⁾	2500	3200	0.91	-13	84	350
<i>Koattro</i> PB M 8510M	45	230600	0.89	-22	81	120
<i>Koattro</i> PB M 8911M	200	46600	0.89	-22	82	100

Koattro mPB-1 products are manufactured in the LyondellBasell Polybutene-1 plant located in Moerdijk, The Netherlands.

Please contact us to learn more about these innovative products. Our Application Development engineers are available to support you in your development of tomorrow's HMA formulations.

(1) Experimental Grade

Note: Typical properties not to be construed as specifications. Information related to relevant regulatory subjects is available in the Product Stewardship Bulletin (PSB) on the website: lyb.com

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