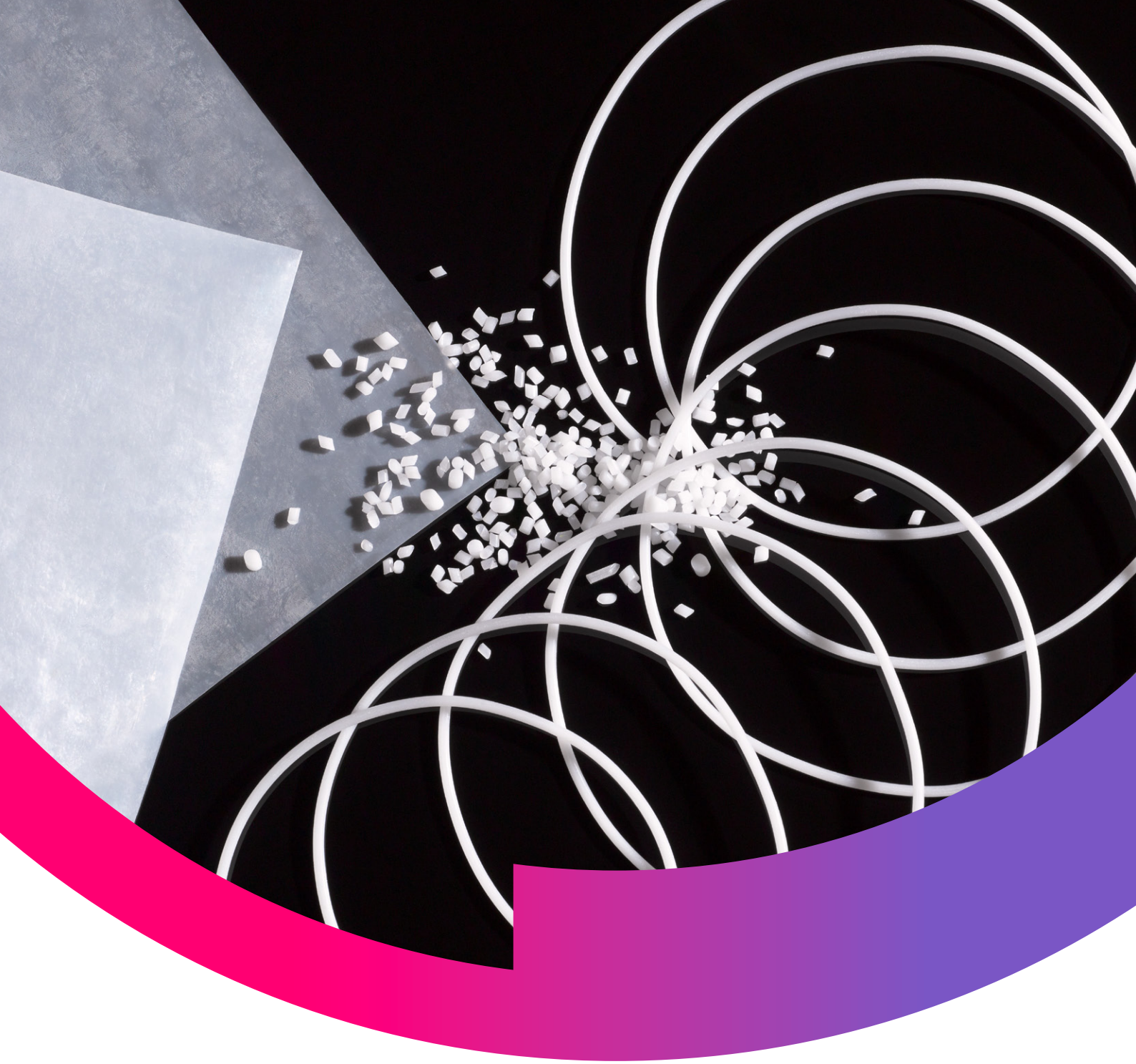


Desmomelt® U

Precisely connecting contradictions.

Desmomelt® U

covestro

Life is livelier when we connect contradictions

Precisely connecting contradictions

Bringing contradictory aspects together can form a completely new perspective. All elements flow into one another and each part perfectly complements the other's strength. **Desmomelt® U** raw materials precisely combine the opposite characteristics of hotmelts and solvent/waterborne adhesives. They bridge the gap between automated and manual applications, thus opening up new possibilities for applying adhesives digitally. Regardless of application, producers and designers can now look forward to a greater competitive edge with exceptional outcomes.

Desmomelt® U portfolio

Desmomelt® U – aliphatic polyurethane powder
New raw materials for low temperature activation adhesives

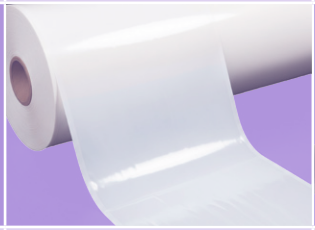
The new product line consists of crystalline, aliphatic, high molecular weight thermoplastic resins designed for adhesive applications where high (initial/final) bond strength and non yellowing is mandatory.

Desmomelt® U powder

- are aliphatic high molecular weight polyurethanes designed for adhesive applications
- provide a broad range of crystallization rates and molecular weights
- are non yellowing with strong adhesion performance on various synthetic or natural substrates
- are compatible with many other resins to further optimize performance
- are well suited for heat activation bonding processes at low temperatures
- can be compounded with fillers and additives by extrusion processes
- can be processed into hotmelt adhesive filaments and films
- can be used as raw materials for traditional solventborne and **NEW Hybrid SB/WB** adhesives
- can be used to formulate high performance adhesives for a broad range of applications including footwear, textile, electronics, automotive interior and furniture markets

Product	Molecular weight	Crystallization speed	Activation temperature [°C]	Initial green strength	Final strength	Benefits
Desmomelt® U 410	low	high	50-60	low	medium-high	non yellowing, high flow
Desmomelt® U 320	medium	medium	55-65	medium	high	non yellowing
Desmomelt® U 230	high	medium-low	60-70	high	high	non yellowing, high toughness

Supply forms of **Desmomelt® U**

Desmomelt® U powders				
	Pellets	**Films**	**Fine powder**	**Coarse powder**
Products				
Segments	Sports & Leisure Textile E&E Automotive DIY	Sports & Leisure E&E Automotive Textile	Sports & Leisure Textile 3D	Sports & Leisure Automotive Textile DIY
Benefit	Enables thermoplastic processing e.g. for automation of contact / heat activation adhesive applications	Non yellowing high performance adhesive films with low heat activation temperature	Non yellowing low temperature activation powders for adhesive applications	Non yellowing powders for SB and Hybrid SB/WB contact and heat activation adhesives

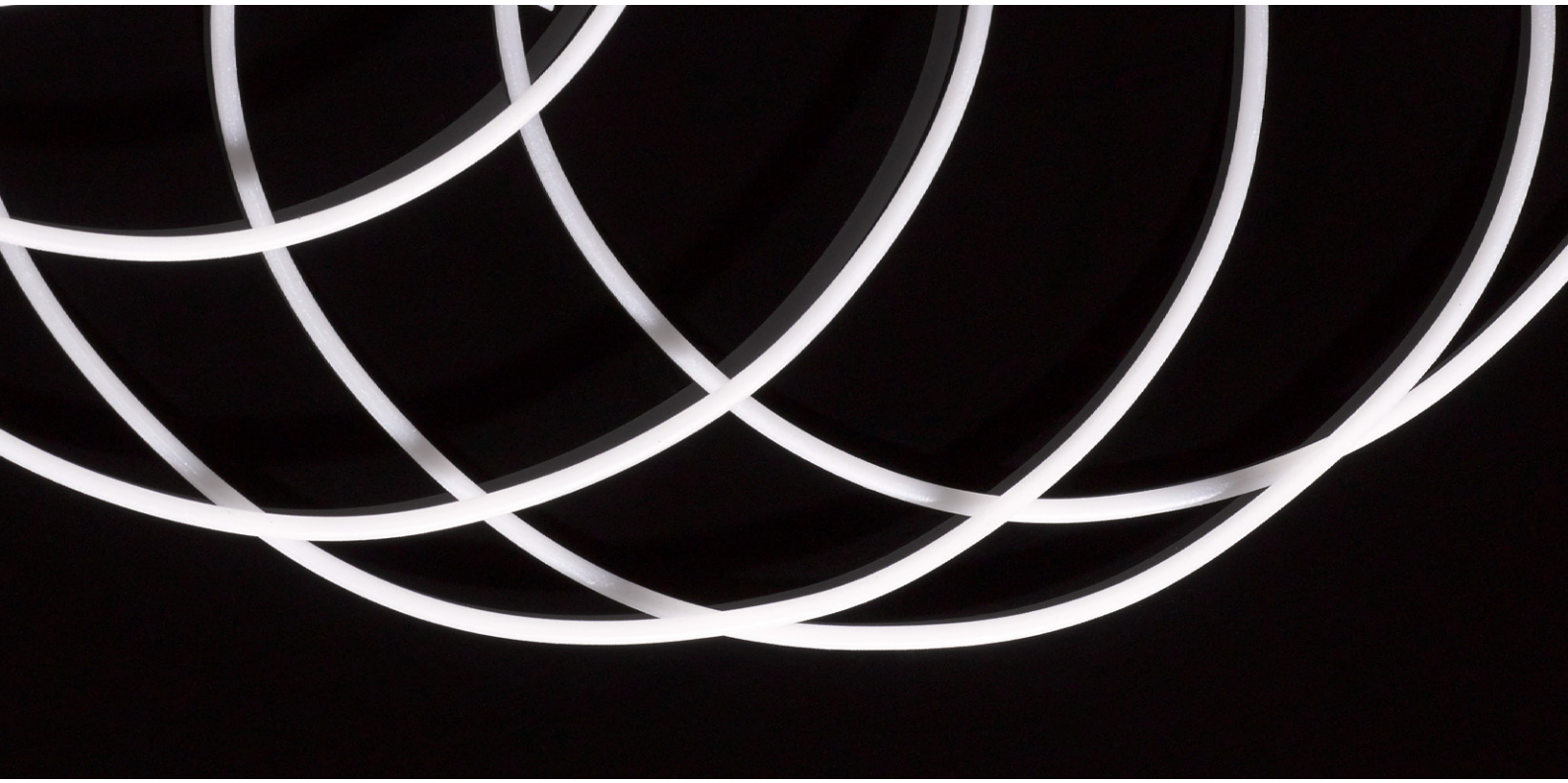
Digital application enabled by **Desmomelt® U**

How does Desmomelt® U enable digital application of adhesives?

Product design and production steps become more and more digital. Adhesive application technologies follow the demand for fully digital production processes.

- **Desmomelt® U** based hotmelts and Hybrid formulations allow highly automated and precise digital application processes
- Digital adhesive applications create greater design freedom e.g. patterns and 3D glue profiles
- **Desmomelt® U** based hotmelt applications enable highly precise application of hotmelt glues on sensitive substrates
- **Desmomelt® U** based Hybrid adhesive formulations combine high solid contents with good print stability in high shear applications

Desmomelt® U based filaments



Covestro provides Desmomelt® U pellets that partners can easily process into high-performance filaments for advanced adhesive applications in footwear, textile, automotive and electronic industries

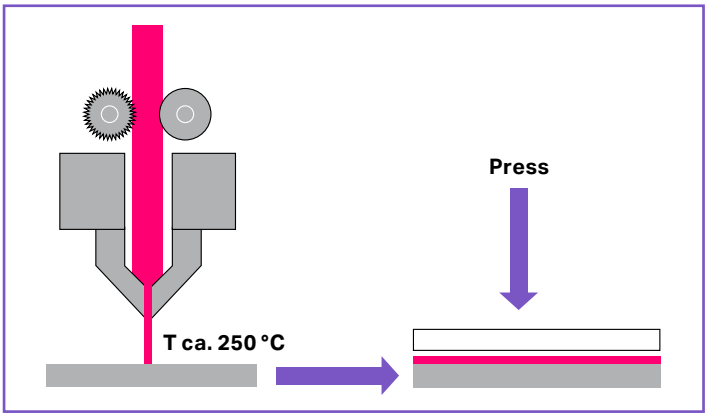
Filaments made from **Desmomelt® U** pellets

- are aliphatic high molecular weight polyurethanes designed for contact bonding and heat activation adhesive applications
- provide a broad range of crystallization rates and molecular weights
- are non yellowing with outstanding adhesion on various synthetic or natural substrates
- enable bonding directly after application or at a later stage by heat activation processes
- enable efficient bonding via
  - direct application on many substrates
  - one-sided bonding application in footwear*

** Depending on processing setup and materials*

Desmomelt® U based filaments – key application parameters and properties

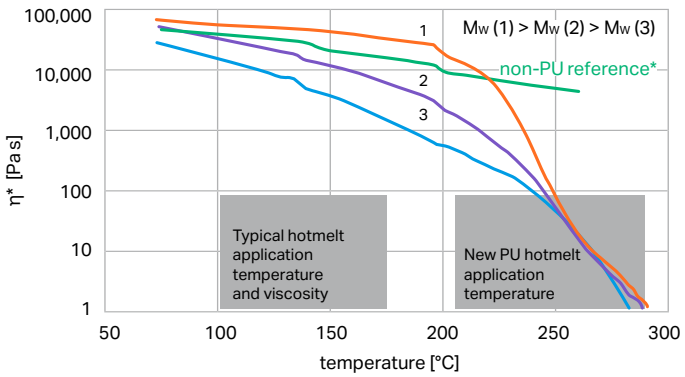
	Desmomelt® U 410	Desmomelt® U 320	Desmomelt® U 230
Processing parameters			
Temperature °C	200-240	220-260	240-280
Substrates	most synthetic and natural materials	most synthetic and natural materials	most synthetic and natural materials
Bondline appearance	opaque	opaque	opaque



Application and bonding via FFF printers

- FFF (fused filament fabrication) printers are modern holtmelt guns enabling operation at high temperatures with low material residence times
- Substrates stay cool
- Bonding is immediately possible
- Bond line shows high initial bond strength
- Bonding one sided and two sided feasible
- Open time can be designed as needed

Temperature dependent viscosity of selected Desmomelt® U filaments



** Works only for PU chemistry*

Processing Desmomelt® U filaments

- Only short exposure to high temperatures
- Reversible viscosity reduction at high temperatures
- Rapid property restoration on substrates

Desmomelt® U powders for solventborne and Hybrid adhesives

KEY BENEFITS

Solventborne and Hybrid adhesive formulations made from Desmomelt® U are suitable for standard and digital (automated) applications in footwear, textile, electronics and automotive

Desmomelt® U for SB and new Hybrid SB/WB adhesive formulations

- Are aliphatic, non yellowing, high molecular weight polyurethanes supplied as powder suitable for the production of solventborne and new Hybrid adhesive formulations
- **Desmomelt® U** grades are available with various crystallization rates, heat resistances and solution viscosities
- **Desmomelt® U** grades can be formulated to yield adhesives with high solid contents if used in combination with suitable protic co-solvents or as a Hybrid SB/WB formulation
- **Desmomelt® U in Hybrid formulations** provides a stepping stone between solventborne and waterborne high performance adhesives
- Solventborne and Hybrid adhesive formulations based on **Desmomelt® U** can be used in contact and heat activation bonding processes
- Solventborne and Hybrid adhesives based on **Desmomelt® U** can be formulated with aliphatic isocyanate crosslinkers e.g. Desmodur® N series for optimized performance levels
- New Hybrid formulation technology is specifically suitable for use in high shear digital drop on demand (printing) and dispensing technologies

Key properties

Product Name	Moleculare weight	Crystallization speed	Heat activation temperature / °C	Viscosity / mPas	Initial / final peel strength
Desmomelt® U 410	low	high	50-60	20-50	low / medium-high
Desmomelt® U 320	medium	medium	55-65	50-200	medium / high
Desmomelt® U 230	high	medium-low	60-70	200-600	high / high

The product data listed is provided as general information only. These are approximate values only, and are not considered part of the product specifications. Note: Viscosity in mPa·s is measured at 23˚C, 15 w% MEK / water (16:1), (23°C, #62, 30 rpm)

SOLUBILITY (EVALUATED FOR 15% SOLIDS)*

Product // Solvent	Acetone	Methylethylketon	Ethylacetate
Desmomelt® U 410	■	■	■
Desmomelt® U 320	■	■	■
Desmomelt® U 230	■	■	▷

* containing 5% of protic co-solvent (Ethanol)

■ soluble ▷ soluble at 8 % concentration or at 15% containing 10% of protic co-solvent

Covestro Deutschland AG
Kaiser-Wilhelm-Allee 60
51373 Leverkusen
Germany

solutions.covestro.com
info@covestro.com

Edition: 2025