

**Desmomelt® U**

**Desmomelt® U**

Precisely connecting contradictions.



# 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 hot melts and solvent/waterborne adhesives. In doing so, 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 powders new raw materials for adhesives


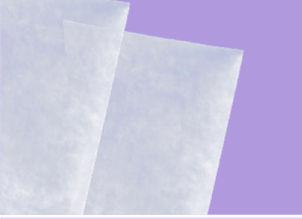


The product line consist of crystalline, aliphatic, high molecular weight thermoplastic resins designed for adhesive applications where high (initial/final) bond strength and non-yellowing is mandatory.

### Desmomelt® U powders

- ▶ 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 on various synthetic or natural substrates
- ▶ can be blended to further optimize performance
- ▶ are well suited for heat activation bonding processes at low temperatures
- ▶ can be compounded by extrusion processes at low temperatures
- ▶ can be processed into filament and foils at low temperatures
- ▶ can be used as raw materials for solventborne adhesives
- ▶ can be used to formulate high performance adhesives for the footwear, textile, electronics, automotive interior and furniture markets



# Application possibilities for **Desmomelt® U** powders

Desmomelt® U powder				
	Filaments	Foils	Solventborne adhesives	Fine powder
<b>Products</b>				
<b>Processing step</b>	Compounding and extrusion	Compounding and extrusion / blow molding	Formulation and dissolving	Formulation
<b>Segments</b>	Footwear Textile E&E Automotive DIY	Footwear Textile E&E Automotive	Footwear Automotive Textile DIY	Footwear Textile Additive manufacturing
<b>Key benefit</b>	Enables automation of contact / heat activation adhesive applications	Non-yellowing, high performance, heat activation adhesive foils	Non-yellowing solventborne contact / heat activation adhesive as stepping stone between water and solventborne technologies	Non-yellowing low temp activation powder adhesive that can be used in scatter coating operations and SLS printing

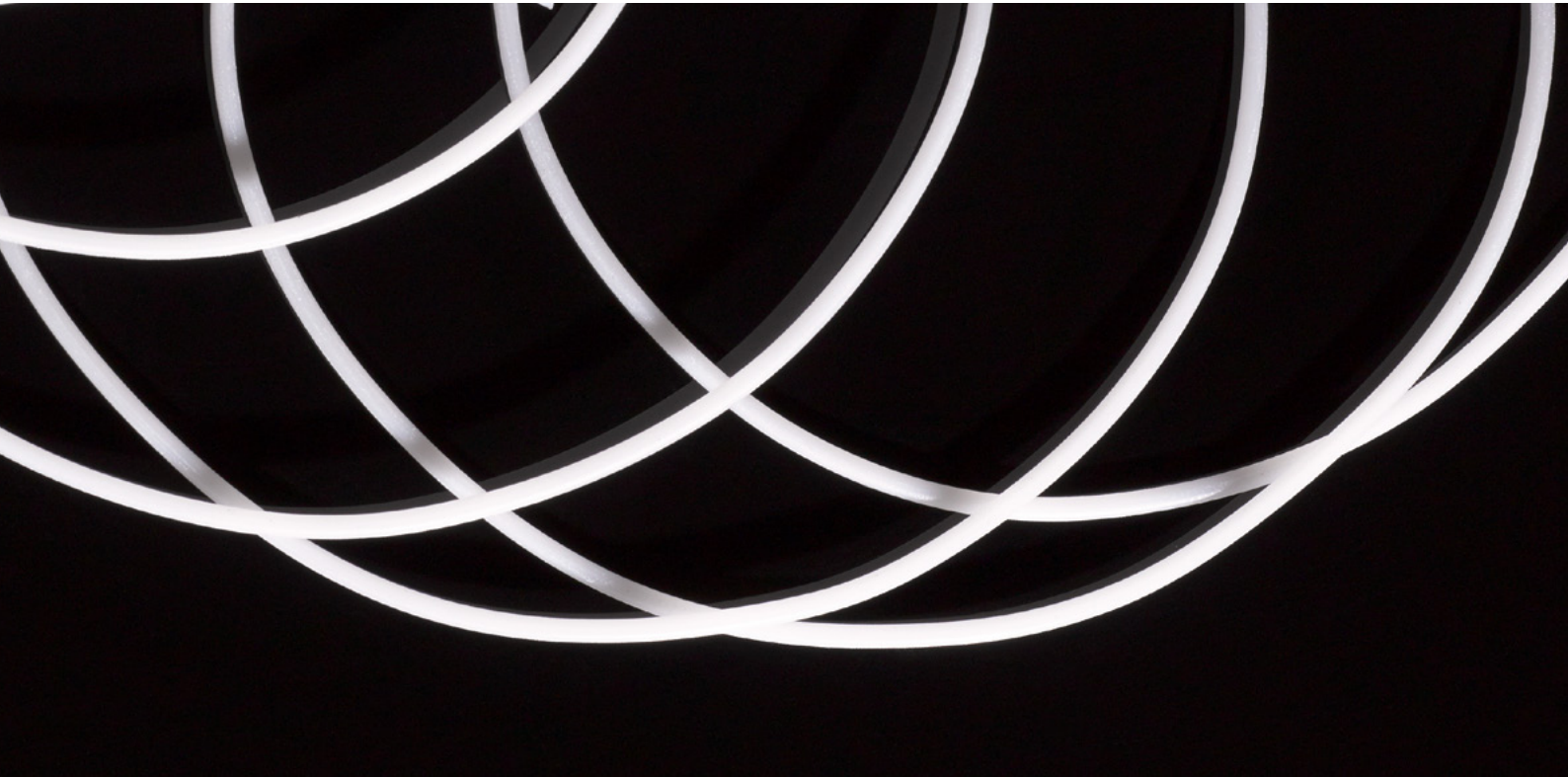
## Digital application enabled by **Desmomelt® U**

### How does **Desmomelt® U** enable digital application of glues?

- ▶ Product design and production steps become more and more digital
- ▶ Digital glue application reacts to the demand for fully digital production processes
- ▶ **Desmomelt® U** based hot melts allow highly automated and precise digital application processes
- ▶ Digital adhesive application enables greater design freedom e.g. patterns and 3D glue profiles
- ▶ **Desmomelt® U** based solventborne adhesive formulations combine high solid contents with good printability



# Desmomelt® U filaments



## KEY BENEFITS

**Desmomelt® U enables precise and automated adhesive application if used as filament**

Desmomelt® U powders

- ▶ can easily be processed into filaments at low temperatures

**Filaments made from Desmomelt® U are suitable for applications in footwear, textile, automotive and electronics**

Filaments made from  
Desmomelt® U powders

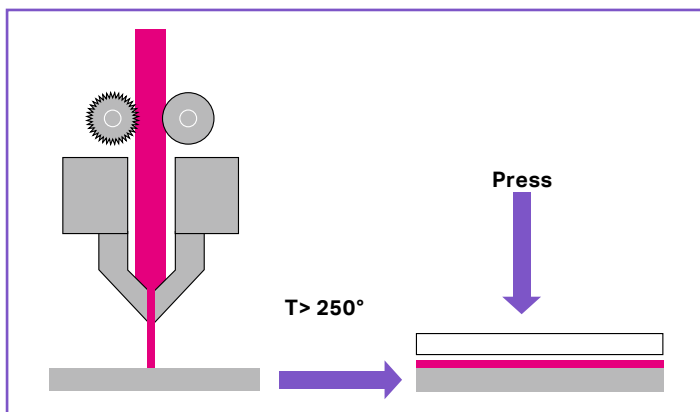
- ▶ are aliphatic high molecular weight polyurethanes designed for adhesive application
- ▶ provide a broad range of crystallization rates and molecular weights
- ▶ are non-yellowing with outstanding adhesion on various synthetic or natural substrates
- ▶ enable bonding directly after application or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

*\*Depends on processing setup and materials*

# Desmomelt® U based filaments – key application parameters and properties

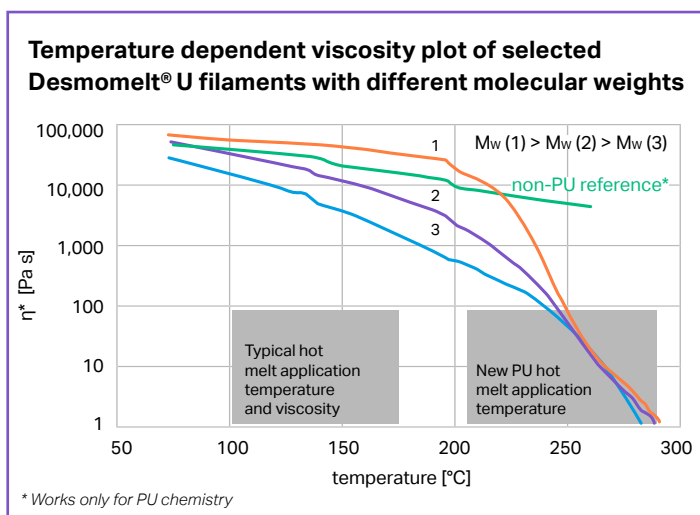
	Desmomelt® U 320	Desmomelt® U 230	Experimental grade CS-TIK 04-4-4*
<b>Material properties</b>			
Molecular weight	medium	high	very high
Peel strengths (PVC) [N/mm]	> 10	> 10	> 10
High initial green strengths (PVC) [N/mm]	0	+	++
Crystallization speed	fast	medium	slow
Activation temperature [°C]	55-65	60-70	60-80
Benefits	aliphatic, non-yellowing	aliphatic, non-yellowing	aliphatic, non-yellowing
<b>Processing parameters</b>			
Application temperature [°C]	200-260	250-280	270-290
Substrates	most synthetic and natural materials	most synthetic and natural materials	most synthetic and natural materials
Appearance	milky white	milky white	milky white

\* available as lab sample only



## Application and bonding via FFF printers

- FFF (fused filament printers) are modern hot melt glue guns enabling operation at high temperatures with low 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



## 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 adhesives

## KEY BENEFITS

Solventborne adhesive formulations made from Desmomelt® U are suitable for applications in footwear, textile and automotive

Desmomelt® U products for solventborne adhesives

- are aliphatic, non-yellowing, high molecular weight polyurethanes usable for the production of solventborne adhesives and are supplied as powders
- 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 cosolvents
- Desmomelt® U** provides a stepping stone between solventborne and waterborne high performance adhesives
- solventborne adhesives based on **Desmomelt® U** can be used in contact and heat activation bonding processes
- solventborne adhesives based on **Desmomelt® U** can be formulated with aliphatic isocyanate crosslinkers e.g. Desmodur® N series for optimized performance levels

## Key properties

Product	Crystallization rate	Solution viscosity at 23 °C (15w% in MEK/Ethanol) approx. [mPa·s]	Activation temperature [°C]	Initial green strength	Final strength	Appearance	Properties / Applications
<b>Desmomelt® U 230</b>	medium	< 1500 containing 10w% Ethanol	60-70	high	high	transparent	aliphatic, non-yellowing, high toughness
<b>Desmomelt® U 320</b>	medium-fast	< 500 containing 5w% Ethanol	55-65	medium	high	transparent	aliphatic, non-yellowing
CS TIK 04-7-4*	fast	< 100 containing 5w% Ethanol	50-60	low	medium-high	transparent	aliphatic, non-yellowing, high solid contents

\* available as lab sample only

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 23 °C unless otherwise noted

## SOLUBILITY (EVALUATED FOR 15% SOLIDS)

Product // Solvent	Acetone	MEK	Ethylacetate
<b>Desmomelt® U 230</b>	▶	▶	◻
<b>Desmomelt® U 320</b>	▶	▶	▶
CS TIK 04-7-4*	▶	▶	▶

\* available as lab sample only

▶ soluble with 5% protic cosolvent ◻ soluble with 10% protic cosolvent





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

[solutions.covestro.com](https://solutions.covestro.com)  
[info@covestro.com](mailto:info@covestro.com)

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