We are binding

Mowital® – PVB for every challenge

kuraray

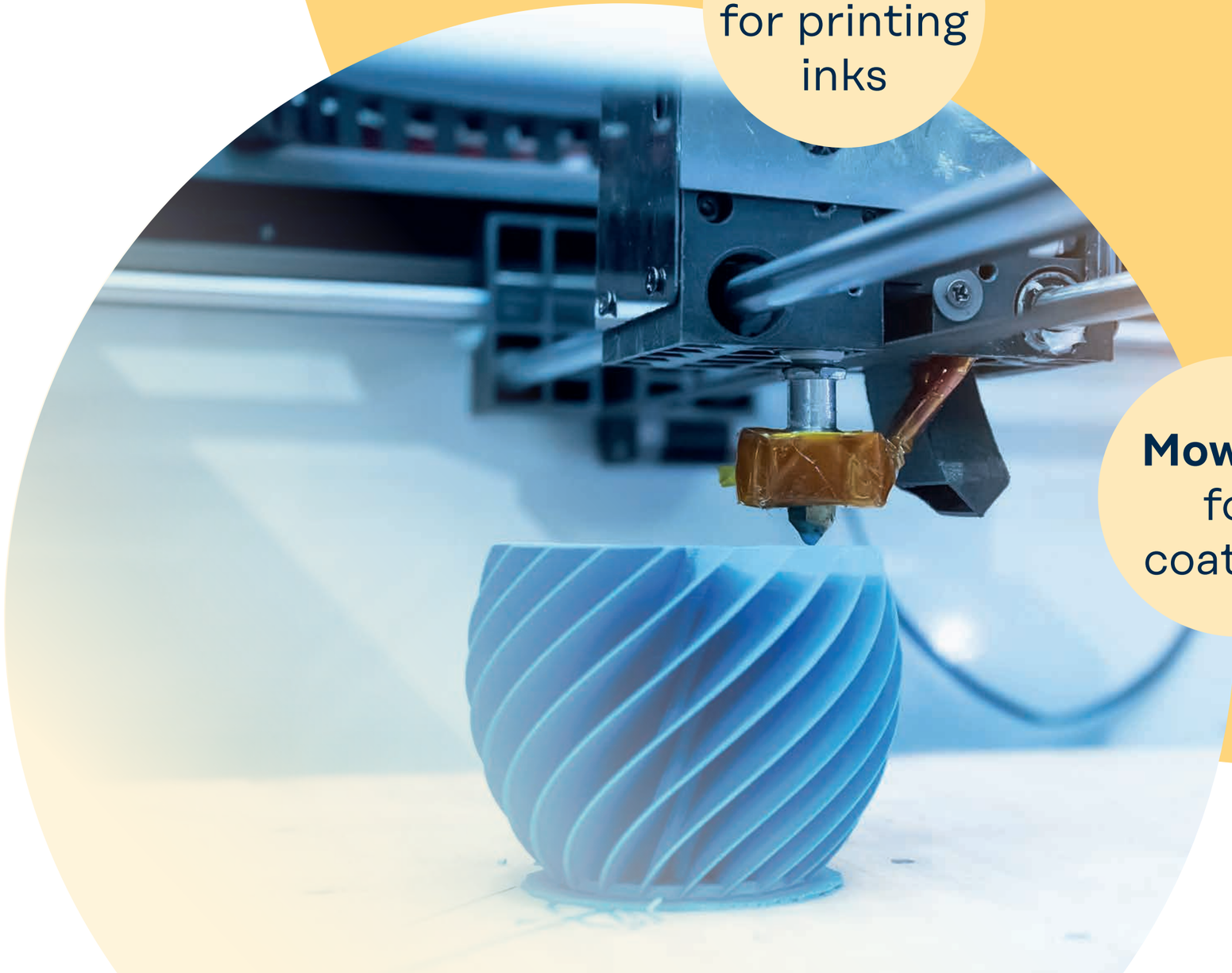
Mowital®

The material for thousand applications

Mowital® for 3D printing

Mowital® for ceramics

Mowital® for printing inks



Mowital® for coatings

FROM PAINTS AND PRINTING INKS, TO ADHESIVES, CERAMICS, FILMS AND 3D PRINTING:

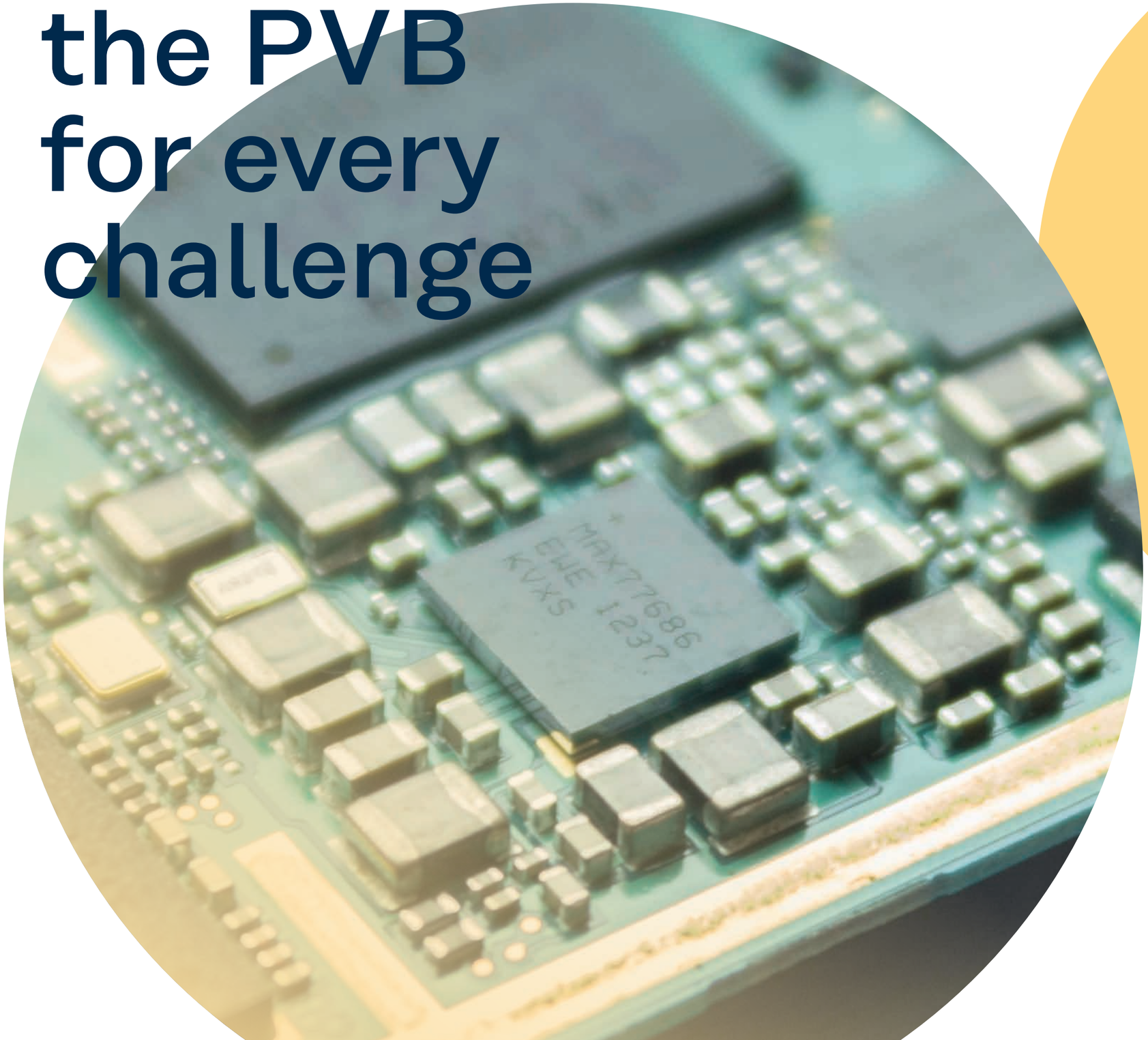
Polyvinyl butyral resins (PVB) are extremely important in many areas today.
With **Mowital®**, Kuraray offers a unique portfolio of PVB materials.

Thanks to their specific acetal, hydroxyl and acetate groups, they feature technical and chemical properties that are ideally tailored to a wide range of applications.

Benefit from the versatility and quality of European market leader for technical PVB applications Kuraray that set standards across the globe.

learn more:

Mowital® – the PVB for every challenge



WITH ITS NUMEROUS PRODUCT VARIANTS, MOWITAL® IS THE FIRST CHOICE FOR A WIDE RANGE OF APPLICATIONS:

- Compatible with many **polymers**, **Mowital®** enables ideal crosslinking of various functional groups of organic substances.
- The PVB is ideal for use with a **wide range of solvents** – from non-polar solvents like hydrocarbons to highly polar solvents like methanol.
- **Mowital®** is available in variants with **different viscosities**, from low to high viscous grades.

FOOD CONTACT STATUS

The use of **Mowital®** B types is sanctioned by: The (EG) regulation 1935/2004 and No. 10/2011 – all monomers and starting substances authorized by listing in Annex I. Council of Europe, Resolution AP 96(5) on surface coatings intended to come into contact with foodstuffs – all monomers and starting substances authorized by listing in appendix 2, list 1. US Food and Drug Administration 21 CFR § 175.105 adhesives, 21 CFR § 175.300 resinous and polymeric coatings, 21 CFR § 176.170 components of paper and paperboard in contact with aqueous and fatty foods.

Properties for the highest of requirements

water sensitivity

high binding power

excellent adhesion

elasticity

colourless

Mowital® features outstanding optical properties. It is **colourless**, perfect for coatings and lending paints and printing inks a brilliant gloss. As a film it is crystal clear, similar to glass.

Thanks to its **high binding power** and rheological properties, **Mowital®** acts as an excellent binder for printing inks, paints and coatings as well as in the production of ceramic products.

For optimized **water sensitivity** the special polymer is optionally available with a higher number of butyral groups.

With excellent **adhesion and film formation properties**, **Mowital®** is ideal for use in adhesives. It forms an ideal bond to a diversified spectrum of surfaces, both organic and inorganic substrates.

Mowital® is a rheological modifier. With its **outstanding elasticity**, it gives plastics and adhesive systems excellent softness and flexibility.

Mowital® is particularly suited for **thermoplastic applications**.

Applications of Mowital®

● **Main application Area**
○ **Possible application Area**

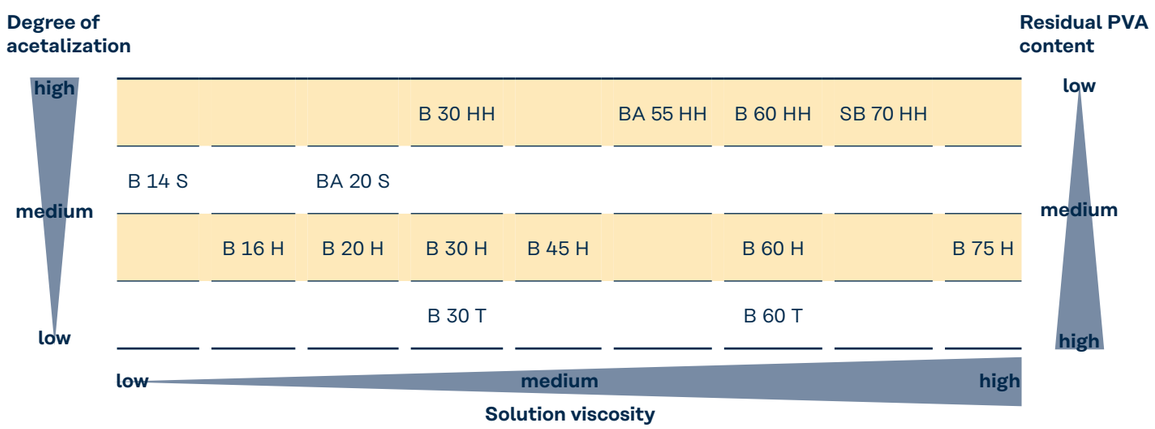
	Mowital® B 14 S	Mowital® B 16 H	Mowital® B 20 H	Mowital® B 30 T	Mowital® B 30 H	Mowital® B 30 HH	Mowital® B 45 H	Mowital® B 60 T	Mowital® B 60 H	Mowital® B 60 HH	Mowital® B 75 H	Mowital® BA 20 S	Mowital® BA 55 HH	Mowital® SB 70 HH
Strippable packaging coatings	●	●	●		●	●						●		
Automotive refinishing coatings	○	○	○		●	●	○		○	○		○	○	
Can coating/Stoving enamels/Film lacquers	○	○	○	●	●	●	○	●	○	○	○	●	○	
Electrostatic spray primers						●				●		○	●	
Corrosion protection/shop primers/wash primers	●	●	●		●	●	●		●	●		●	●	
Heat-sealable lacquers	●	●	●	●	●	●	●	●	●	●	●	●	●	
Radiator primers/topcoats	●	●	●		●	●	●		●	●		●	●	
Wood sealing varnishes	●	●	●		●	●	●		●	●		○	●	
Plastic surface finishes/nitrocellulose lacquers	●	●	●		●	●	●	●	○	○		●	●	
Gear paints/paper varnishes	●	●	●		●	●	●	●	●	●		○	●	
Adhesives/oil-resistant lacquers	●	●	●		●	●	●	●	●	●		○	●	
Road marking paints	●	●	●		●	●	○	○	○	○		○		
Additive for powder coatings	●	●	●	○	●	○		○				●		
Coil coatings	●	●	●	●	●	○	●	●	●	○		●	○	
Zinc-rich primers	○	○	○		●	●						●		
Inkjet printing inks	●	●	●									●		
Flexographic/special gravure inks	●	●	●		●							●		
Pigment preparations	●	●	●	○	●	○	○					●		
Thermo-transfer inks	○	○	○		●	○	●		●	○		●	●	
Temporary binder for ceramics					○	○	●		●	●	●		●	●
Foundry aids					●	○	●					○		
Adhesive additives/rheology modifiers	○	○	○	○	○	○	●	●	●	●	○	●	●	
Hotmelts	●	●	●		●	●	●		●	●	○	●	●	
Binder for abrasive papers					○	○	○		●	●	○		●	
Light bulb cement	○	○	○		●	○	●		○	○			○	
Structural adhesives	○	○	○		○	●	○		●	●	●	○	●	
Cardboard packaging impregnations	●	●	●		●	●	●		○	○		●		
Candle coatings	○	○	○		○	○	●		●	●		○	●	
Prepregs/Composites							●	●	●	●	●		●	
Thermoplastic processing	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3D Printing					●	○	●		●	○				

Mowital® B = Homo acetal → acetalization of butyraldehyde
Mowital® BA = Mixed acetal → co-acetalization of butyraldehyde and acetaldehyde
Mowital® SB = Homo acetal → acetalization of butyraldehyd and extra specification

Analytical Data of PVB

Grade	Specification viscosity (10% ethanol) Hoeppler method (20°C) [mPa*s]	Corresponding viscosity range[2] (10 % ethanol/ toluene 1:1) Brookfield method (20°C/30 rpm) [mPa*s]	PVOH content (Hydroxyl) [wt %]	PVOH content (Hydroxyl) [mol %]	PVOAc content (Acetate) [wt %]	PVOAc content (Acetate) [mol %]	Glass transition temperature = Tg	Solid
Mowital® B 14 S	9,0 – 13,0	6,5 – 8,5	14,0 – 18,0	21,0 – 26,5	5,0 – 8,0	3,8 – 6,0	60	≥ 97,5
Mowital® B 16 H	14,0 – 20,0	9,0 – 14,0	18,0 – 21,0	26,2 – 30,2	1,0 – 4,0	0,7 – 2,9	63	≥ 97,5
Mowital® B 20 H	20,0 – 30,0	14,0 – 23,0	18,0 – 21,0	26,2 – 30,2	1,0 – 4,0	0,7 – 2,9	64	≥ 97,5
Mowital® B 30 H	35,0 – 60,0	24,0 – 42,0	18,0 – 21,0	26,2 – 30,2	1,0 – 4,0	0,7 – 2,9	68	≥ 97,5
Mowital® B 30 HH	35,0 – 60,0	23,0 – 41,0	11,0 – 14,0	16,7 – 20,9	1,0 – 4,0	0,8 – 3,1	63	≥ 97,5
Mowital® B 30 T	30,0 – 55,0	26,0 – 50,0	24,0 – 27,0	33,8 – 37,6	1,0 – 4,0	0,7 – 2,9	70	≥ 97,5
Mowital® B 45 H	60,0 – 90,0	36,0 – 54,0	18,0 – 21,0	26,2 – 30,2	1,0 – 4,0	0,7 – 2,9	69	≥ 97,5
Mowital® B 60 H	160,0 – 260,0	120,0 – 200,0	18,0 – 21,0	26,2 – 30,2	1,0 – 4,0	0,7 – 2,9	70	≥ 97,5
Mowital® B 60 HH	120,0 – 280,0	80,0 – 190,0	12,0 – 16,0	18,1 – 23,7	1,0 – 4,0	0,8 – 3,0	65	≥ 97,5
Mowital® B 60 T	180,0 – 280,0	160,0 – 260,0	24,0 – 27,0	33,8 – 37,6	1,0 – 4,0	0,7 – 2,9	72	≥ 97,5
Mowital® B 75 H[1]	60,0 – 100,0	44,0 – 75,0	18,0 – 21,0	26,2 – 30,2	0,0 – 4,0	0,0 – 2,9	73	≥ 97,5
Mowital® BA 20 S	24,0 – 30,0	15,0 – 20,0	14,0 – 18,0	20,8 – 26,3	1,0 – 4,0	0,8 – 3,0	84	≥ 97,5
Mowital® BA 55 HH	160,0 – 220,0	95,0 – 135,0	11,0 – 14,0	16,7 – 20,9	1,0 – 4,0	0,8 – 3,1	92	≥ 97,5
Mowital® SB 70 HH	280,0 – 330,0	155,0 – 185,0	12,0 – 14,0	18,1 – 20,9	1,0 – 4,0	0,8 – 3,1	68	≥ 97,5

[1] 5 % Viscosity [2] Calculated



Solubility of Mowital®

● Unlimited Solubility
○ Limited Solubility
— Insoluble

	Mowital® T-grades OH Content: 24 – 27 %	Mowital® H-grades OH Content: 18 – 21 %	Mowital® S-grades OH Content: 14 – 18 %	Mowital® HH-grades OH Content: 11 – 14 %
ALCOHOLS				
Methanol	●	●	○	○
Ethanol	●	●	●	●
Propanol	●	●	●	●
i-Propanol	●	●	●	●
Butanol	●	●	●	●
i-Butanol	●	●	●	●
Diacetone alcohol	●	●	●	●
Benzyl alcohol	●	●	●	●
GLYCOL ETHERS				
1-Methoxy propanol-2	●	●	●	●
Butyl glycol	●	●	●	●
3-Methoxy-butanol-1 (methoxy butanol)	●	●	●	●
Dowanol (DPnB)	○	●	●	●
ETHERS				
Dioxane	●	●	●	●
Tatrahydofuran (THF)	●	●	●	●
CELLUSOLVE™				
Methyl Cellusolve	●	●	●	●
Ethyl Cellusolve	●	●	●	●
Butyl Cellusolve	●	●	●	●
ESTERS				
Methoxy propyl acetate	—	●	●	●
Methyl acetate	—	○	●	●
Butyl acetate	—	●	●	●
Acetic acid-methoxy-n-butylester	—	○	●	●
(Butoxyl)	—	●	●	●
Glycolic acid-n-butylester (Polysolvan 0)	●	●	●	●
Dibasic esters (DBE)	—	●	●	●
Ethyl lactate	●	●	●	●
KETONES				
Acetone	—	●	●	●
Methylethylketone	○	●	●	●
Methylisobutylketone	—	●	●	●
Cyclohexanone	●	●	●	●
HYDROCARBONS				
Aliphatic	○[1]	○[1]	○[1]	○[1]
Toluene	—	○[1]	○[1]	○[1]
Xylene	—	○[1]	○[1]	○[1]
OTHERS				
Terpineol	●	●	●	●
Butyl carbitol	●	●	●	●
Acetic Acid	●	●	●	●
Dimethyl sulfoxide (DMSO)	●	●	●	●

[1] Completely soluble if solvent contains 10 % alcohol.
The solubilities stated here refer to the pure solvents (determined in 10 % solution – for B 75 H in 5 % solution). In many cases solvent blends have superior dissolving capacity.

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