

***kuraray***

**mowital™**

world of PVB resin



**MOWITAL®**

# PVB RESIN

FOR THE BEST CONNECTIONS



# MOWITAL® - MEETING YOUR MOST DEMANDING NEEDS

Mowital® is the trademark for a wide range of different polyvinyl butyrals (PVB) marketed by Kuraray. It has excellent adhesion and film-forming properties, high binding power and outstanding optical transparency.

Mowital® is soluble in many organic solvents and can be combined with a wide range of reaction partners. The major applications are highly elastic, transparent, tough films for laminated safety glass and use as a binder in printing inks, coatings and corrosion-protection primers.

Mowital® consists of carbon, hydrogen and oxygen and degrades thermally without residue, producing carbon dioxide and water. Due to backward integration of the production Kuraray uses its own polyvinyl alcohol as starting material. This allows complete quality control of the starting polymers and thus ensures a consistently high quality level.

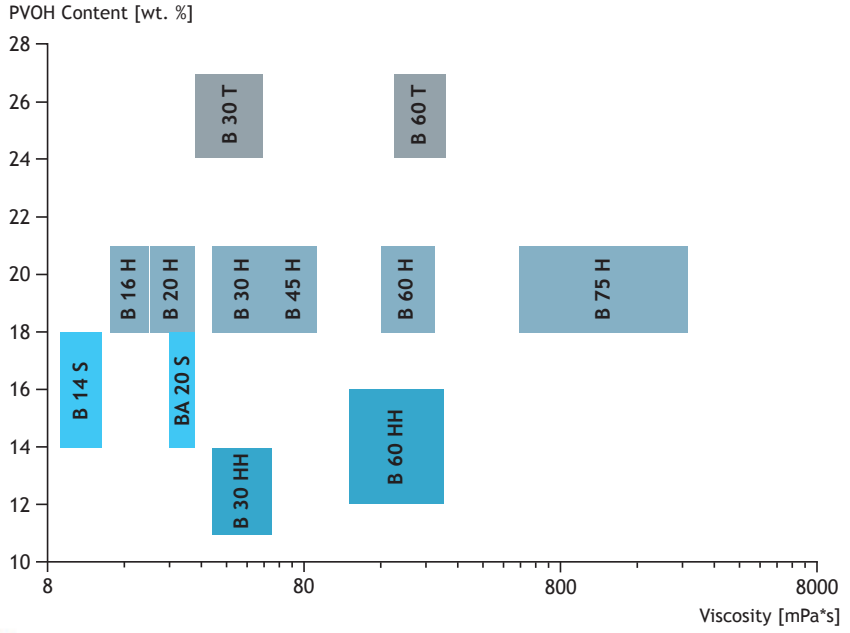
Mowital® is supplied as a fine-grain, free flowing powder in paper valve bags or, on request, in big bags. Since Kuraray constantly optimises the existing applications of Mowital® and develops new ones. Kuraray places particular value on technical services and close cooperation with its customers.

## Polyvinyl butyral – individualist with universal characteristics

- Enormous number of applications
- Essential component of prepregs and composite materials
- Improved flexibility and good adhesion to various substrates
- Prevents steel from rusting as a component of corrosion-protection primers
- Excellent surface adhesion
- Superior flow and pigment wetting properties
- Special build-up of retroreflective coatings in road traffic signs and markings

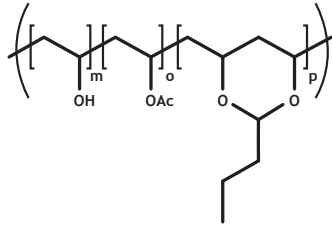


## Mowital® Product Portfolio

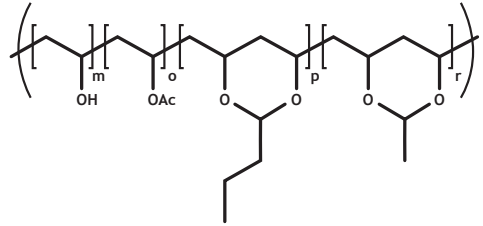


## Mowital® Polymer Structures

Polymer Structure of Mowital® B



Polymer Structure of Mowital® BA



## Comparison of our polyvinyl butyrals and their properties

B 14...    B 20...    B 30...    B 45...    B 60...    B 75...

increase in

- Molecular weight
- Solution viscosity
- Melting and softening range
- Toughness

B...T

B...H

B...HH

increase in

- Water resistance
- Solubility in non-polar solvents
- Compatibility with non-polar polymers



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# MOWITAL® PRODUCTS

● Main application area

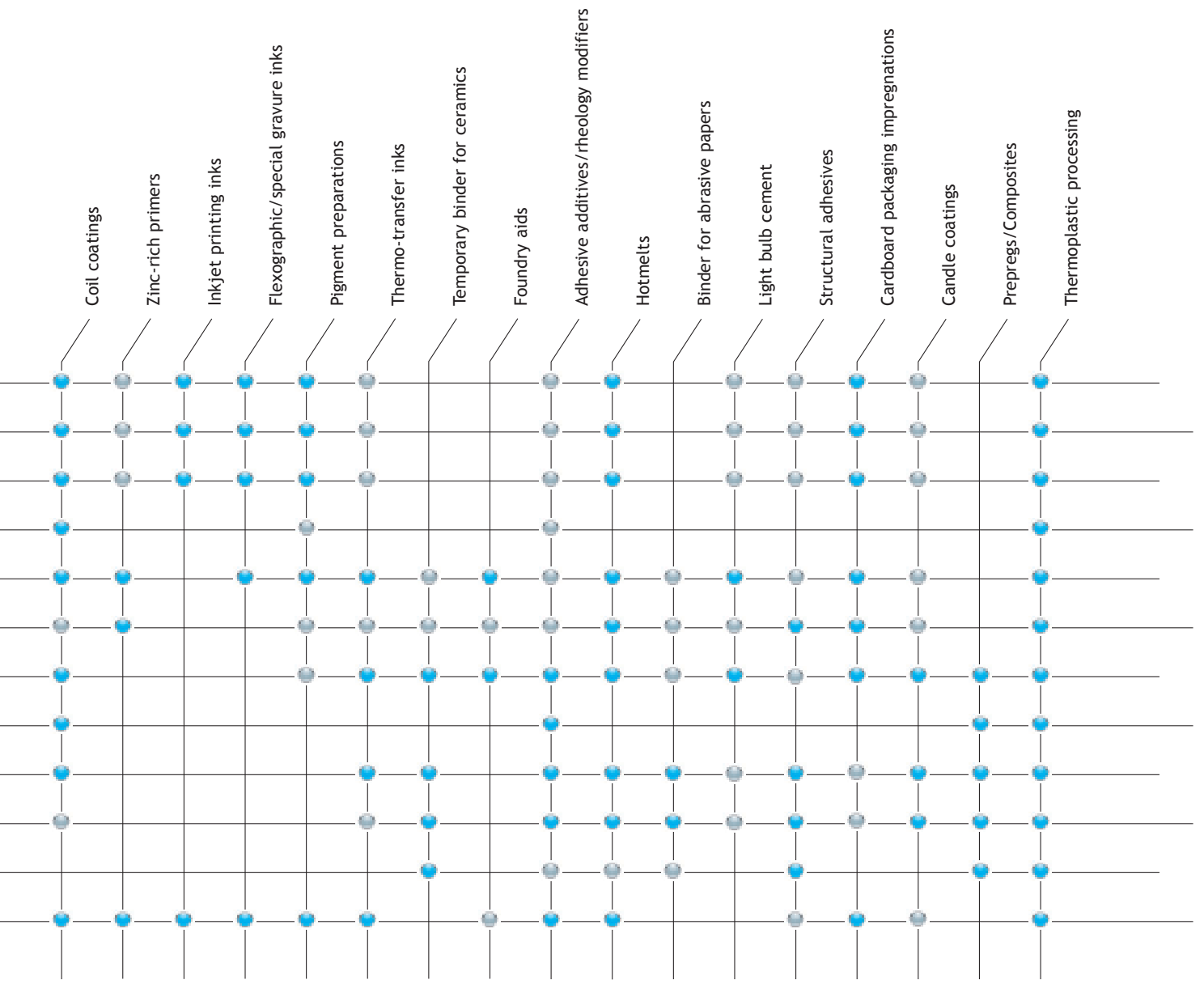
● Possible application area

	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
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	●	●	●	●	●	●	●	●	●	●	●	●	●




## APPLICATION AREAS

The table gives an overview of the wide range of Mowital® applications. Properties and applications depend mainly on the degree of acetalisation and the viscosity of a Mowital® grade. The numerical suffix of the grade designation (14, 16, 20, 30, 45, 60 and 75) indicates the increasing degree of polymerisation (and thus the increasing viscosity). The designations T, H, S and HH indicate different degrees of acetalisation.





# SOLUBILITY OF MOWITAL®

-  Unlimited Solubility
-  Limited Solubility
-  Insoluble

	Mowital® B...T OH Content: 24 - 27%	Mowital® B...H OH Content: 18 - 21%	Mowital® B...S OH Content: 14 - 18%	Mowital® B...HH OH Content: 11 - 14%	Mowital® BA 20 S OH Content: 14 - 18%
<b>ALCOHOLS</b>					
Methanol	Unlimited	Unlimited	Limited	Limited	Unlimited
Ethanol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Propanol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
i-Propanol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Butanol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
i-Butanol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Diacetone alcohol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Benzyl alcohol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
<b>GLYCOL ETHERS</b>					
1-Methoxy propanol-2	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Butyl glycol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
3-Methoxy-butanol-1 (methoxy butanol)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Dowanol (DPnB)	Limited	Unlimited	Unlimited	Unlimited	Unlimited
<b>ETHERS</b>					
Dioxane	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Tetrahydrofuran (THF)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
<b>CELLUSOLVE™</b>					
Methyl Cellusolve	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Ethyl Cellusolve	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Butyl Cellusolve	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
<b>ESTERS</b>					
Methoxy propyl acetate	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Methyl acetate	Unlimited	Limited	Unlimited	Unlimited	Unlimited
Butyl acetate	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Acetic acid-methoxy-n-butylester	Unlimited	Limited	Unlimited	Unlimited	Unlimited
(Butoxyl)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Glycolic acid-n-butylester (Polysolvan 0)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Dibasic esters (DBE)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Ethyl lactate	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
<b>KETONES</b>					
Acetone	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Methylethylketone	Limited	Unlimited	Unlimited	Unlimited	Unlimited
Methylisobutylketone	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Cyclohexanone	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
<b>HYDROCARBONS</b>					
Aliphatic	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>
Toluene	Unlimited	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>
Xylene	Unlimited	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>	Limited <sup>1)</sup>
<b>OTHERS</b>					
Terpineol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Butyl carbitol	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Acetic Acid	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Dimethyl sulfoxide (DMSO)	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited

<sup>1)</sup> Completely soluble if solvent contains 10% alcohol.

The solubilities stated here refer to the pure solvents (specified as 10% solution - for B 75 H as 5% solution). In many cases solvent blends have superior dissolving capacity.

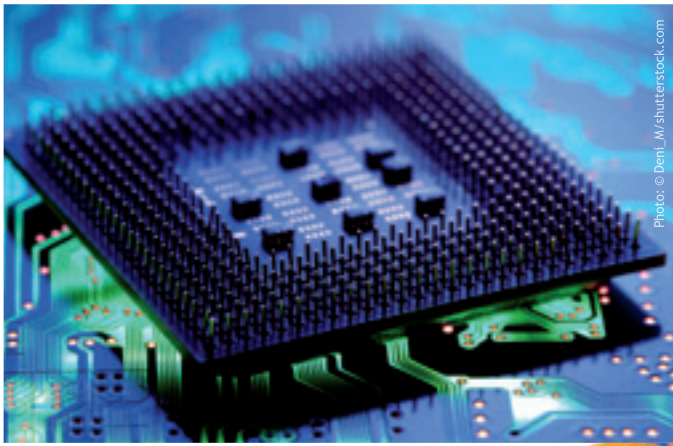


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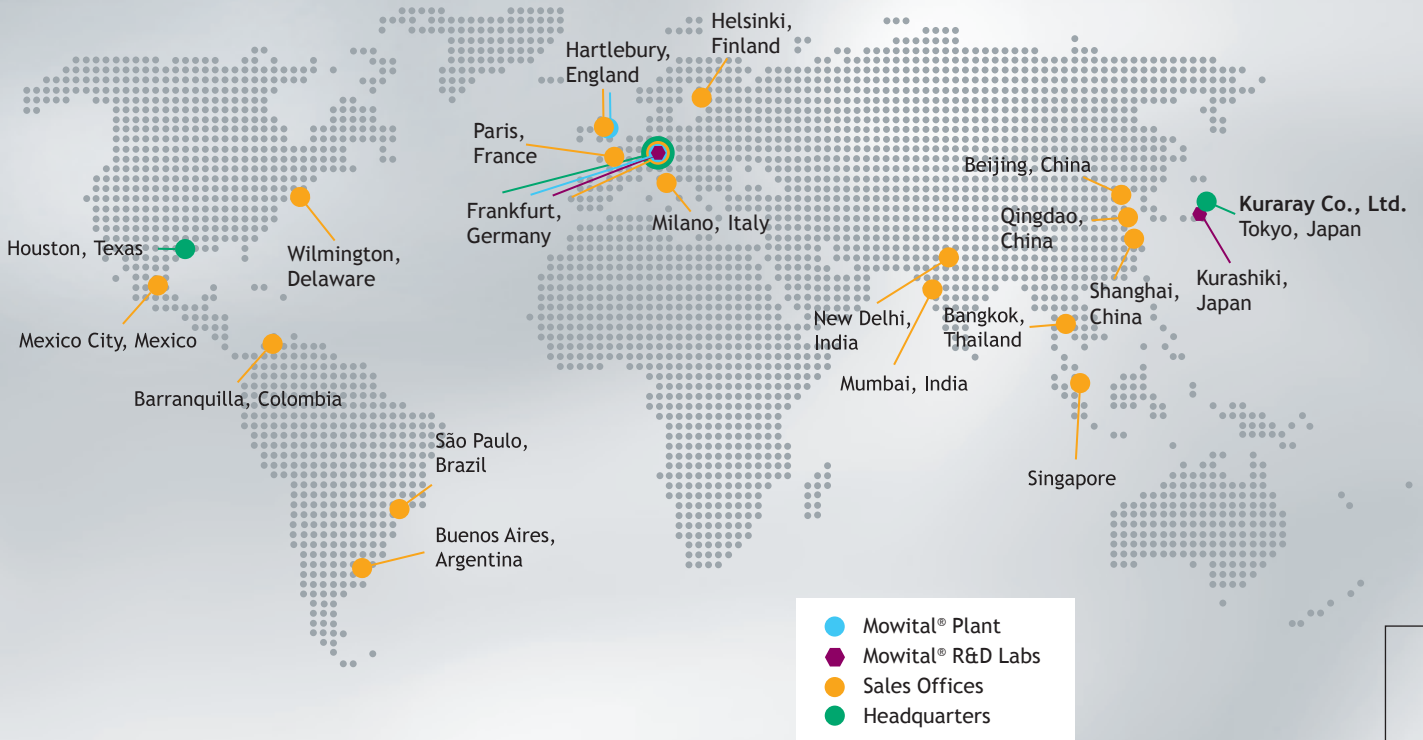


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## Analytical Data

Grade	Specification viscosity (10% ethanol) [mPa*s]	Corresponding viscosity range <sup>2)</sup> (10% ethanol/ toluene 1:1) [mPa*s]	PVOH content (Hydroxyl)		PVOAc content (Acetate)		Glass transition temperature = T <sub>g</sub> [°C]	Solid transition temperature = T <sub>g</sub> [wt %]
			[wt %]	[mol %]	[wt %]	[mol %]		
Mowital® B 14 S	9.0 - 13.0	6.5 - 8.5	14.0 - 18.0	21.0 - 26.4	5.0 - 8.0	3.7 - 6.2	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 - 3.0	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 - 3.0	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 - 3.0	68	≥ 97.5
Mowital® B 30 HH	35.0 - 60.0	23.0 - 41.0	11.0 - 14.0	16.7 - 20.8	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 - 3.0	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 - 3.0	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	60.0 - 100.0 <sup>1)</sup>	44.0 - 75.0 <sup>1)</sup>	18.0 - 21.0	26.2 - 30.2	0.0 - 4.0	0.0 - 3.0	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	0.7 - 3.1	84	≥ 97.5

1) 5% Viscosity  
2) Calculated



For further products of the Kuraray Group, please visit [www.kuraray.com](http://www.kuraray.com).  
 You can find further information on our Mowital® products at [www.mowital.com](http://www.mowital.com).

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