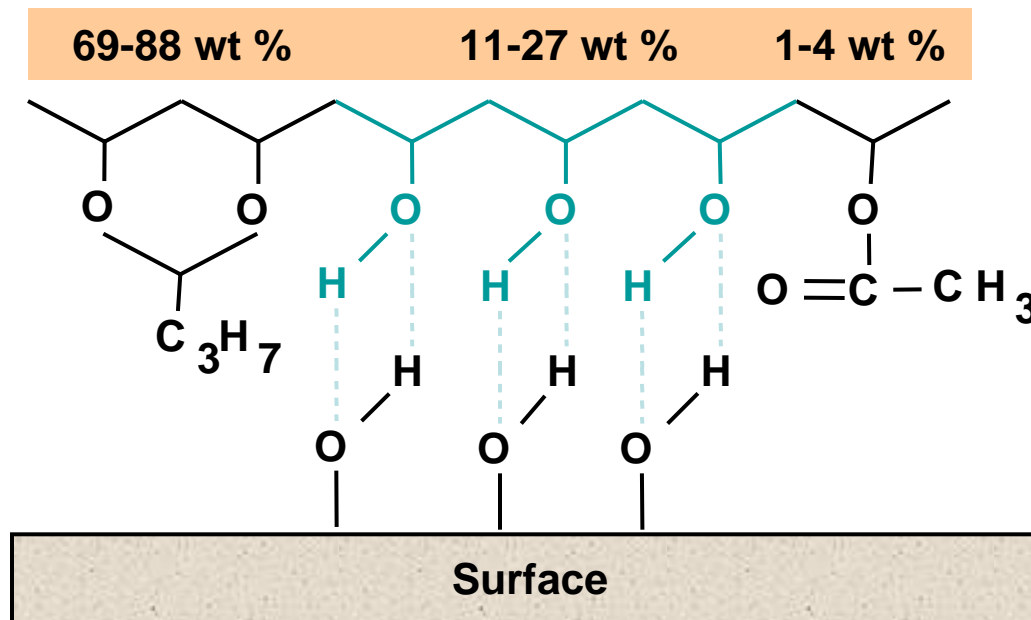


kuraray

***Mowital[®] for
Powder Coatings***

Mowital[®], “Polyvinyl butyral”:

- Excellent adhesion to substrates, like “metal”, “wood”, “glass” etc...



- Well react with cross-linkers like “phenolic resin”, “epoxy”, “isocyanate” etc...
- Well soluble in alcohols and many other organic solvents
- Thermoplastic resin

Example of nomenclature; “Mowital B60H”

Trade name:	Mowital
Capital B:	Stating the used aldehyde (butyraldehyde)
Number :	Referring to the molecular weight, the higher the number the higher the molecular weight
Suffix:	Indicating the residual PVOH content, T being the highest and HH being the lowest. PVOH content and degree of acetalization depend on each other (high degree of acetalization corresponds to low PVOH content and vice versa).

suffix	wt.-% PVOH
T	24 – 27
M	21 – 24
H	18 – 21
HH	11 – 14

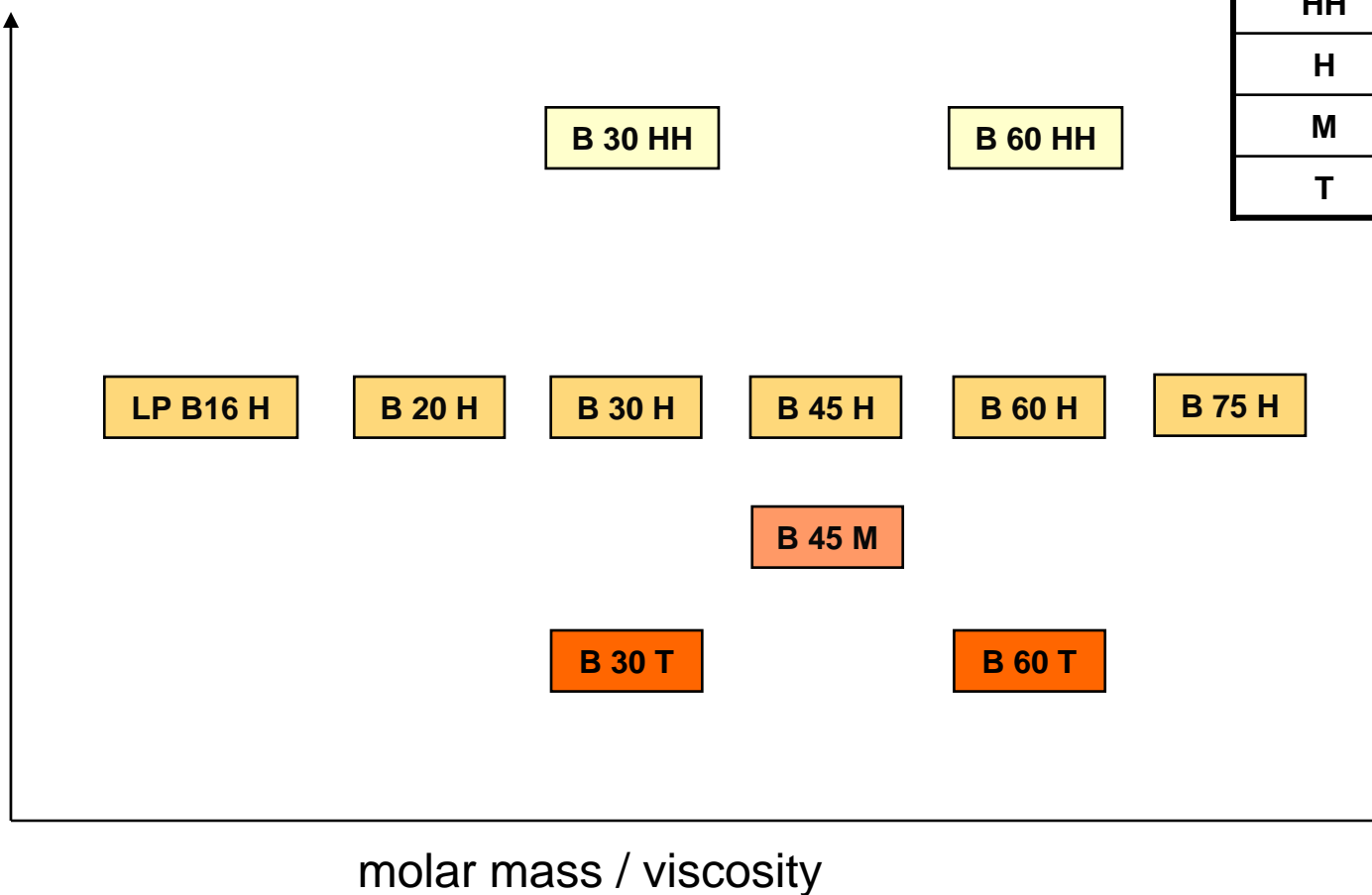
Degree of acetalization

80-88
high

75-81
medium

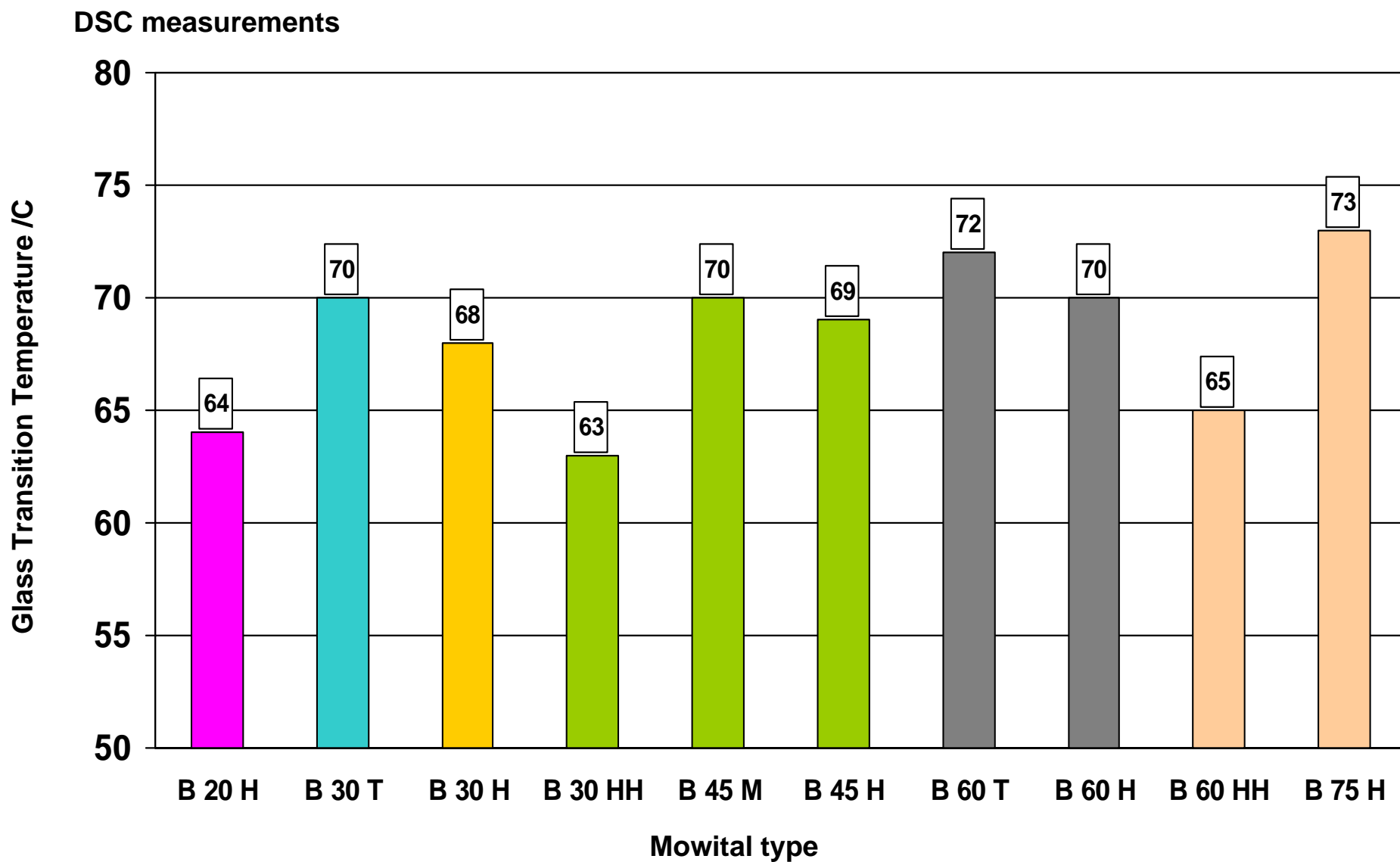
69-75
low

suffix	wt.-% PVOH
HH	11 – 14
H	18 – 21
M	21 – 24
T	24 – 27

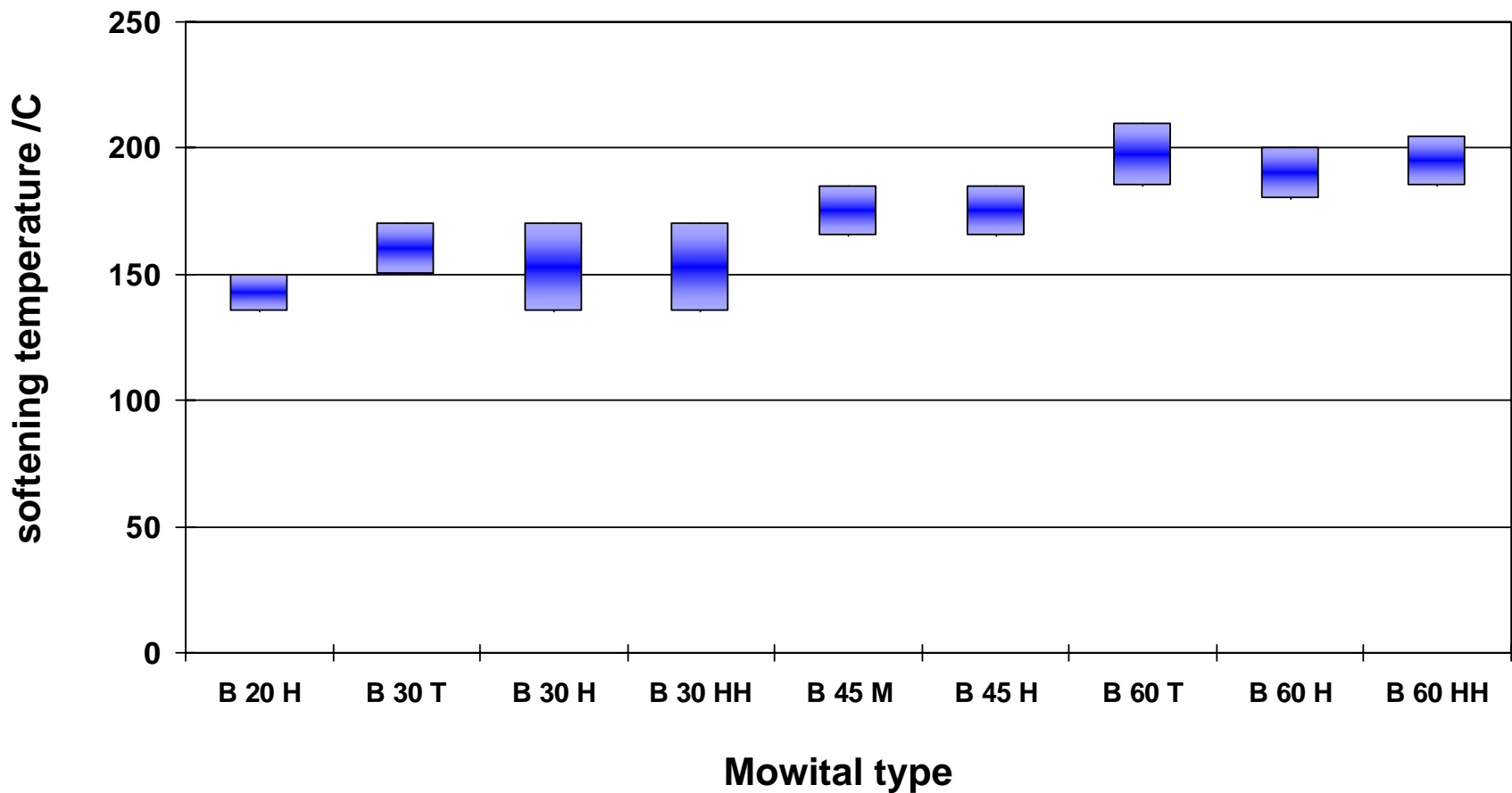


		Mowital B20H	Mowital B30T	Mowital B30H	Mowital B30HH	Mowital B60HH
<u>Powder</u>						
Bulk Density	g / cc	0.326	0.299	0.277	0.231	0.229
MI	g / 10min 190 degC, 2.16kg	109.5	28.7	16.2	11.3	1.6
<u>Film</u>						
Film property	Strength (kg/cm²)	105	433	443	410	494
	Elongation (%)	1	5	5	7	10
Water Absorption	20 degC x 24hrs	4.4	10.5	6	2.4	2.2
Pencil hardness	JISK5400	H	H	H	F	H

Film property; 20degC, 65%RH, speed 10 mm/min



measurement ring & ball method (DIN ISO 4625)

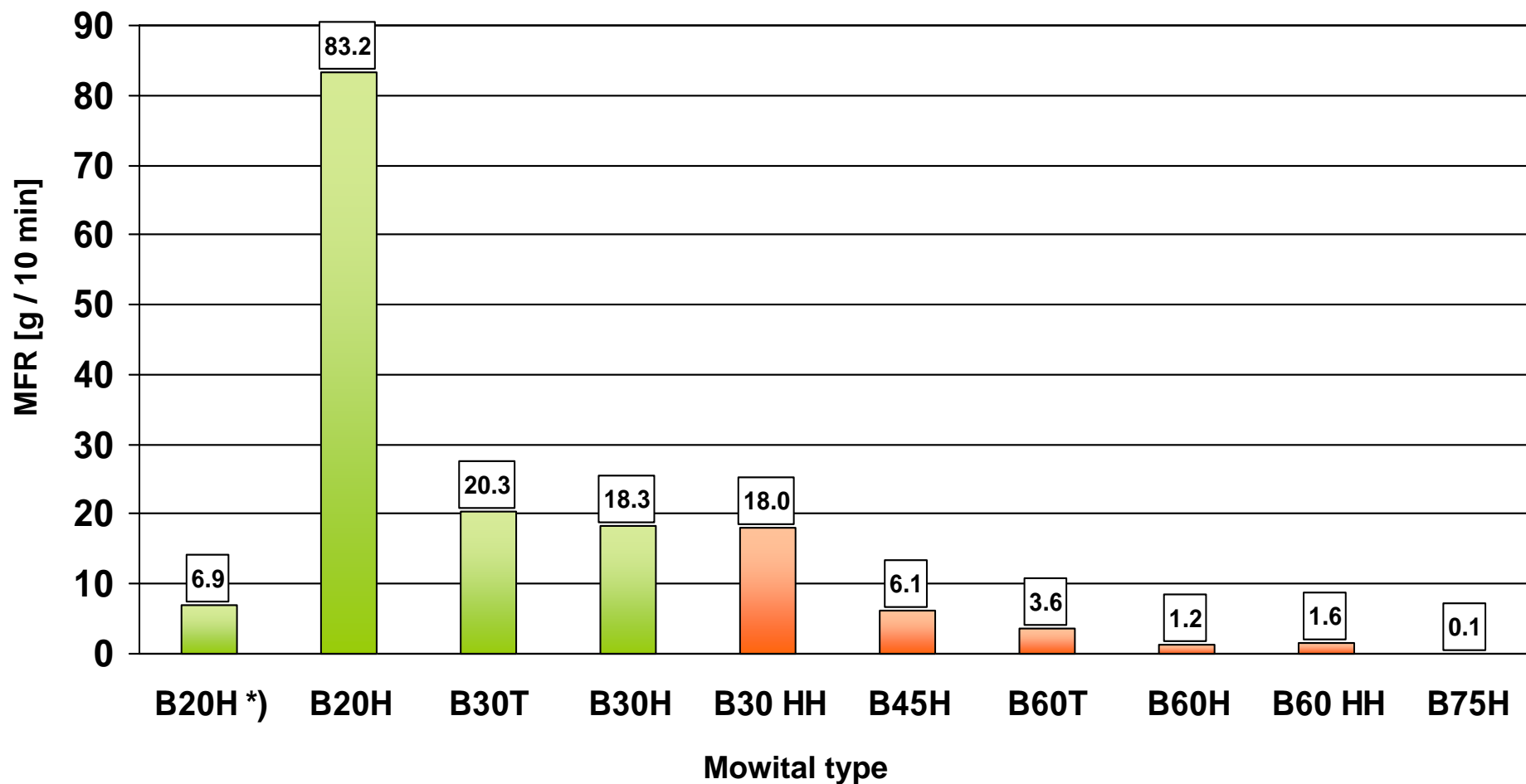


Molecular weight B14 < B16 < B20 < B30 < B45 < B60

Melt Flow Rate (MFR) measurements

conditions: weight: 2.16 kg, **temperature: 190 degC**, melting time: 5 min

***) temperature: 150 degC**



- ➡ Excellent adhesion to metal substrate even without primer
- ➡ Hardness of the coat (compared to Nylon 11)
- ➡ Transparent coating

As an additive;

- ➡ Additive to influence the surface structure (“Hammer finish“)
 - ➡ Additive to improve elasticity of the coating
 - ➡ Additive to improve wetting of edge domains
 - ➡ Additive to improve phase compatibility during extrusion
-



Mowital[®] for Powder Coatings - Performance

Powder formulation	Mowital B30H / pigment 100 / 3	Mowital B30HH / pigment 100 / 3	Commercially available Nylon 11 based powder
Coating condition	Fluidized bed Pre heating temp.: 310 degC (exact temp. of substrate is about 280 degC) Dipping time: 5 sec. After heating: 200 degC for 2 min		
Coating thickness	400 μm	400 μm	400 μm
Adhesion (1mm crosscut method, adhered part / 100)	100/100 (without primer)	100/100 (without primer)	100/100 (with primer)
Pencil hardness	H	H	B
Impact resistance (Ball drop method, 300g)	> 100cm	> 100cm	> 100cm
Weather ability (Sunshine weather meter; 3000hrs)	No change	No change	Chalking
Water absorption (20 degC / 24h)	6 %	2.4 %	1.3 %

kuraray Mowital[®] for Powder Coatings - Application

Formulation: Mowital B30H / pigment = 100 / 3

Coated by fluidized bed

Thickness: 400 μm



- ➡ Excellent adhesion to metal substrate even “without primer”
 - ➡ Higher hardness of the coat compared with Nylon 11
 - ➡ Better weather stability compared with Nylon 11
-

kuraray Mowital® for Powder Coatings – as an Additive

Powder ingredients:

Crylcoat 2428;	polyester resin (functionalized by carboxyl groups)	45.0 g
Araldit GT 6064;	epoxy resin	28.5 g
Kronos 2160;	titanium dioxide	25.0 g
Resiflow PV 88;	flow agent	1.0 g
Benzoin;	degasser	0.5 g
		total: 100.0 g
Mowital;	modifier	x g

Extrusion:

$T_1 = 100 \text{ degC}$, $T_2 = 110 \text{ degC}$, $T_3 = 112-13 \text{ degC}$

Stoving conditions:

10 min at 180 degC object temperature

kuraray Mowital® for Powder Coatings – as an Additive

Coated by Electrostatic Spraying;



Influence of Mowital B 60 H in powder coatings based on polyester / epoxy hybrid binder

content of Mowital B 60 H:

0.5% 1.0% 2.0%



Influence of Mowital B 30 T in powder coatings based on epoxy binder

content of Mowital B 30 T:

1% 5% 10%



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