

- PVOH Standard -

	Grade	Viscosity ¹⁾ DIN 53015 [mPa × s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]
Partially hydrolysed grades	Mowiol 3-85	3.4 - 4.0	84.2 - 86.2	0.5	5.0
	Mowiol 4-88	3.5 - 4.5	86.7 - 88.7	0.5	5.0
	Mowiol 5-88	5.0 - 6.0	86.7 - 88.7	0.5	5.0
	Mowiol 8-88	7.0 - 9.0	86.7 - 88.7	0.5	5.0
	Mowiol 13-88	11.5 - 14.5	86.7 - 88.7	0.5	5.0
	Mowiol 18-88	16.5 - 19.5	86.7 - 88.7	0.5	5.0
	Mowiol 23-88	21.5 - 24.5	86.7 - 88.7	0.5	5.0
	Mowiol 26-88	24.5 - 27.5	86.7 - 88.7	0.5	5.0
	Mowiol 32-88	30.0 - 34.0	86.7 - 88.7	0.5	5.0
	Mowiol 40-88	38.0 - 42.0	86.7 - 88.7	0.5	5.0
	Mowiol 47-88	45.0 - 49.0	86.7 - 88.7	0.5	5.0
	Mowiol 56-88	52.0 - 60.0	86.7 - 88.7	0.5	5.0
		Mowiol 30-92	28.0 - 32.0	91.5 - 93.3	0.5
Fully hydrolysed grades	Mowiol 4-98	4.0 - 5.0	98.0 - 98.8	0.5	5.0
	Mowiol 6-98	5.0 - 7.0	98.0 - 98.8	0.5	5.0
	Mowiol 10-98	9.0 - 11.0	98.0 - 98.8	0.5	5.0
	Mowiol 20-98	18.5 - 21.5	98.0 - 98.8	0.5	5.0
	Mowiol 30-98	28.5 - 31.5	98.0 - 98.8	0.5	5.0
	Mowiol 56-98	52.0 - 60.0	98.0 - 98.8	1.0	5.0
		Mowiol 15-99	12.5 - 17.5	99.0 - 99.8	0.5
	Mowiol 28-99	26.0 - 30.0	99.0 - 99.8	0.5	5.0

1) of a 4 % aqueous solution at 20 °C determined by Hoppler viscometer.

2) calculated as Na2O

3) after 3 hours' drying at 105 °C/DIN 53189. Methanol content: less than 3 %.

*Additional data valid for Mowiol grades

pH of a 4 % solution in distilled water (DIN19261): 4.5 - 7 partially and fully hydrolysed grades.

Bulk density (DIN 53466): approx. 0.4 - 0.6 gcm⁻³, depending on grade.

*The test methods for determining the data are fully described in our "Mowiol-Polyvinyl alcohol" brochure.

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	Grade	Viscosity ¹⁾ DIN 53015 [mPa x s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]	
Partially hydrolysed grades	PVA 203	3.2 - 3.6	87.0 - 89.0	0.4	5.0	
	PVA 205	4.6 - 5.4	86.5 - 89.0	0.4	5.0	
	PVA 205MB ⁴⁾	4.6 - 5.4	86.5 - 89.0	0.4	5.0	
	PVA 205S ⁴⁾	4.6 - 5.4	86.5 - 89.0	0.4	5.0	
	PVA 217	20.5 - 24.5	87.0 - 89.0	0.4	5.0	
	PVA 217SB ⁴⁾	20.5 - 24.5	87.0 - 89.0	0.4	5.0	
	PVA 217S ⁴⁾	20.5 - 24.5	87.0 - 89.0	0.4	5.0	
	PVA 220	27.0 - 33.0	87.0 - 89.0	0.4	5.0	
	PVA 220SB ⁴⁾	27.0 - 33.0	87.0 - 89.0	0.4	5.0	
	PVA 220S ⁴⁾	27.0 - 33.0	87.0 - 89.0	0.4	5.0	
	PVA 224	40.0 - 48.0	87.0 - 89.0	0.4	5.0	
	PVA 224SB ⁴⁾	40.0 - 48.0	87.0 - 89.0	0.4	5.0	
	PVA 224S ⁴⁾	40.0 - 48.0	87.0 - 89.0	0.4	5.0	
	PVA 226	50.0 - 60.0	86.0 - 89.0	0.4	5.0	
	PVA 235	90.0 - 110.0	87.0 - 89.0	0.4	5.0	
	Medium hydrolysed grades	PVA 403	2.8 - 3.3	78.5 - 81.5	0.4	5.0
		PVA 405	4.5 - 5.2	80.0 - 83.0	0.4	5.0
PVA 420		37.0 - 45.0	79.0 - 81.0	0.4	5.0	
PVA CST		24.0 - 30.0	95.5 - 96.5	0.4	5.0	
Fully hydrolysed grades	PVA 613	14.5 - 18.5	92.5 - 94.5	0.4	5.0	
	PVA 624	50.0 - 60.0	95.0 - 96.0	0.4	5.0	
	PVA 706	6.3 - 7.7	90.5 - 92.5	0.4	5.0	
	PVA 103	3.2 - 3.8	98.0 - 99.0	0.7	5.0	
	PVA 105	5.2 - 6.0	98.0 - 99.0	0.7	5.0	
	PVA 105K ⁴⁾	5.2 - 6.0	98.0 - 99.0	0.7	5.0	
	PVA 110	10.2 - 11.8	98.0 - 99.0	0.7	5.0	
	PVA 117	25.0 - 31.0	98.0 - 99.0	0.4	5.0	
	PVA 117K ⁴⁾	25.0 - 31.0	98.0 - 99.0	0.4	5.0	
PVA 117S ⁴⁾	25.0 - 31.0	98.0 - 99.0	0.4	5.0		
PVA 117H ⁴⁾	25.0 - 31.0	> 99.3	0.7	5.0		
PVA 124	54.0 - 66.0	98.0 - 99.0	0.4	5.0		

1) of a 4 % aqueous solution at 20 °C, determined by Brookfield synchronised-motor rotary-type viscometer

2) calculated as Na₂O

3) after 3 hours' drying at 105 °C.

4) K, MB, SB: anti-foaming/defoaming grade; S: finer powder grade; H: super-hydrolysed

This information is based on our present state of knowledge and is intended to provide general notes on our products on their use. It should therefore not be constructed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our General Condition of Sale.

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- PVOH Standard plus -

	Grade	Viscosity ¹⁾ DIN 53015 [mPa x s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]
Fine powder G2 grades ⁴⁾	Mowiol 4-88 G2	3.5 - 4.5	86.7 - 88.7	0.5	5.0
	Mowiol 8-88 G2	7.0 - 9.0	86.7 - 88.7	0.5	5.0
	Mowiol 18-88 G2	16.5 - 19.5	86.7 - 88.7	0.5	5.0
	Mowiol 26-88 G2	24.5 - 27.5	86.7 - 88.7	0.5	5.0
	Mowiol 47-88 G2	45.0 - 49.0	86.7 - 88.7	0.5	5.0
Low ash grades	Mowiol 4-88 low ash	3.5 - 4.5	86.7 - 88.7	0.09	5.0
	Mowiol 8-88 low ash	7.0 - 9.0	86.7 - 88.7	0.09	5.0
	Mowiol 40-88 low ash	38.0 - 42.0	86.7 - 88.7	0.09	5.0
	Mowiol 4-98 low ash	4.0 - 5.0	98.0 - 98.8	0.09	5.0
	Mowiol 56-98 low ash	52.0 - 60.0	98.0 - 98.8	0.09	5.0
	Mowiol 28-99 low ash	26.0 - 30.0	99.0 - 99.8	0.09	5.0

1) of a 4 % aqueous solution at 20 °C determined by Hoppler viscometer.

2) calculated as Na₂O

3) after 3 hours' drying at 105 °C/DIN 53189. Methanol content: less than 3 %.

4) Particle size is below 200 μm.

- PVOH Specialties-

Melt moldable grades;

	Grade	Melt Flow Rate		Melting Temp. [°C]	Glass Transition Temp. [°C]
		2.16 kg [g/10min.]	[°C]		
Mowiflex	TC 232	< 1 (39; 21.6kg)	190 (190)	178	34
CP-polymer	CP - 4104 MI	75 - 80	230	210	55

High Viscosity / low degree of hydrolysis grades;

High viscosity / low DH grades

	Grade	Viscosity ¹⁾	Degree of hydrolysis	Max Ash content ²⁾	Max Volatile content ³⁾
		DIN 53015 [mPa × s]	(saponification) [mol.-%]	[%]	[%]
High viscosity grades	PVA 140H	(250)	> 99.7	1.0	5.0
	PVA 235	80.0 - 110.0	87.0 - 89.0	0.4	5.0
Low hydrolyzed grades	PVA 420H	29.0 - 35.0	79.0 - 81.0	0.4	5.0
	PVA 424H	45.0 - 51.0	78.5 - 80.5	0.2	5.0
	PVA 403	2.8 - 3.3	78.5 - 81.5	0.4	5.0
	PVA 405	4.5 - 5.2	80.0 - 83.0	0.4	5.0
	PVA 505	4.2 - 5.0	72.5 - 74.5	0.4	5.0
Water dispersible grades	PVA LM-20	3.0 - 4.0 ⁴⁾	38.0 - 42.0	n.a.	5.0
	PVA LM-10HD	4.5 - 5.7 ⁴⁾	38.0 - 42.0	n.a.	5.0

1) of a 4 % aqueous solution at 20 °C determined by Brookfield synchronised rotary-type viscometer.

2) calculated as Na2O

3) after 3 hours' drying at 105 °C. Methanol content: less than 3 %.

4) solvent; water / methanol = 1/1

- PVOH Specialties-

Modified grades;

	Grade	Viscosity ¹⁾ DIN 53015 [mPa x s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]
Carboxylic acid containing grades	KL-118	29.0 - 34.0	95.0 - 99.0	n.a.	n.a.
	KL-318	20.0 - 30.0	85.0 - 90.0	n.a.	5.0
	KL-506	5.2 - 6.2	74.0 - 80.0	n.a.	5.0
Cationic group containing grades	CM-318	17.0 - 27.0	86.0 - 91.0	n.a.	n.a.
Silanol containing grades	R- 1130	20.0 - 30.0	98.0 - 99.0	n.a.	5.0
	R- 2105	4.5 - 6.0	98.0 - 99.0	n.a.	n.a.
	R- 3109	9.0 - 12.0	98.0 - 99.0	n.a.	5.0

1) of a 4 % aqueous solution at 20 °C determined by Brookfield synchronised rotary-type viscometer.

2) calculated as Na₂O

3) after 3 hours' drying at 105 °C. Methanol content: less than 3 %.

EXCEVAL, water soluble ethylene-vinyl alcohol copolymer;

	Grade	Viscosity ¹⁾ DIN 53015 [mPa x s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]
Super hydrolyzed grades	HR-3010	12.0 - 16.0	99.0 - 99.4	0.4	5.0
Fully hydrolyzed grades	RS-2117	23.0 - 30.0	97.5 - 99.0	0.4	5.0
	AQ-4104	3.5 - 4.5	98.0 - 99.0	0.4	5.0
Medium hydrolyzed grades	RS-1717	23.0 - 30.0	92.0 - 94.0	0.4	5.0

1) of a 4 % aqueous solution at 20 °C determined by Brookfield synchronised rotary-type viscometer.

2) calculated as Na₂O

3) after 3 hours' drying at 105 °C. Methanol content: less than 3 %.

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- PVOH Specialties-

PVOH for PVC polymerization;

	Grade	Viscosity ¹⁾ DIN 53015 [mPa × s]	Degree of hydrolysis (saponification) [mol.-%]	Max Ash content ²⁾ [%]	Max Volatile content ³⁾ [%]
Primary suspending agent	PVA 420H	29.0 - 35.0	79.0 - 81.0	0.4	5.0
	PVA 424H	45.0 - 51.0	78.5 - 80.5	0.2	5.0
	PVA L-8	5.0 - 6.0	69.5 - 72.5	n.a.	5.0
	PVA L-9	6.0 - 6.5	69.5 - 72.5	n.a.	5.0
	PVA L-9-78	6.0 - 6.7	76.5 - 79.0	n.a.	5.0
Secondary suspending agent (powder)	PVA LM-20	3.0 - 4.0 ⁴⁾	38.0 - 42.0	n.a.	5.0
	PVA LM-10HD	4.5 - 5.7 ⁴⁾	38.0 - 42.0	n.a.	5.0
Anti dry foam agent	ACM-3	2.8 - 3.3	n.a.	n.a.	5.0

1) of a 4 % aqueous solution at 20 °C determined by Brookfield synchronised rotary-type viscometer.

2) calculated as Na₂O

3) after 3 hours' drying at 105 °C. Methanol content: less than 3 %.

4) solvent; water / methanol = 1/1