

# KURARAY POVAL™ PVC Grades

## Technical data sheet

### Characteristics

Modified polyvinyl alcohol (PVOH) grades with varying degrees of polymerization, hydrolysis and co-monomers.

### Recommended Uses

Suitable to be used as primary suspending agent and secondary suspending agent for PVC suspension polymerization.

### Form supplied

Granules / fine powder with defined grain size.

### Specifications

The data are determined by our quality control for each lot prior to release.

### KURARAY POVAL™ for PVC

Type	Grade [ KURARAY POVAL™ ]	Viscosity <sup>1)</sup> [mPa·s]	Hydrolysis [mol.-%]	Volatile Max [%]	Ash Max <sup>2)</sup> [%]	pH
Primary Suspending Agent	L-8	5.0 – 5.8	69.5 - 72.5	3.0	1.1	5.0 - 7.0
	L-9	5.5 - 6.1	69.5 - 72.5	3.0	1.1	5.0 - 7.0
	L-9-78	6.0 - 6.7	76.5 - 79.0	5.0	1.2	5.0 - 7.0
	L-10	5.0 - 7.0	71.5 - 73.5	5.0	1.0	5.0 - 7.0
	40-80 E	37.0 – 45.0	79.0 - 81.0	5.0	0.4	5.0 – 7.0
	32-80	29.0 - 35.0	79.0 - 81.0	5.0	0.4	5.0 - 7.0
	48-80	45.0 - 51.0	78.5 - 80.5	5.0	0.2	5.0 - 7.0
Secondary Suspending Agent	LM-10 HD	4.5 - 5.7	38.0 - 42.0	3.0	0.6	n.a.
	LM-20	3.0 - 4.0	38.0 - 42.0	3.0	1.0	n.a.

Note: 1) Viscosity is measured at 4% aqueous solution at 20°C determined by Brookfield synchronized-motor rotary type.  
2) Ash content is measured at dry basis as Na<sub>2</sub>O.

### Additional data, valid for all KURARAY POVAL™ grades

As for 32-80 and 48-80, the first number in the nomenclature denotes the viscosity of the 4 % aqueous solution at 20 °C as a relative measure for the molar mass of the KURARAY POVAL™. The second number denotes the degree of hydrolysis of the polyvinyl acetate from which the KURARAY POVAL™ grade is derived.

Nomenclature of L and LM Grades are different from standard grades. L series is specially made as primary suspending agent and LM series is specially made for secondary suspending agent.

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### Properties and uses

Polyvinyl alcohols are water-soluble polymers manufactured by alcoholysis of polyvinyl acetate. The properties of the various grades are mainly governed by the molecular weight and the remaining content of acetyl group.

KURARAY POVAL™ 32-80 and 48-80 are polyvinyl alcohol grades with 80 mol% degree of hydrolysis. They are primarily used as primary suspending agent for PVC suspension polymerization as they have good polymerization stability and high bulk density.

L-Polymer grades are polyvinyl alcohol grades that have been developed to be used as primary suspending agents for PVC suspension polymerization. The desired grain size can be obtained at low level of L-Polymer. Also a precise control of the particle size distribution is achieved and PVC grains tend to be more spherical using L-Polymer grades. PVC grains of good porosity are produced while maintaining a satisfactory bulk density. The plasticizer speed, the “fish eyes” count and the residual vinyl chloride monomer level are drastically improved using L-Polymer grades.

Meanwhile, LM-Polymer grades are primarily used as secondary suspending agent for PVC polymerization due to their high porosity. Porosity determines the ease of removal of unreacted vinyl chloride monomer as well as the speed of plasticizer uptake. Besides, LM-Polymer grades have self-dispersing property and high surface activity.

### Processing

#### Preparation of KURARAY POVAL™ 32-80 and 48-80 solutions

KURARAY POVAL™ is usually processed as an aqueous solution. The solution should be prepared in corrosion resistant vessels. As a first step KURARAY POVAL™ is sprinkled into cold water during stirring and heated to 90 - 95 °C in a water bath or by the use of live steam. The solution should be stirred during cooling in order to prevent skin formation. The speed of dissolution increases with increasing temperature. The speed of dissolution decreases with increasing molecule size. The dissolving process is also made more difficult when there is a transition to higher concentrations. As a result even a more highly concentrated KURARAY POVAL™ solution, e.g. a 30 % solution of KURARAY POVAL™ 32-80, should be produced at temperatures of 90 -95 °C.

#### Preparation of KURARAY POVAL™ L grades solutions

As first step PVOH is sprinkled into cold water during stirring and heated to 70 – 80 °C in a water bath. In the case of KURARAY POVAL™ L-9 and L-9-78, it is recommended to heat the solution up to about 90°C. After addition of all L-Polymer, the agitation should be continued for further 90 min. During this time the stirring velocity should be reduced in order to prevent foaming. Finally the solution should then be cooled down below the cloud point with 90 min. The solution should be prepared in corrosion-resistant vessels. Recommended concentration for a stock solution is 2 – 4 %. A possible foam formation when stirred or during transport in pipelines can be prevented by using a suitable design such as a low-speed anchor stirrer or by avoiding steep downward gradients in the pipelines.

#### Preparation of KURARAY POVAL™ LM grades solutions

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Firstly, PVOH will be sprinkled slowly into pure water at normal room temperature and the mixture will be stirred to avoid lump formation. After addition of all LM-Polymer, the agitation should be continued for further 1 to 2 hours below 40°C. During this time, the stirring speed should be reduced in order to prevent foaming issue. The solution should be prepared in corrosion-resistant vessels.

### Preservation

Like any other polyvinyl alcohol, KURARAY POVAL™ in the form of an aqueous solution can be attacked by microorganisms under certain conditions. In the acidic pH range the main organisms reproduced are the fission fungi, whilst bacteria grow most readily in a neutral to weakly alkaline medium. The solution can be preserved from any microorganism attack by adding a preservative. Quantities of about 0.01 - 0.20 % by weight preservative, relative to the KURARAY POVAL™ solution, are generally sufficient. Compatibility and efficiency must be tested. Information on the quantity to be used is available from the suppliers.

It is advisable for the KURARAY POVAL™ solution to be prepared and stored in clean containers. Considering the resistance that may be shown by some microorganisms to the preservatives employed, the dissolving vessel in particular, together with the filling equipment (pipes, valves, tubing etc.), needs to be kept clean. Any skins or incrustations should be removed. In the event of complications the possibility of changing to a different preservative must be considered.

### Storage

KURARAY POVAL™ can be stored for an unlimited period of time under appropriate conditions that is in its original packs in closed, dry rooms, at room temperature.

## Industrial Safety and Environmental Protection

Not classified as a dangerous substance or preparation according to the current criteria of chemical legislation. A safety data sheet is available on request.

## Special remarks

### Status as governed by foodstuffs legislation

Refer to the KURARAY POVAL™ webpage for regulatory information.

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**Manufactured by Kuraray Co., LTD.**

<https://www.kuraray-poval.com/ja/>