

## Low Methanol KURARAY POVAL<sup>™</sup>

### Methanol ≤ 0.1 wt% (product made in Japan)

Grade name (tentative)		Viscosity <sup>1)</sup> [mPa•s]	Degree of hydrolysis [mol%]	Methanol <sup>2)</sup> content [%]	Ash <sup>3)</sup> content [%]	pH
KURARAY POVAL <sup>™</sup>	22-88 LV	20.5-24.5	87.0-89.0	≤ 0.1	≤0.4	5.0-7.0

- 1) of a 4 % aqueous solution at 20 °C DIN 53015 / JIS K 6726  
 2) Kuraray method by HS-GC  
 3) calculated as Na<sub>2</sub>O

### Methanol ≤ 0.3 wt% (product made in Germany)

Grade name (tentative)		Viscosity <sup>1)</sup> [mPa•s]	Degree of hydrolysis [mol%]	Methanol <sup>2)</sup> content [%]	Ash <sup>3)</sup> content [%]	pH
KURARAY POVAL <sup>™</sup>	4-88 LV	3.5-4.5	87.0-89.0	≤ 0.3	≤0.4	5.0-7.0
	26-88 LV	24.5-27.5	87.0-89.0	≤ 0.3	≤0.4	5.0-7.0
	40-88 LV	38.0-42.0	87.0-89.0	≤ 0.3	≤0.4	5.0-7.0
	49-88 LV	45.0-52.0	87.0-89.0	≤ 0.3	≤0.4	5.0-7.0

- 1) of a 4 % aqueous solution at 20 °C DIN 53015 / JIS K 6726  
 2) Kuraray method by HS-GC  
 3) calculated as Na<sub>2</sub>O

- Statement to prove absence of following substances will be available.  
TSE/BSE, heavy metals, conflict minerals, GMO, etc.
- Specically for the products made in Germany (methanol ≤ 0.3 %) we would be able to achieve GMP for cosmetic in 2019 following the guide from EFCI if it creates additional value in the market

## Low Methanol KURARAY POVAL™

### Processing

#### Preparation of KURARAY POVAL™ solutions, general procedure

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 increased molecular weight (increased viscosity of the aqueous solution). 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™ 4-88, should be produced at temperatures of 90 -95 °C.

Polyvinyl alcohol solutions may produce foam when stirred or during transport in pipelines, but this can be largely prevented by using a suitable stirrer design such as a low-speed anchor stirrer or by avoiding steep downward gradients in the pipelines.

Suitable defoamers are n-octanol, tributyl phosphate, Foamaster® 223 and the Agitan® grades 301, 305 and 731, which are used in quantities of up to approx. 0.001 - 0.010 % relative to the solution. Polyvinyl alcohol solutions which have been stored for lengthy periods may increase in viscosity. This is especially true of fully saponified grades in high concentrations and at low temperatures. The original viscosity can be restored by heating and stirring.

#### 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. Products which have proved especially suitable for the purpose are for example the Mergal® grades K9N and K14. The dosage depends on the concentration of the solution, the storage temperature and the nature and intensity of the infection. Quantities of about 0.01 - 0.2 % 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.

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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.

Certain applications for KURARAY POVAL™ in solution (cosmetic preparations, finger paints etc.) require the preservatives employed to be of approved types and physiologically inert. In such instances it is essential for the relevant legal regulations regarding physiological effects to be taken into account.

### Storage

KURARAY POVAL™ resin 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. Kuraray would recommend that our product is used within 12 months from the shipment date as given on the certificate of analysis.

## General

### Industrial Safety and Environmental Protection

Not classified as a dangerous substance or preparation according to the current criteria of chemical legislation, or of the EU Directives 67/548/EC. A safety data sheet is available on request.