

KURARAY POVAL™ 200-88KX SB and 105-88KX SB

Technical data sheet

Characteristics

Polyvinyl alcohol (PVOH) having varying degree of polymerization

Recommended Uses

Modification of emulsion adhesives, production of paper adhesives and remoisten able adhesives. Protective colloid in emulsion polymerization and raw material for the production of sizes and textile finishes. Binder in the surface finishing of paper. Also for regulating the processing characteristics of all types of coatings.

Form supplied

Colorless, fine granules

Specification

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

Grade name		Viscosity ¹⁾ JIS K 6726 [mPa•s]	Degree of hydrolysis [mol%]	Non-volatile content [%]	Ash ²⁾ content [%]	pH
KURARAY POVAL™	200-88KX SB	175.0 - 225.0	87.0 - 89.0	94.0 ≤	≤ 0.4	6.0 ± 1.0
KURARAY POVAL™	105-88KX SB	90.0 - 120.0	87.0 - 89.0	94.0 ≤	≤ 0.4	6.0 ± 1.0

¹⁾ Viscosity of a 4 % aqueous solution at 20 °C

²⁾ Calculated as Na₂O

Additional data, valid for all KURARAY POVAL grades

Non-volatile content min. 95 % (after 3 hours' drying at 105 °C/DIN 53189). Methanol content: less than 3 %. pH of a 4 % solution in distilled water (DIN 19261): 5 - 7. Bulk density (DIN 53466): approx. 0.4 - 0.6 gcm⁻³, depending on grade. 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.

Properties and uses

Polyvinyl alcohol (PVOH) is widely used as a stabilizer for the emulsion polymerization of VAM or as a post additive for emulsion. In general, the emulsion with PVOH provides such advantages as, high viscosity, high mechanical stability, high film strength and high heat resistance compared to other stabilizers. But the large dosage of PVOH decreases water resistance of the adhesive (or the film) produced with the emulsion. 200-88KX SB and 105-88KX SB can achieve high viscosity emulsions in a small dosage of PVOH. The emulsion with 200-88KX SB or/and 105-88KX SB can have better balanced performances than with conventional PVOH.

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Processing

Preparation of KURARAY POVAL 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 80 - 90 °C in a water bath for 1 - 2 h. 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. Highly concentrated KURARAY POVAL solution needs higher temperature and longer time to dissolve completely.

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 micro-organisms 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 micro-organism 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.

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 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.

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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.

Special remarks

Status as governed by foodstuffs legislation

Refer to the KURARAY POVAL webpage for regulatory information.