

Adding value to your products - worldwide



KURARAY POVAL™, EXCEVAL™, ELVANOL™ and MOWIFLEX™ are the trademarks for polyvinyl alcohols made by Kuraray. Their key characteristics – outstanding film-forming properties and high binding strength – add real value to your products. Our polymers are water-soluble, highly reactive, crosslinkable and foamable. They have high pigment binding capacity, protective colloid characteristics and thickening effects. The physical and chemical properties of KURARAY POVAL™ make it ideal for a wide variety of applications, ranging from adhesives through paper and ceramics to packaging

films. Many of our polymers are food contact-approved and thus suitable for food applications. Ecologically KURARAY POVAL™ is advantageous due to its biodegradability and the fact that combustion does not generate residues. It is available in various particle sizes from granules to fine powders. Kuraray produces its wide range of KURARAY POVAL™ grades in Japan, Singapore, Germany and the USA. Kuraray's global production and service network make us your partner of choice for innovative high-quality PVOH resins. **KURARAY - Here to Innovate.**

Kuraray America, Inc.

2625 Bay Area Blvd.,
Suite 600 Houston, TX77058
United States of America
Phone: +1 800 423 9762
info.kuraray-poval@kuraray.com

Kuraray Europe GmbH

Philipp-Reis-Str. 4
65795 Hattersheim am Main,
Germany
Phone: +49 69 305 85 351
info.eu-poval@kuraray.com

Kuraray Asia Pacific Pte., Ltd.

250 North Bridge Road
#10-01/02 Raffles City Tower
Singapore 179101
Phone: +65 6337 4123
info@poval.sg@kuraray.com

Kuraray China Co., Ltd.

Unit 2207, 2 Grand Gateway
3 Hongqiao Road, Xuhui District,
Shanghai 200030, China
Phone: +86 21 6119 8111
info@poval.cn@kuraray.com

Head Office:

Kuraray Co., Ltd.

Ote Center Bldg.
1-1-13, Otemachi Chiyoda-ku
Tokyo 100-8115, Japan
Phone: +81 3 67 01 1000
info@poval.jp@kuraray.com

KURARAY POVAL™ LV-Grades

A biodegradable and sustainable polymer for personal care applications



KURARAY POVAL™ LV-grades

KURARAY POVAL™ LV-grades have been specially designed for cosmetic and personal care applications. For these grades we have compiled adapted regulatory brochures/dossiers and give statements on: Nanomaterials, Heavy metals, Micro-plastics, Fragrances, Methanol, Animal testing and Biodegradation. The KURARAY POVAL™ LV-grades are produced under GMP conditions and have a specified Methanol (MeOH) content below

0,3% ex Germany and even below 0.1% ex Japan.

Polyvinyl alcohol is a nonionic water soluble polymer that is well suited for water based cosmetic and personal care products. Polyvinyl alcohol is a linear and crystalline polymer that is also biodegradable under the right conditions.

Functionalities

- ✓ Film former
- ✓ Adhesion promotor
- ✓ Encapsulater
- ✓ Emulsifier
- ✓ Lubricant
- ✓ Viscosity controller



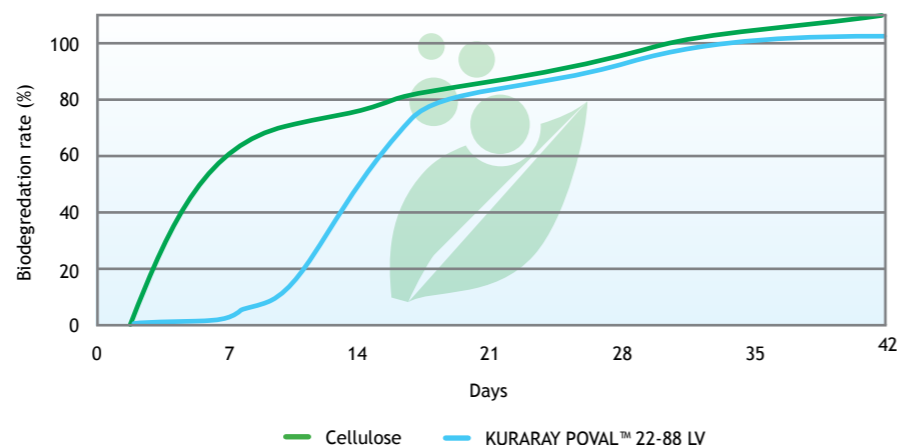
Applications

- ✓ Skin care (peel off mask, etc.)
- ✓ Color cosmetics (mascara, brows, etc.)
- ✓ Sun care
- ✓ Hair care (hair colorant, shampoo, etc.)



Biodegradability of KURARAY POVAL™ LV-grades

Polyvinyl alcohol (PVOH) is recognized as one of the very few vinyl polymers which is water soluble and biodegradable in water in the presence of suitably acclimated micro-organisms. Also KURARAY POVAL™ LV is biodegradable according to ISO 14851. This has been confirmed by internal tests as well as at external laboratories.



KURARAY POVAL™ LV-grades for personal care

Methanol ≤0.3 wt% (product made in Germany)

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

Methanol ≤0.1 wt% (product made in Japan)

| | | | | | |
|-------------------------|-------------|-------------|-------|-------|-----------|
| KURARAY POVAL™ 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 Na₂O

Case study - facial / peel off mask

Both formulations give peel-off masks with even coverage, easy to apply, quick drying time and mechanical properties allowing the removal of the masks in one piece. They represent a good starting point for the formulation of commercial peel-off masks.

| pH. | Ingredients (Trade names) | Ingredients (INCI Names) | %W/W | |
|-----|---------------------------|---|----------------|----------------|
| | | | FR-0256H-19049 | FR-0256O-19091 |
| A | Water | Water | 60,40 | 58,20 |
| | Xanthan Gum FNPC | Xanthan Gum | - | 0,20 |
| | Glycerin | Glycerin | 5,00 | 5,00 |
| | KURARAY POVAL™ 26-88 LV | Polyvinyl alcohol | 2,00 | 2,00 |
| | KURARAY POVAL™ 49-88 LV | Polyvinyl alcohol | 10,00 | 10,00 |
| B | Water | Water | 5,00 | 5,00 |
| | Butylene Glycol | Butylene Glycol | 2,00 | 2,00 |
| | Polyglykol 1500 S | PEG-32 | 5,00 | 5,00 |
| C | NEOFECT 304 | Benzyl Alcohol, Caprylyl Glycol | 0,60 | 0,600 |
| D | Alcohol | Alcohol | 10,00 | 10,00 |
| E | BK Bright Fire Red DCS | Synthetic Fluorophlogopite, Iron Oxides, Dimethicone, Triethoxycaprylylsilane | - | 2,00 |

Transparent mask Metallic colored mask for good skin coverage