

January 29, 1999
Kuraray Co., Ltd.

New Business Development, RS POLYMER, a New Water-Soluble Resin

Utilizing its innovative synthesis technology, Kuraray has developed a new water-soluble resin, RS POLYMER, and has begun test operation of a pilot facility at its Nakajo Plant in Nakajo-machi, Niigata Prefecture. Moreover, we are constructing a production facility at our Okayama Plant with a view to beginning production in January 2000.

1. What are Poval and “EVAL”?

Kuraray was the first company in the world to commercialize poval (polyvinyl alcoholic resin), a water-soluble synthetic resin. With its superior water-solubility, adhesivity, and emulsifying properties, poval has a wide variety of applications, such as a warp sizing agent, a paper processing agent, and an adhesive. Kuraray is the world's leading manufacturer of poval, with approximately 30% of the world market.

Kuraray was also the first to commercialize “EVAL” (EVOH resin). Due to its outstanding gas barrier properties, which enable it to shut out such gases as oxygen and carbon dioxide, “EVAL” is used as a food packaging material and for non-food applications. Kuraray has a 70% share of the world market for EVOH resins.

2. What is “RS POLYMER”?

Being a water-soluble resin combining the properties of poval and EVOH resins, RS POLYMER has the following qualities, making possible the development of a wide range of applications.

(1) Water resistance and gas barrier properties

Although RS POLYMER is water soluble, it shows water resistance and barrier properties. If, for example, a product is bonded to a substrate using an emulsion (an adhesive used for wood materials) containing RS POLYMER, water resistance is improved to a level where the product does not peel off even if it comes into contact with hot water. Furthermore, when an RS POLYMER solution is applied onto surfaces of substrates such as paper and films, these items demonstrate not only water resistance, but also high barrier properties against a variety of gases, oil and organic solvents.

(2) Stable viscosity in solution at low temperatures

When RS POLYMER is dissolved in water, it demonstrates improved workability at the time of application, free from such problems as the changing viscosity of solutions over time (the gelation problem).

(3) Melt-molding properties

As RS POLYMER has both melting properties and water solubility, it opens up the possibility of developing new molding applications, such as the molding of films, sheets, and injection-blow molded bottles with water soluble property.

(4) Biodegradability

Thanks to the excellent biodegradability of RS POLYMER, it is easy to conform to water regulations and to lighten the load placed on wastewater treatment systems. It is particularly effective for applications such as warp sizing.

3. Business Plan for “RS POLYMER”

(1) Pilot Plant

- (i) Location: Nakajo Plant (Nakajo-machi, Niigata Prefecture)
- (ii) Production capacity: 800 tons p.a.
- (iii) Production begun: February 1996

(2) Production Facility

- (i) Location: Okayama Plant (Kaigandori 1-2-1, Okayama City; Plant Manager: Tatsuya Nakano, Director)
- (ii) Production capacity: 10,000 tons p.a.
- (iii) Construction begun: November 1998
- (iv) Operations to begin: January 2000
- (iv) Capital investment: ¥1,000 million approx.

(3) Marketing Plan

At present, the domestic market takes precedence. However, once this production facility comes on stream, we hope to expand into the export market with its huge latent demand. We are therefore now promoting sampling activities targeted at overseas countries.

Sales targets:	Fiscal 2000	¥1,000 million
	Fiscal 2002	¥3,000 million
	Fiscal 2005	¥5,000 million