

# High-Acid Value Polyester Resins

Developed product

PLAS COAT Z-730 · PLAS COAT Z-2041 · GX-1484 · GX-1488 · GX-1554

- Environmentally friendly, **low-VOC waterborne coating**.
- **Also available as a solid resin**; soluble in organic solvents such as ethyl acetate and methyl ethyl ketone (MEK).
- **Resin that can be used in either water-based or solvent-based systems**.
- Removable with alkaline water.
- Suitable for use as a polymeric emulsifier.
- Excellent adhesion to PET film.
- Forms a coating film with excellent clarity.
- **Coating film properties can be improved by using a crosslinker that reacts with COOH groups.**

## General properties

| Product name     | General properties (Water-borne dispersion) |                        |             |                                     | General properties (Solid resin) |                      |                                 | Supply form                                    |
|------------------|---------------------------------------------|------------------------|-------------|-------------------------------------|----------------------------------|----------------------|---------------------------------|------------------------------------------------|
|                  | Solid content (%)                           | Viscosity (mPa·s/20°C) | pH (10% aq) | Solvent (%)                         | Tg (°C)                          | Acid value (mgKOH/g) | Refractive index (RT, 632.8 nm) |                                                |
| PLAS COAT Z-730  | 25                                          | 10                     | 6.5 ~ 8.5   | Water: 75, IPA <sup>※</sup> : 0~0.9 | 46                               | 50 ~ 65              | 1.55                            | Water-borne dispersion or solid resin (flakes) |
| PLAS COAT Z-2041 | 25                                          | 5                      | 6.0 ~ 9.0   | Water :75                           | 55                               | 50 ~ 80              | No data                         |                                                |
| GX-1484          | 25                                          | 10                     | 6.5 ~ 9.5   | Water :75                           | 48                               | 60 ~ 100             | No data                         |                                                |
| GX-1488          | 25                                          | 10                     | 6.0 ~ 9.0   | Water :75                           | 70                               | 50 ~ 80              | No data                         |                                                |
| GX-1554          | 25                                          | 5                      | 6.5 ~ 8.5   | Water :75                           | 99                               | 55 ~ 75              | 1.61                            |                                                |

※ IPA : Isopropyl alcohol (CAS No. 67-63-0)

※ These values are for reference only and do not constitute product specifications.

| Product name     | Water dispersibility | Organic solvent solubility <sup>※</sup> | Alkaline removability | Acrylic emulsion polymerization | Biodegradability (58°C Compost) | Biobased content | Recycled PET content | Remarks               |
|------------------|----------------------|-----------------------------------------|-----------------------|---------------------------------|---------------------------------|------------------|----------------------|-----------------------|
| PLAS COAT Z-730  | ◎                    | ○                                       | ○                     | ○                               | —                               | —                | —                    | Standard grade        |
| PLAS COAT Z-2041 | ◎                    | ◎                                       | ◎                     | ○                               | ○                               | —                | —                    | Biodegradable         |
| GX-1484          | ◎                    | ◎                                       | ◎                     | ○                               | —                               | ○                | —                    | Biobased              |
| GX-1488          | ◎                    | ◎                                       | ◎                     | ○                               | —                               | —                | ○                    | Recycled PET          |
| GX-1554          | ◎                    | ×                                       | ○                     | ○                               | —                               | —                | —                    | High refractive index |

◎: Excellent, ○: Good, ×: Poor, —: Not applicable ※ Soluble solvents (Examples): Ethyl acetate, Methyl ethyl ketone

| Properties                        | Applications                                                                                                                             |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Water dispersibility              | Water-borne coatings, Water-borne binders, Water-borne primers                                                                           |
| Organic solvent solubility        | Solvent-borne coatings, Solvent-borne binders, Solvent-borne primers                                                                     |
| Alkali peelability                | De-inking primers, Removable inks, Temporary protective films                                                                            |
| Acrylic emulsion polymerizability | Polymeric emulsifiers, Adhesion promoters, Binders                                                                                       |
| Biodegradability                  | Eco-friendly materials, Paper processing, Textile processing, Paints/Coatings, Fertilizer coatings, Adhesion promoters, Primers, Binders |
| Biobased content                  | Eco-friendly materials, Paper processing, Inks, Paints/Coatings, Adhesion promoters, Primers, Binders                                    |
| Recycled PET content              | Eco-friendly materials, Textile processing, Inks, Paints/Coatings, Adhesion promoters, Primers, Binders                                  |
| High refractive index             | Optical film coatings, Adhesion promoters, Primers, Binders                                                                              |

## Coating film properties

| Product name                | PLAS COAT Z-730     |           |              | PLAS COAT Z-2041 |           |              | GX-1484 |           |              | GX-1488 |           |              | GX-1554 <sup>※</sup> |           |              |
|-----------------------------|---------------------|-----------|--------------|------------------|-----------|--------------|---------|-----------|--------------|---------|-----------|--------------|----------------------|-----------|--------------|
|                             | None                | Oxazoline | Carbodiimide | None             | Oxazoline | Carbodiimide | None    | Oxazoline | Carbodiimide | None    | Oxazoline | Carbodiimide | None                 | Oxazoline | Carbodiimide |
| Water resistance (25°C)     | ○                   | ○         | ○            | △                | ○         | ○            | △       | ○         | ○            | ○       | ○         | ○            | ○                    | ○         | ○            |
| Hot water resistance (80°C) | ×                   | ○         | ○            | △                | ○         | ○            | △       | ○         | ○            | △       | ○         | ○            | △                    | ○         | ○            |
| Solvent resistance          | Ethanol             | △         | ○            | ○                | △         | ○            | △       | ○         | ○            | ○       | ○         | ○            | ○                    | ○         | ○            |
|                             | Isopropyl alcohol   | △         | ○            | ○                | △         | ○            | △       | ○         | ○            | ○       | ○         | ○            | ○                    | ○         | ○            |
|                             | Hexane              | ○         | ○            | ○                | ○         | ○            | ○       | ○         | ○            | ○       | ○         | ○            | ○                    | ○         | ○            |
|                             | Toluene             | ×         | ○            | ○                | △         | ○            | △       | ○         | △            | △       | ○         | ○            | ○                    | ○         | ○            |
|                             | Ethyl acetate       | ×         | △            | ○                | ×         | ○            | ×       | ○         | △            | ×       | △         | △            | △                    | ○         | ○            |
|                             | Methyl ethyl ketone | ×         | △            | ○                | ×         | △            | ×       | ○         | △            | ×       | ×         | △            | ×                    | ○         | △            |

**Results** ○: No change △: Whitening ×: Dissolution

• Substrate: Untreated PET film, Drying condition 120°C×5min, Dry thickness about 3μm

• Water resistance: Appearance change in 24 hours of immersion in water at 25°C.

• Hot water resistance: Appearance change in 30 minutes of immersion in hot water at 80°C.

• Solvent resistance: Appearance change after rubbing (5 round trips) with a cotton swab, soaked in solvents.

※ GX-1554 was evaluated with 5% high-boiling solvent (ethylene glycol mono-n-butyl ether) added as a film-forming agent.