

# Products for powder coatings

Long-lasting environmentally  
friendly esthetics



# The elements of success

You need a partner who can see the big picture when it comes to your products, your processes and your customers. Our experience and expertise in the special niches of organic chemistry, process technology and application development are at your service, providing you with a complete chain of solutions to enhance quality and profitability at every step.

Our versatile intermediates, an essential element of your winning formula, are specifically designed to add value and enhance end-product performance. Your solution to meeting the increasing demands for safer, lighter, more durable and environmentally friendly end-user products, begins here.

## Innovation in everything we do

Innovation distinguishes every aspect of our business process. Developing smarter and safer solutions creates real value in new chemical applications. Focused innovation instills leadership and purpose in our business activities, improves internal processes and increases application and product competitiveness.

## Delivering our promises globally

Our global presence provides you with reliable solutions and processes, consistent high quality, security of production and supply and delivery with precision. This commitment also means rapid response when product or application support is required and the very best in technical support.

## Putting the care into chemicals

We take our responsibilities to heart and are committed to attentive, sustainable business practices. We minimize risks for our customers, our employees and the environment by working proactively to ensure safe products and processes.





## Long-lasting environmentally friendly esthetics

### Sustainable solutions for quality & cost-effectiveness

Is it possible to achieve the best quality and most durable, esthetic finish in a coating with a cost-effective and environmentally friendly solution?

Powder coating is one of the most economical coating solutions and is also one of the most environmentally friendly. We offer the powder coatings industry raw materials for the production of resins. We also offer specialty resins and additives for coating formulators. Our products have a range of quality enhancing properties that help you create coatings with a uniform, durable and attractive finish.

The growth of the powder coatings industry during the last twenty years has been dramatic, with new applications continually being developed to ensure ever expanding market penetration in a wide range of industries.

The powder used for the process is a mixture of finely ground particles of pigment and resin, which is sprayed onto the surface to be coated. The charged powder particles adhere to the electrically grounded surfaces until heated and fused into a smooth coating in a curing oven or under infrared radiation.

Powder coatings are increasingly used in:

- architectural applications
- domestic appliances
- transportation/automotive applications
- general industrial applications

### Our products for powder coatings:

#### Polyols & acids for resins

##### Neo (Neopentyl Glycol)

An essential glycol for durable and high-quality powder polyesters

##### BEPD (Butyl Ethyl Propanediol)

A unique glycol for enhancing the outdoor durability of polyesters

##### TMP (Trimethylolpropane)

A branching monomer for powder polyesters

##### PIA (Purified Isophthalic Acid)

An aromatic di-carboxylic acid with exceptional purity for superior outdoor durability

#### Specialty polyester for coatings

##### Curalite™ 2300

A specialty carboxyl functional polyester for low-temperature curing and use as a matting agent

We welcome your questions. More detailed information and specifications of each product are available on [www.perstorp.com](http://www.perstorp.com) or through your Perstorp sales representative.

# Expanding choice

## The building blocks of quality

### Neo – essential for quality & durability

Neo (Neopentyl Glycol) is the glycol of choice for most polyesters, imparting improved hydrolytic stability and superior weathering and chemical and water resistance. Its symmetric structure is the most adequate for achieving the required glass transition temperature (T<sub>g</sub>) of powder polyesters.

Neo can be delivered globally, in solid form as flakes at ambient temperature, in molten form at elevated temperatures or as Neo 90, a 90% solution in water.

Neo (Neopentyl Glycol)

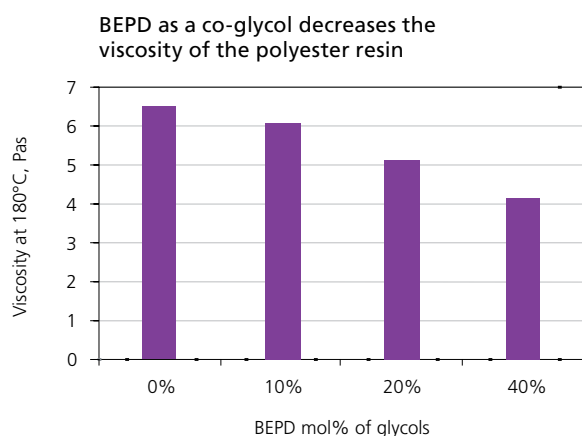
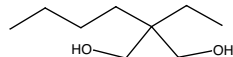


### BEPD – outstanding outdoor performance

BEPD (Butyl Ethyl Propanediol) is a branched hydrophobic glycol that imparts outstanding durability to powder polyester resins used in outdoor conditions.

Using BEPD as a co-glycol with Neo lowers the viscosity of polyesters while retaining suitable T<sub>g</sub>, which allows better leveling and a wider processing window. It also enhances the outdoor durability of polyester based powder coatings. The product is available as solid or molten BEPD or as BEPD70L, which is more adequate for bulk delivery. BEPD70L is a blend of 70% BEPD, 25% Neo and 5% water.

BEPD (Butyl Ethyl Propanediol)

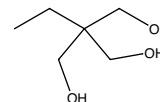


### TMP – the safe branching monomer

TMP (Trimethylolpropane) is an important raw material for high-quality industrial resins, typically used in concentrations of between 1% and 5% in order to branch the polyester to increase functionality. It has a low melting point and is available in flaked form or as hot liquid. TMP is a non hazardous chemical and easy to handle and easy to process.

Our superior supply capacity makes us the global leader in manufacturing TMP.

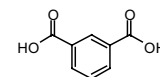
TMP (Trimethylolpropane)



### PIA – Specialty acid for superior weatherability

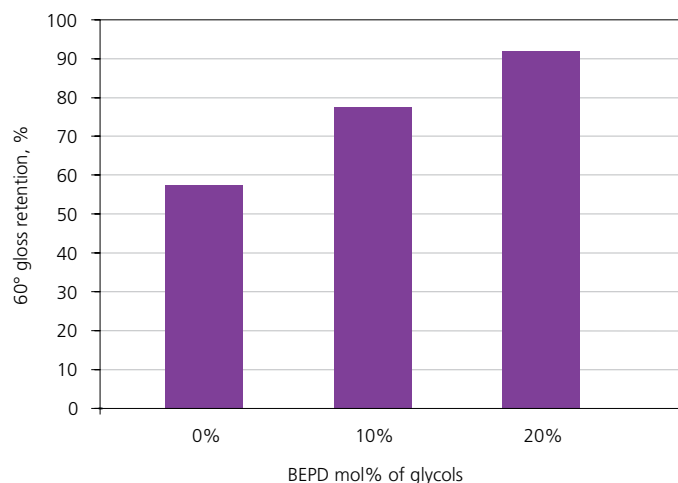
Our PIA (Purified Isophthalic Acid) is an aromatic dicarboxylic acid of exceptional purity. In powder polyesters, PIA is typically used to partially replace terephthalic acid in order to improve the outdoor durability of powder coatings.

PIA (Purified Isophthalic Acid)



### BEPD improves the weatherability of Primid powder coatings

1 year Florida exposure, gloss 60° retention



# Specialty resin with enhance performance

## Curalite™ 2300 – low temperature curable matte powder polyester

Curalite™ 2300 is a specialty linear polyester with an exceptional acid number and functionality. It has been specially developed to provide low gloss hybrid powder coatings that can be cured at a temperature as low as 140°C.

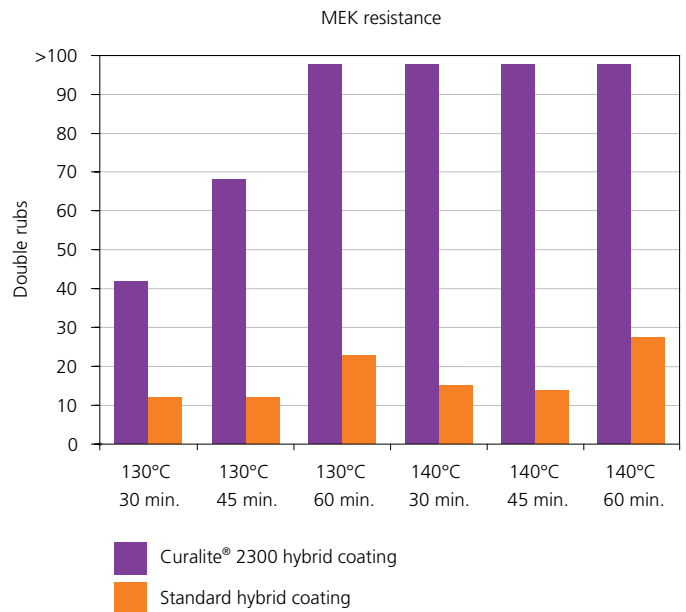
	Acic number (mg KOH/g)	Tg (°C)	Viscosity range 150°C (Pas)	Particle size (mm)
Curalite™ 2300	213-246	45	15-28	<3

Material, parts by weight	Formulation
Curalite™ 2300	28
Epikote 1002	72
Catalyst (MIA5)	1.5
Irganox 1010	0.1
Kronos 2310	30
Modaflow Powder III	1.5
Benzoin	0.8

Coating properties, cured 25 min. at 140°C	
60° gloss after storage of the powder coating	
Initial	2.5
3 months, climate room	3.6
6 months, climate room	5.5
Erichsen flexibility (mm)	8
Buchholz hardness, DIN 53 153	118
Cross-cut, 0 – 5, 0 best	0
Surface resistance to cold liquids (EN 12720), where 5 is best	
Distilled water, 24 hrs	5
Ethanol 48 w%, 16 hrs	5
Acetone, 2 min.	4

Curalite™ 2300 increases the reactivity of the formulation and thereby allows lower temperature curing within an acceptable processing time. The choice of catalyst in the powder formulation is very important in order to achieve storage stability.

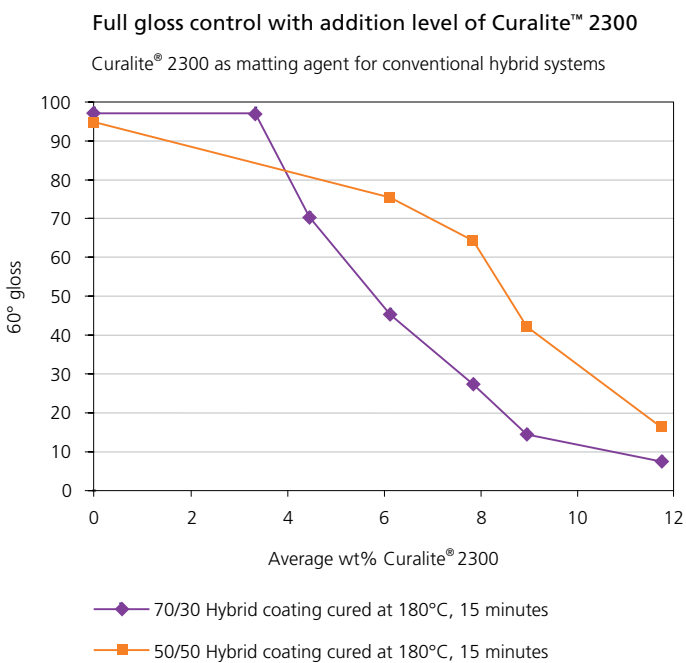
Reactivity comparison Curalite™ 2300 – standard hybrid coating, identical additives & catalyst package



## Curalite™ 2300 – a versatile matting additive

How matte or glossy do you prefer your finish to be? You have the choice to decide.

Reaching a desired gloss may be difficult to obtain if you are dependent on a matting agent that requires very narrow processing conditions. Curalite™ 2300 features an almost linear 'gloss to additive level' relation, which allows you to easily achieve the level of gloss you desire.



## Full gloss control over wide curing conditions

Curing conditions	Thickness (µm)	Gloss, 60°
140°C, 30 min.	55±5	18
180°C, 20 min.	70±5	17
200°C, 6 min.	75±5	17

7 wt% Curalite™ 2300 in a conventional hybrid system

Curalite™ 2300 frees you from over-dependence on processing conditions to reach your desired gloss level. The gloss is consistent with concentration on a large processing window (from 140°C to 200°C).

## Further opportunities

Can we help you open up new markets?

We have a range of products and know-how to help you develop powder coatings to meet new demands. For example, our specialty polymers such as Boltorn™ dendritic polymers feature unique high functionality and low viscosity. The Charmor™ range of micronized polyols is used for intumescent coatings. These are just some of the solutions we offer for developing new powder coatings in order to respond to new market potential.



## Product data summary

### Polyols for resins

#### Glycols

Products	Appearance	OH-value (mg KOH/g)	Molecular weight (g/mol)	Melting point (°C)
Neo (Neopentyl Glycol)	Flakes	1,075	104.2	129
Neo 90	Liquid (90% in water)	1,075*	104.2	35
BEPD (Butyl Ethyl Propanediol)	Semi-crystalline	695	161.0	44
BEPD70L	Liquid		146.1	<21

#### Branching monomer

TMP (Trimethylolpropane)	Flakes	1,247	135.1	59
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\* Water free

### Acids for resins

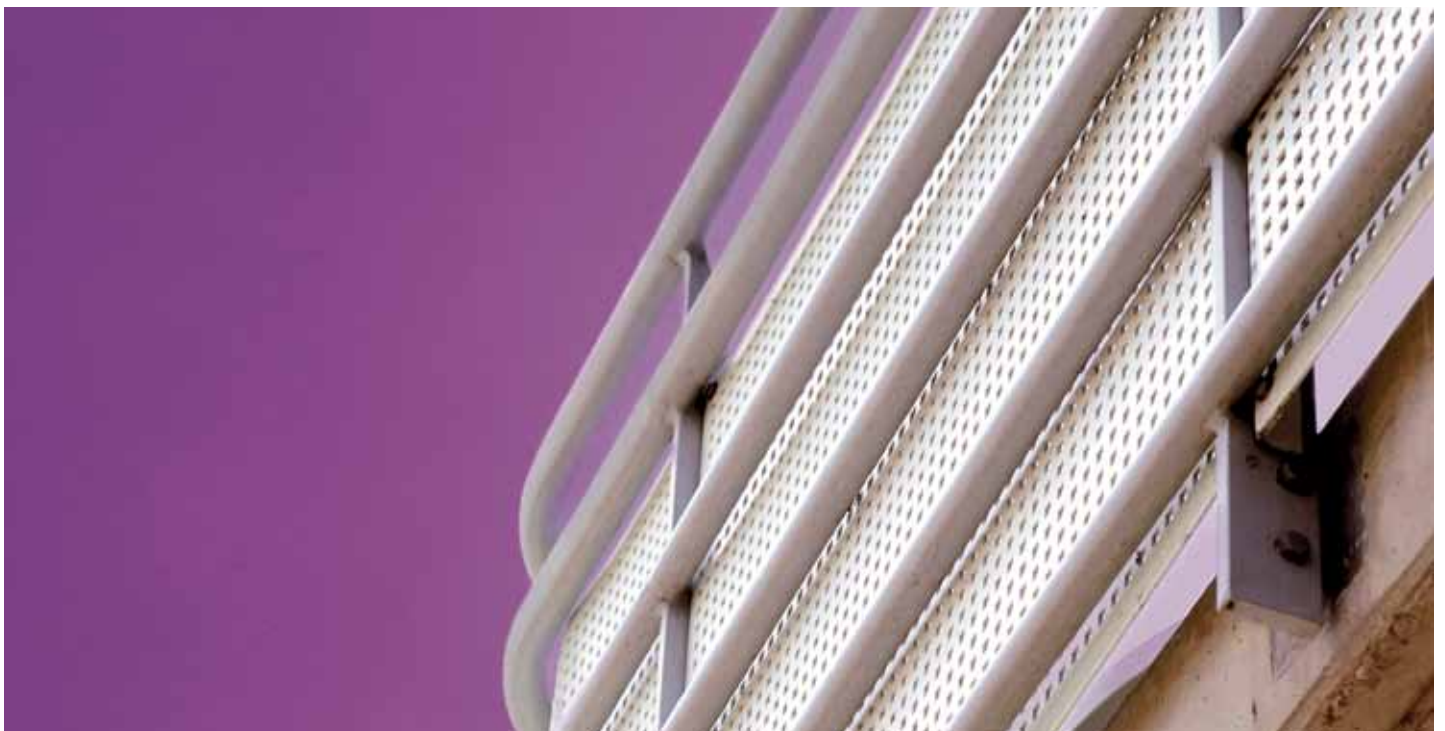
#### Carboxylic acid

Product	Appearance	Reactive Group	Purity W% min.	Acid value mg KOH/g	Ash ppm max.	m-Toluic acid ppm max.	Moisture wt% max.	Molecular weight g/mol
PIA (Purified Isophthalic Acid)	White crystals	2 carboxyl	99.8	673–677	15	150	0.1	166.13

### Polyester for coatings

#### Specialty carboxyl functional polyester

Product	Acid number (mg KOH/g)	Tg (°C)	Viscosity range 150°C (Pas)	Particle size (mm)
Curalite™ 2300	213-246	45	15-28	<3





## Your winning formula

The Perstorp Group, a trusted world leader in specialty chemicals, places focused innovation at your fingertips. Our culture of performance builds on over 125 years of experience and represents a complete chain of solutions in organic chemistry, process technology and application development.

Matched to your business needs, our versatile intermediates enhance the quality, performance and profitability of your products and processes. Present in the aerospace, marine, coatings, chemicals, plastics, engineering and construction industries, they can also be found in automotive, agricultural, food, packaging, textile, paper and electronics applications.

Our chemistry is backed by reliable business practices and a global commitment to responsiveness and flexibility. Capacity and delivery security are ensured through strategic production plants in Asia, Europe and North and South America, as well as sales offices in all major markets. Likewise, we combine product and application assistance with the very best in technical support.

As we look to the future, we strive for the development of safer products and sustainable processes that reduce environmental impact. This principle of innovation and responsibility applies not only to our own business, but also to our work with yours. In fulfilling it, we partner with you to create a winning formula that benefits your business – as well as the people it serves.

Discover your winning formula at [www.perstorp.com](http://www.perstorp.com)