

# SIRALES<sup>®</sup> PE 5900

PRODUCT DATA  
SHEET  
RS/172/090601/1

## Description

Carboxylated polyester resin with high cristallinity.

## Applications

Replacement of 10 – 20% of polyester resin in superdurable powder coating formulations with Siraless PE 5900 increases flow and mechanical properties of cured films, without affect weather resistance.

## Sales specification

Property	Value	Unit	Method
Acid number	28 .... 36	mg.KOH/gr	SIR 10328
Melting Range	105 .... 120	°C	SIR 10000

## Typical Properties

Property	Value	Unit	Method
Viscosity ICI at 125°C	1500	mPa.s	SIR 10391

## Supply Form

The product is available as irregular flakes packed in 25 kg polyethylene bags.

## Storage Stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (20°C) the resin should have a stability of one year.

## Safety

The product is not flammable and no toxic effect has been determinated. Further information are provided in the relevant safety data sheet.

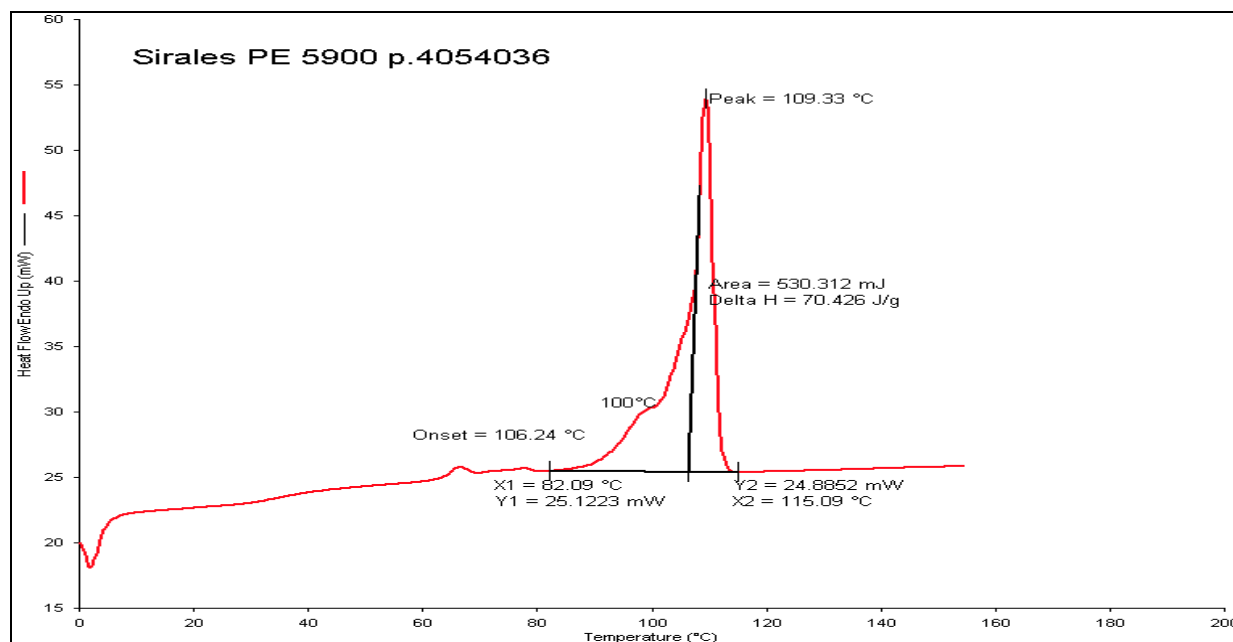
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**Cristallinity of Sirales PE 5900 is showed by DSC analysis.**  
The resin shows a sharp melting point with high enthalpy of fusion.



DSC Perkin Elmer Series 7, 20 deg.min

## Powder Coating Applications

Formulation	A without	B with 10%
Highly branched carboxylated polyester based only on Isophthalic acid	618	556
Sirales PE 5900		62
Prosid H (β-hydroxyalkylamide hardener)		32
Byk 360/P		10
Benzoin		3
Kronos 2310		350

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# SIRALES<sup>®</sup> PE 5900

APPLICATION DATA  
RS/172/090601/2

## Extrusion condition

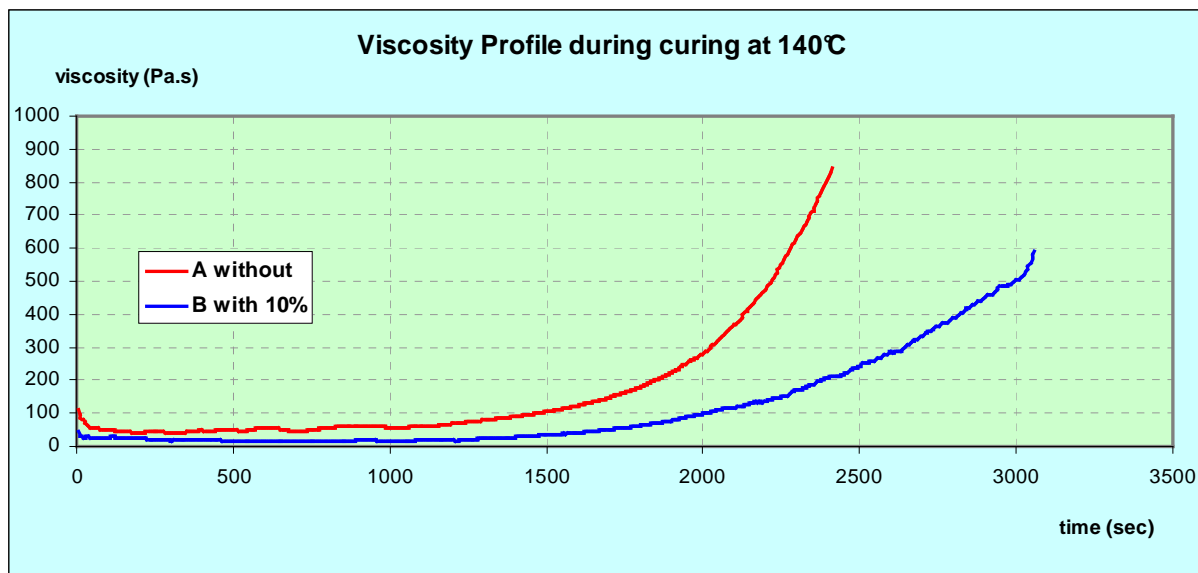
Extruder	BUSS PLK 46
Casting temperature	120°C
Screw temperature	Cold
Speed	110-130 rpm

## Film properties (curing cycle 15 min. at 200°C; 20 min. at 180°C real time)

	A without	B with 10%
Film thickness	60-80µm	60-80µm
Indentation (DIN 53156)	> 2 mm	> 9 mm
Direct gardner impact (ASTM D 2794)	1 Nm	> 10 Nm
Reverse gardner impact (ASTM D 2794)	0 Nm	> 10 Nm
Mandrel bend resistance (ASTM D 522)	fail	pass

## Rheology

The better flow of the coating with Sirales PE 5900 inside, was evaluated measuring the viscosity of the powder during curing at 140°C.



Dynamic Stress Rheometer; plate-plate geometry, dynamic time sweep (oscillatory frequency = 1Hz)

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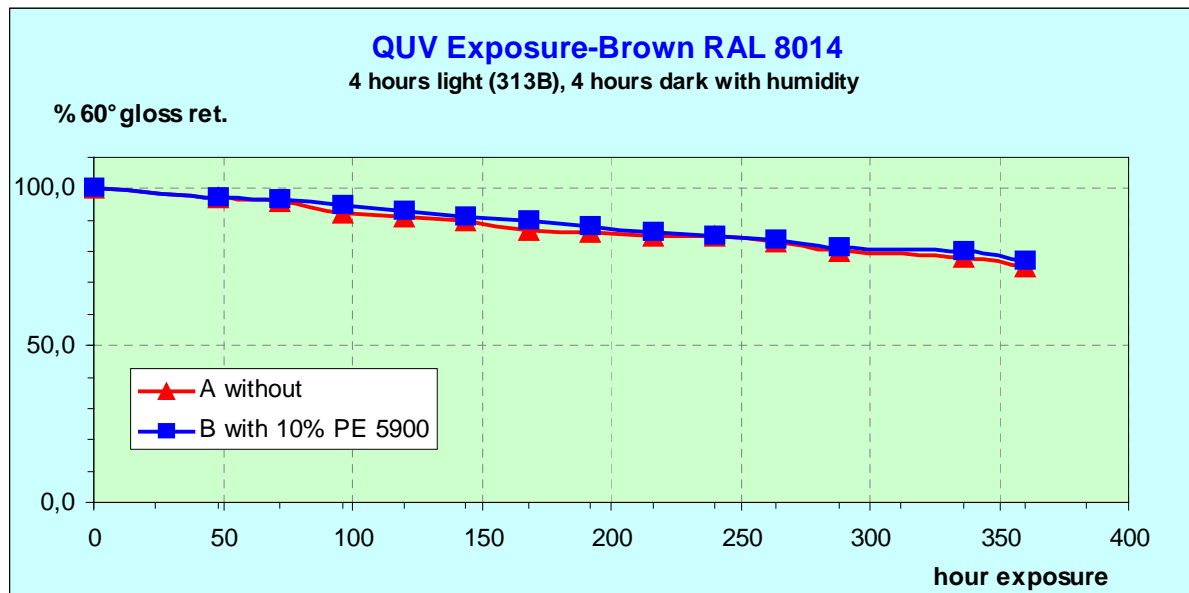
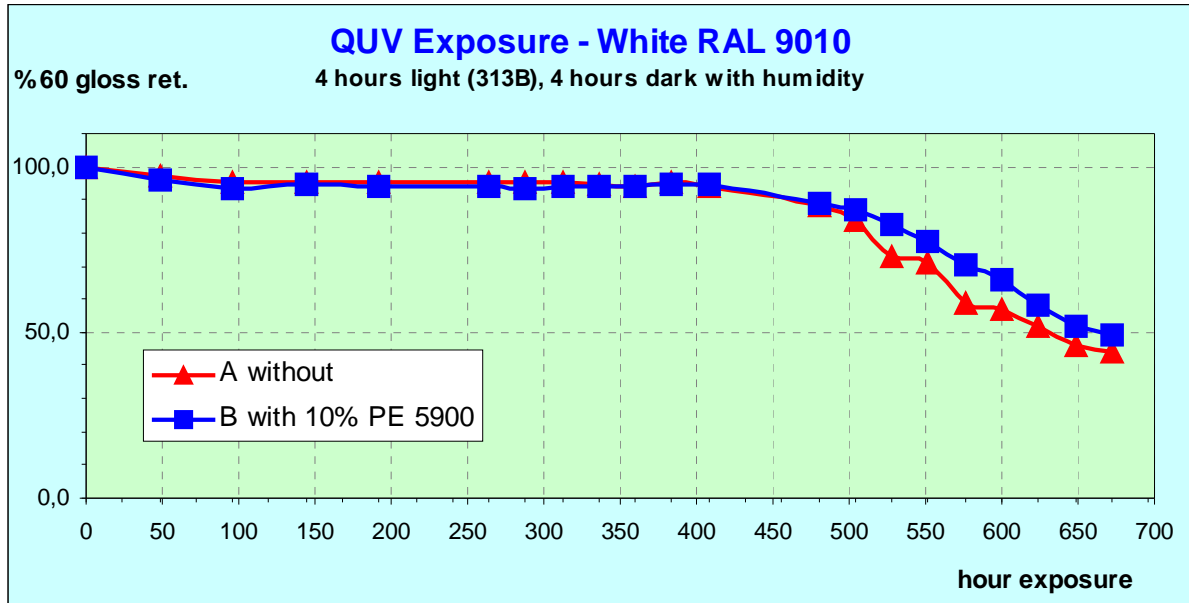
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## Accelerated weathering test

The resin Siraless PE 5900 doesn't affect weather resistance of the powder coatings that contain it.



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# SIRALES<sup>®</sup> PE 5900

APPLICATION DATA  
RS/172/030901/4

## One-shot Matt powder coatings based on b-hydroxyalkylamides.

### Starting formulation white powder coating

Component [part by weight]	A	B	C	D see note
Sirales PE 7816.T	665	465	400	335
Sirales PE 5900		200	265	330
Prosid 411	35	35	35	35
Benzoin	3	3	3	3
Flow control agent(§)	10	10	10	10
Titanium dioxide (§§)	300	300	300	300

(§) Byk 360/P from BykChemie GmbH

(§§) Kronos 2310 from Kronos Titan GmbH

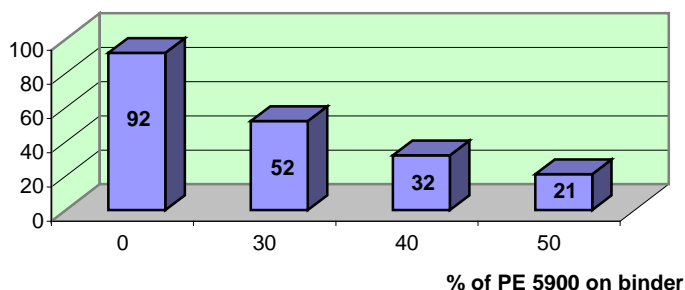
**Manufacturing method :** Extruder: Buss-Ko-Kneader PLK 46; Casing setting temp.: 120°C; Kneading screw temp.: cold; rpm: 150.

**Application procedure :** Corona spray gun, voltage 60 kV; Unichim steel 1 mm thick

**Stoving cycles :** 15 minutes at 180°C; 20 minutes at 160°C (object temperature)

Property	A	B	C	D
Thickness [micron]	60 - 80			
Whiteness index [DIN CIE 10°]	80	78	76	75
Gloss a 60°	92	52	32	21
Gloss a 20°	40	18	9	5
Impact front [N.m]	> 10	> 10	> 10	> 10
Impact rev [N.m]	> 10	> 10	> 10	> 10

### Gloss 60°



**Note on D formulation :** quite difficult to extrude. The output melt sticks to the cooling rolls.

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# SIRALES<sup>®</sup> PE 6210/F

PRODUCT  
DATA SHEET  
RS/085/071502/1

## Description

Hydroxylated polyester resin for powder coating containing 10% of acrylic flow agent.

## Applications

SIRALES<sup>®</sup> PE 6210/F, used in a quantity from 3 to 9% in the formulation of powder coatings gives a very good flow. The particular composition of the formulation grants both a very good resistance to weathering and a very good compatibility with the most common hardeners for powder coatings: epoxy-polyester, polyurethane, TGIC polyester and polyester- $\beta$ -hydroxyalkylamide.

## Sales specification

Property	Value	Unit	Method
Acid number	8 max	mg KOH/g	SIR 10328
Viscosity ICI at 200 °C	1500 ... 3500	mPa s	SIR 10391

## Typical properties

Property	Value	Unit	Method
Hydroxyl number	45	mg KOH/g	SIR 10299
Glass transition temperature (Tg)	58	°C	ASTM D 3418

## Supply Form

Product is available as irregular flakes packed in 25 kg polyethylene bags.

## Storage stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (25°C) the resin should have a stability of one year.

## Safety

The product is not flammable and no toxic effect has been determined.  
Further information are provided in the relevant safety data sheet.

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# SIRALES<sup>®</sup> PE 6215/F

PRODUCT  
DATA SHEET  
RS/114/071502/1

## Description

Hydroxylated polyester resin for powder coating containing 15% of acrylic flow agent.

## Applications

SIRALES<sup>®</sup> PE 6215/F, used in a quantity from 2 to 7% in the formulation of powder coatings gives a very good flow. The particular composition of the formulation grants both a very good resistance to weathering and a very good compatibility with the most common hardeners for powder coatings: epoxy-polyester, polyurethanic, TGIC polyester and polyester- $\beta$ -hydroxyalkylamide.

## Sales specification

Property	Value	Unit	Method
Acid number	8 max	mgKOH/g	SIR 10328
Viscosity ICI at 200 °C	1200 ... 3200	mPa s	SIR 10391

## Typical properties

Property	Value	Unit	Method
Hydroxyl number	45	mgKOH/g	SIR 10299
Glass transition temperature (Tg)	58	°C	ASTM D 3418

## Supply Form

Product is available as irregular flakes packed in 25 kg polyethylene bags.

## Storage stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (25°C) the resin should have a stability of one year.

## Safety

The product is not flammable and no toxic effect has been determined.  
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# SIRALES<sup>®</sup> PE 6215/F

## APPLICATION DATA

### Comparison between flow agent adsorbed on silica and dispersed in hydroxylated polyester resins

#### Flow agent in resin assures:

- + better dispersion of flow agent in dry blend;
- + less orange peel caused by plasticizing effect of hydroxylated resin

Formulation (parts by weight)	A	B
Sirales PE 8254	360	340
Eposir 7178 PG	240	225
Sirales PE 6215/F (15%)	/	45
Flow agent on silica (66%)	10	
Benzoin	4	4
Titanium dioxide Kronos 2310	286	286
Blanc fixe Super F	100	100

% of flow agent on powder	0.66	0.68
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#### Extrusion condition

Extruder	BUSS PLK 46
Casting temperature	100°C
Screw temperature	Cold
Speed	80 - 120 rpm

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**SIR INDUSTRIALE**

# SIRALES<sup>®</sup> PE 6220

## PRODUCT DATA SHEET

RS/093/070903/1

### Description

Hydroxylated polyester resin with good weathering resistance.

### Applications

Sirales PE 6220 is suitable for preparation of masterbatches with additives and pigments commonly used in thermosetting powder coating production.

Its particular composition guarantee optimum compatibility, fillers and pigments wettability and resistance to ageing.

### Sales specification

Property	Value	Unit	Method
Acid number	5 max	mg KOH/gr	SIR 10328
Hydroxyl number	62 – 75	mgKOH/gr	SIR 10299
Viscosity ICI at 200°C	500 – 2500	mPa.s	SIR 10391

### Typical Properties

Property	Value	Unit	Method
Glass transition temperature	50	°C	ASTM D 3418

### Supply Form

Product is available as irregular flakes packed in 25 Kg polyethylene bags.

### Storage stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (25°C max) the resin should have a stability of one year.

### Safety

The product is not flammable and no toxic effect has been determined.  
Further information are provided in the relevant safety data sheet.

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# SIRALES<sup>®</sup> PE 7400

PRODUCT  
DATA SHEET  
RS/134/091702/1

## Description

Masterbatch to increase tribostatic properties of powder coatings. SIRALES<sup>®</sup> PE 7400 contains 5% of active substance dispersed in carboxylated polyester resin suitable for outdoor powder coatings.

## Applications

SIRALES<sup>®</sup> PE 7400, employed in an amount from 2 to 4%, increases greatly the tribostatic chargeability of a powder coating. It can be employed in indoor and outdoor powder coatings without affects gel time and storage stability of the paints. The masterbatch is easy handling and ensures a very good dispersion of the tribo additive.

## Sales specifications

Property	Value	Unit	Method
Acid number	30 - 38	mg KOH/gr	SIR 10328
Viscosity at 200°C (ICI cone plate)	2000 - 4000	mPa.s	SIR 10391
Colour <sup>(1)</sup>	3 max.	Sc. Gardner	ASTM D 1544

(1) Determined on 50% m/m solution on dimethylformamide.

## Typical Properties

Property	Value	Unit	Method
Glass transition temperature (Tg)	60	°C	ASTM D 3418

## Supply Form

Product is available as irregular flakes packed in 25 kg Polyethylene bags.

## Storage stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (not more than 25°C) the resin should have a stability of one year.

## Safety

The product is not flammable and no toxic effect has been determined.

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# SIRALES<sup>®</sup> PE 6310/F

## PRODUCT DATA SHEET

RS/130/071505/1

### Description

Hydroxylated polyester resin with 10% of flow agent, suitable for clear powder coatings.

### Applications

SIRALES<sup>®</sup> PE 6310/F, used in a quantity from 5 to 9% in the powder, allow to have high clearness in the powders formulated with the typical hardeners used for thermoset varnish products: polyester- $\beta$ -hydroxyalkylamide, polyester-TGIC, polyurethane and epoxy-polyester. Moreover, the particular formulation grants an excellent weathering resistance.

### Sales specification

Property	Value	Unit	Method
Acid number	8 max.	mg KOH/g	SIR 10328
Viscosity ICI at 200°C	1500...4500	mPa.s	SIR 10391

### Typical Properties

Property	Value	Unit	Method
Hydroxyl number	45	mg KOH/g	SIR 10299
Glass transition temperature (T <sub>g</sub> )	54	°C	ASTM D 3418

### Supply Form

Product is available as irregular flakes packed in 25 kg Polyethylene bags.

### Storage stability

The product should be stored in the original bags kept tightly closed, away from sunshine and heat sources. Under these conditions and at a normal temperature (20°C) the resin should have a stability of one year.

### Safety

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