SIRALES® PE 7220.T

PRODUCT DATA SHEET
RS/155T/110901/1

Description
Carboxylated polyester resin for outdoor powder coatings.

Application
Sirales® PE 7220 in combination with b-hydroxyalkylamides (ratio 93:7) or with TGIC (ratio 90:10) makes achievable outdoor powder coatings with high hardness and solvent resistance.
Physical blending of the powders based on it with that prepared with low hardeners demand resins, like Sirales® PE 7201 or PE 7202, gives good mat finishing.
The paints based on it show a good tribochargeability.

	TGIC	**β-hydroxyalkylamide**
Curing cycle :	10 … 15 min. at 200°C.	8 … 12 min. at 200°C.
(in real time)	15 … 20 min. at 180°C.	10 … 15 min. at 180°C.
		15 … 20 min. at 160°C.

Sales specifications

Property	**Value**	**U.M**	**Method**
Acid number	46 ... 54	mg.KOH/gr	SIR 10328
Viscosity ICI at 200 °C	3000 ... 6000	mPa.s	SIR 10391
Color(1)	3 max.	Sc. Gardner	ASTM D 1544

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

Typical properties

Property	**Value**	**U.M**	**Method**
Glass transition temperature (Tg)(2)	66	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer series 7) : 20°C/minute.

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

Storage
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 informations are provided in the relevant safety data sheet.

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SIRALES® PE 7310

PRODUCT DATA SHEET
RS/027/050401/1

Description
Carboxyleted polyester resin for outdoor powder coatings.

Application
Sirales PE 7310 in combination with TGIC (ratio 93:7) or with β-hydroxyalkylamide (ratio 95:5) makes achievable outdoor powder coatings with high flow, very high yellowing resistance for overbaking, high gloss, good mechanical property and good weathering resisistance.

	TGIC	**b -hydroxyalkylamide**
Curing cycle :	15 min. at 200°C.	10 min. at 200°C.
(in real time)	20 min. at 180°C.	12 min. at 180°C.
		15 min. at 160°C.

Sales specifications

Property	**Value**	**U.M**	**Method**
Acid number	30 ... 38	mg.KOH/gr	SIR 10328
Viscosity ICI at 200 °C	3500 ... 5500	mPa.s	SIR 10391
Color(1)	3 max.	Sc. Gardner	ASTM D 1544

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

Typical properties

Property	**Value**	**U.M**	**Method**
Glass transition temperature (Tg)(2)	60	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer series 7) : 20°C/minute.

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

Storage
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® PE 7315

PRODUCT
DATA SHEET
RS/137/100301/1

Description
Carboxylated polyester resin suitable for outdoor powder coatings.

Applications
Sirales PE 7315, in combination with TGIC (ratio 93/7), makes achievable a powder coating with following features:

- high reactivity:
- high outdoor durability;
- very good gloss and mechanical properties;
- blooming-free cured films.

Curing cycles (real time) 15 … 20 minutes at 160°C
20 … 25 minutes at 150°C

Sales specification

Property	Value	Unit	Method
Acid number	30 … 38	mg KOH/gr	SIR 103281
Viscosity at 200°C (ICI cone plate)	3500 - 6500	MPa.s	SIR 10391
Colour (1)	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 (2)	55	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer series 7) : 20°C/minute.

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

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SIRALES® PE 7320 A

PRODUCT DATA SHEET
RS/063/040204/1

Description
Carboxylated polyester resin, free from trimellitic anhydride, suitable for outdoor powder coatings.

Applications
Sirales PE 7320, in combination with TGIC (ratio 93/7), makes achievable a powder coating durable for outdoor purposes featuring good mechanical, gloss and weather resistance characteristics.

Curing cycles (real time) 15 min. at 200°C
20 min. at 180°C

Sales specification

Property	Value	Unit	Method
Acid number	30 … 38	mg KOH/gr	SIR 103281
Viscosity at 200°C (ICI cone plate)	3500 - 5500	MPa.s	SIR 10391
Colour (1)	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 (2)	68	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer series 7) : 20°C/minute.

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
The product is not flammable and no toxic effect has been determined.
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SIRALES® PE 7320 A

APPLICATION DATA
RS/063/061001/1

Typical formulation

SIRALES PE 7320 A	604
ARALDIT PT 810	46
BYK 360/P	12
BENZOIN	4
KRONOS 2310	334

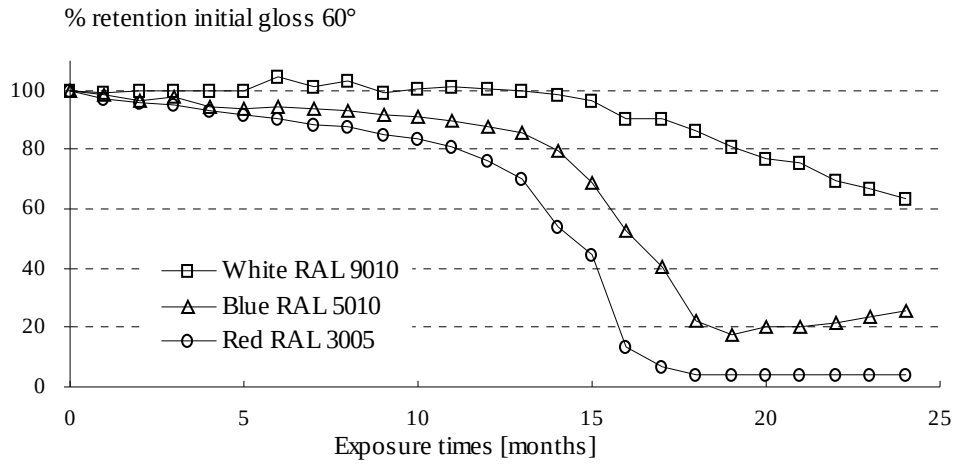
Extrusion condition

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)

Film thickness	60-100µm
Identation (DIN 53156)	> 9 mm
Direct gardner impact (ASTM D 2794)	> 10 Nm
Reverse gardner impact (ASTM D 2794)	> 10 Nm
Mandrel bend resistance (ASTM D 522)	pass

Florida exposure test



5 degree south – washed

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SIRALES® PE 7320 A

APPLICATION DATA
RS/063/061001/2

Outdoor matt powder coating with Sirion VP 1016

Starting Formulation

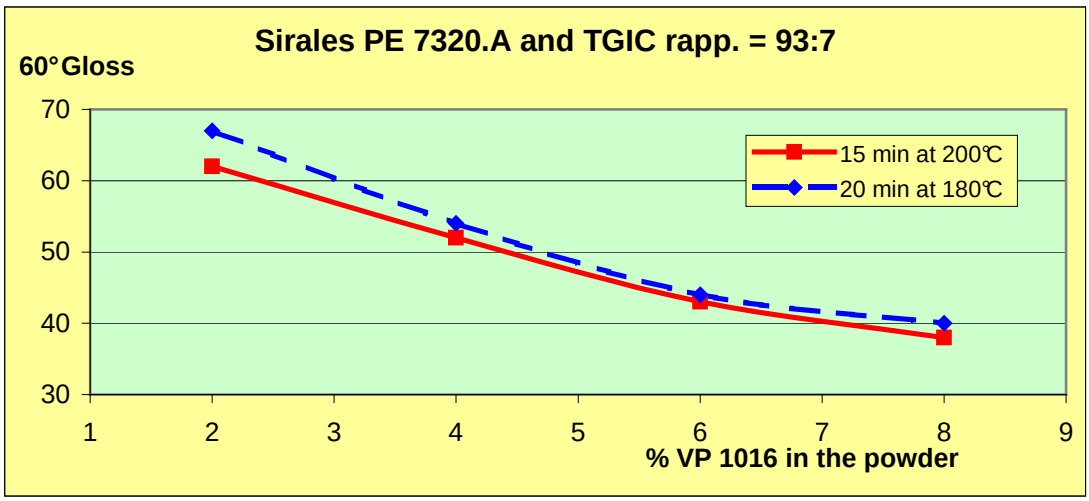
Components (pbw)	2%	4%	6%	8%
Sirales PE 7320.A	558	558	558	558
Araldit PT 810	42	42	42	42
Byk 360/P	8	8	8	8
Benzoin	4	4	4	4
Titanium dioxide Kronos 2310	368	348	328	308
Sirion VP 1016	20	40	60	80

Curing Schedule: 15 minutes at 200°C

	2%	4%	6%	8%
Gloss 60°	62	52	43	38
Gloss 20°	25	23	23	18

Curing Schedule: 20 minutes at 180°C

	2%	4%	6%	8%
Gloss 60°	67	51	45	40
Gloss 20°	27	24	22	16



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SIRALES® PE 7321

PRODUCT
DATA SHEET
RS/149/031401/1

Description
Carboxylated polyester resin for outdoor powder coatings.
Experimental resin. The specifications could be refined without any notice. In case of any question, please contact our sales department.

Applications
Sirales PE 7321, in combination with TGIC (ratio 93/7), makes achievable a powder coating durable for outdoor purposes featuring good weather resistance, very good flow and mechanical properties together with high gloss. The powder coatings prepared with it show an excellent storage stability.

Curing cycles (real time) 10 … 15 min. at 200°C
15 … 20 min. at 180°C

Sales specification

Property	Value	Unit	Method
Acid number	30 … 38	mg KOH/gr	SIR 103281
Viscosity at 200°C (ICI cone plate)	3000 - 5000	mPa.s	SIR 10391
Colour(1)	2 max.	Sc. Gardner	ASTM D 1544

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

Typical Properties

Property	Value	Unit	Method
Glass transition temperature(2)	65	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer mod Diamond) : 20°C/minute.

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

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SIRALES® PE 7321

APPLICATION DATA
RS/149/031401/2

Starting formulation

Component	[parts by weight]
Sirales PE 7321	558
TGIC(#)	42
Benzoin	4
Flow control agent(§)	10
Titanium dioxide(§§)	390

(#) Araldit PT 810 from Huntsman, Teppic from Nissan
(§) Byk 360/P from BykChemie GmbH; Resiflow PV 88 from Worlee-Chemie 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; 0.6 mm aluminium chromate pretread Al 36 panel (Q-Panels), film thickness approx 60 microns.

Stoving cycles :
15 minutes at 180°C, 10 minutes at 200°C (object temperature)

Properties of cured film on Al 36 panel	Value	Unit	Test method
Impact front / rev [N.m] 1/2" ball	> 4 / > 4	N.m	ASTM D 2794
Accelerated weathering resistance (*) Retention of 50% of initial 60° gloss	350	hours	ASTM G 53

(*) Q-Panel QUV; UVB 313 lamps; 4 hours light at 50°C, 4 hours condensation at 40°C

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SIRALES® PE 7322

PRODUCT
DATA SHEET
RS/162/051502/1

Description
Carboxylated polyester resin, free from trimellitic anhydride, suitable for outdoor powder coatings.

Applications
Sirales® PE 7322, in combination with TGIC (ratio 93/7), makes achievable a powder coating durable for outdoor purposes featuring high weather resistance, very good flow and gloss and very good mechanical properties. The powder coatings prepared with it show an excellent storage stability.

Curing cycles (real time) 15 min. at 200°C
20 min. at 180°C

Sales specification

Property	Value	Unit	Method
Acid number	30 … 38	mg KOH/gr	SIR 10328
Viscosity at 200°C (ICI cone plate)	3500 - 5500	MPa.s	SIR 10391
Colour(1)	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(2)	66	°C	ASTM D 3418

(2) Determined on DSC (Perkin Elmer series 7) : 20°C/minute.

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
The product is not flammable and no toxic effect has been determined.
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SIRALES® PE 7322

APPLICATION DATA
RS/162/051502/1

Typical formulation	**pbw**
SIRALES PE 7322	558
ARALDIT PT 810	42
BYK 360/P	10
BENZOIN	4
KRONOS 2310	390

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)

Film thickness	60-100µm
Identation (DIN 53156)	> 9 mm
Direct gardner impact (ASTM D 2794)	> 10 Nm
Reverse gardner impact (ASTM D 2794)	> 10 Nm
Mandrel bend resistance (ASTM D 522)	pass
Accelerated weathering resistance: QPanel Al36, QUV with lamps UVB 313, 4 hrs. light at 50°C + 4 dark condensation hrs. at 40°C to 50% gloss retention, 60° gloss	500 hours

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SIRALES® PE 7112.T

PROVISIONAL PRODUCT DATA SHEET
RS/174/111402/1

Description
Carboxylated polyester resin suitable for outdoor powder coatings.

Applications
The resin SIRALES® PE 7112.T is suitable for the production of outdoor powder coatings with a low content of hardeners: b – hydroxyalkylamide (ratio 96:4) and TGIC (ratio 95:5). It enables to obtain powder coatings with the following characteristics:

- very good tribo chargeability;
- optimal mechanical properties, with an excellent flow and gloss;
- good resistance to weather agents for industrial applications;
- very low yellowing even with high temperature curing cycles.

Suggested curing cycles (real time)	**b – hydroxyalkylamide**	**tgic**
	10…12 min. at 200 ° C	**15 … 18 min. at 200°C**
	15…20 min. at 180 ° C	**20 … 25 min. at 180°C**

Sales specifications

Property	**Value**	**Unit**	**Method**
Acid number	20 - 28	mg KOH/gr	SIR 10328
Viscosity at 200°C (ICI cone plate)	4500 - 7500	MPa.s	SIR 10391
Colour (1)	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)	55	°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.
Further information are provided in the safety data sheet.

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