

EN

Technical information EKOLAK



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LABELLING OF EKOLAK POWDER COATING

Powder coating is marked as follows (it is valid for PE/P and E/P):

PE/P-AB-C-XXXXX, E/P-AB-C-XXXXX, whereby PE/P means polyester cross-linked with HAA and E/P epoxy polyester; other marks specify the quality particulars.

A - surface

PE/P-AB-C-XXXXX and E/P-AB-C-XXXXX:

- 0 – smooth surface
- 1 – fine structured surface
- 2 – rough structured surface
- 3 – not occupied
- 4 – intermediate structure

B - quality

(PE/P-AB-C-XXXXX):

- 0 – increased weather resistance and excellent mechanical features
- 1 – good weather resistance and excellent mechanical features
- 2 – increased weather resistance and average mechanical features
- 3 – good weather resistance and average mechanical features
- 4 – average weather resistance and mechanical features
- 5 – not occupied
- 6 – optimized for low temperature curing at 160°C and good weather resistance and mechanical features

B1 - quality

(E/P-AB-C-XXXXX):

- 1 – good mechanical features and chemical resistance
- 2 – increased chemical resistance
- 3 – improved mechanical features
- 4 – average mechanical features and chemical resistance
- 5 – improved coating of edges
- 6 – optimized for low temperature curing at 160°C and good chemical and mechanical features
- 7 – optimized for thinner coatings
- 8 – optimized for low temperature curing up to 140°C and good chemical and mechanical features

C - gloss

- 1 – super gloss (>90% at an angle of 60°, DIN 67 530)
- 1 – high gloss (>80% at an angle of 60°, DIN 67 530)
- 2 – gloss (60-80% at an angle of 60°, DIN 67 530)
- 3 – semi-gloss (40-60% at an angle of 60°, DIN 67 530)
- 4 – semi-matt (20-40% at an angle of 60°, DIN 67 530)
- 5 – matt (<20% at an angle of 60°, DIN 67 530)

XXXXX - color shade

- RXXXX – the shade is according to RAL (i.e. R9010)
- XXXXX – internal shade code; the first digit indicates the group of shades; the others determines the exact shade

EKOLAK EPOXY/POLYESTER– E/P

Super glossy SG (E/P-01-1-xxxxx SG),
high glossy (E/P-01-1-xxxxx), **glossy** (E/P-01-2-xxxxx),
rough structured (E/P-21-4-xxxxx),
with improved chemical properties (E/P-02-1-xxxxx),
with improved mechanical properties (E/P-03-1-xxxxx),
with improved coating of edges (E/P-05-1-xxxxx),
quality for low curing at 160 °C (E/P-06-1-xxxxx),
optimized for thinner coat coating (E/P-07-1-xxxxx),
quality for low curing up to 140 °C (E/P-08-1-xxxxx).

Semi-glossy (E/P-01-3-xxxxx),
semi-matt (E/P-01-4-xxxxx),
matt (E/P-01-5-xxxxx),
fine-structured (dodati: E/P-11-3-xxxxx, E/P-11-5-xxxxx),
with satisfactory mechanical properties and chemical resistance (E/P-04-1-xxxxx, E/P-04-2-xxxxx, E/P-14-3-xxxxx, E/P-14-5-xxxxx, E/P-24-4-xxxxx, E/P-24-5-xxxxx).

General information - base: based on saturated polyester resins and epoxy resin, specially selected according to their good chemical resistance and the resistance to yellowing in the curing process.

Colour shade: according to RAL-card or according to the sample.

Packaging: 25 kg cartons or big-bags of 500 kg.

Powder properties

Density (ISO 8310-3): 1,2 to 1,7 g/cm³, depending upon the shade.

Yield: 9,8 to 13,8 m²/kg at coat thickness of 60 µm, depending on the shade.

Granulation (Malvern particle sizer): above 40 µm ... 40-55%.

Method of application: traditional CORONA procedure, negative voltage 30-100 kV, possible supply of powder adequate for TRIBO system of application (mark T i.e. E/P -XX-X-xxxxT).

Temperature of powder coatings must be adjusted to the temperature of spraying line before the application.

Pre-treatment:

	STEEL	GALVAN. STEEL	ALUMINIUM
Mechanic cleaning/sandblasting	Suitable for bulk object	Less suitable	Less suitable
Cleaning/degreasing	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment
Iron phosphating	Second phase, suitable for customary requirements	Second phase, suitable for customary requirements	Not suitable
Zinc phosphating	Second phase, advisable for large-scale corrosion requirements	Second phase, advisable for large-scale corrosion requirements	Not suitable
Chrome coating	Not suitable	Partly suitable	Advisable
Zeta coat	Suitable	Suitable	Suitable
Nano ceramics	Suitable	Suitable	Suitable

Mechanical and technological features of the Epoxy/Polyester Ekolak

To determine its mechanical properties the Ekolak was applied to the 0,6 mm thick cold-rolled metal sheet degreased with acetone and cured in the oven at the temperature, required for the particular type of the Ekolak.

Coat thickness: 55-80 µm (depending upon the quality).
 Gloss (ISO 2813) at the angle of 60°.

Labelling	% of gloss
1 – super glossy SG	> 90
1 – high glossy	> 80
2 – glossy	60-80
3 – semi-glossy	40-60
4 – semi-matt	20-40
5 – matt	< 20

Hardness on Bucholz scale (ISO 2815): minimum 91.
 T-bend: minimum T4-OK/OK.
 Impact test (ISO 6272): direct: minimum 100 cm × kg,
 indirect: minimum 100 cm × kg.
 Adhesion (ISO 2409): Gt 0.

Hardness on Bucholz scale (ISO 2815): minimum 91.
 T-bend: minimum T4-OK/OK.
 Impact test (ISO 6272): direct: minimum 50 cm × kg,
 indirect: minimum 50 cm × kg.
 Adhesion (ISO 2409): Gt 0.

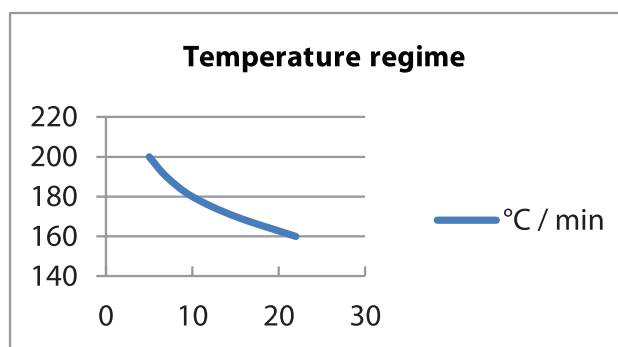
Curing conditions: 180 °C/10 min object temperature, more reactive coatings available from 140 °C/10 min up to 160°C/10 min.	Curing conditions: 190 °C/10 min object temperature, for semi glossy, semi-matt, matt and fine-structured quality.
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In case of inadequate polymerization there is a possibility that the properties of the powder coatings changes:

- when curing on an inappropriate temperature gloss could decrease due to too high temperature,
- due to lower temperatures of curing the gloss may be higher than the prescribed and
- mechanical characteristics are potentially different due to the difference in temperature regime.

Options of curing (table of declared curing for temperature regime 180 °C/10 min):

Temperature (°C)	Time (min)
160	20-25
170	15
180	10 (declared temp. regime)
190	7
200	5



Storage time: 24 months at the temperature below 25 °C for standard coatings.

Chemical resistance and resistance to household stains:

Plates with applied Ekolak coating were exposed to the reactive agent for 48 hours, then cleaned. The surface of the coating was inspected for eventual change/damage.

REACTIVE AGENT	SURFACE CHANGE	REACTIVE AGENT	SURFACE CHANGE
HCl 10%	Coating unchanged	Gasoline	Coating unchanged
Ethanol	Coating unchanged	Aceton	Coating softened, peels off the surface
Ammonia 10%	Coating unchanged	Vegetable oil	Coating unchanged
NaOH 10%	Coating unchanged	Red wine	Coating unchanged
Wine acid 5%	Coating unchanged	Sodium, 5% solution	Coating unchanged
Lactic acid 5%	Coating unchanged	Coffee	Coating unchanged
hydrogen peroxide	Coating unchanged	Cleaning agent	Coating unchanged
KOH 10%	Coating unchanged	H3PO4 10%	Coating unchanged
Diesel	Coating unchanged	Citric acid 20%	Coating unchanged
Sodium hypochlorite 5%	Coating unchanged	Glycerin (C3H8O3)	Coating unchanged
H2SO4 40%	Coating unchanged	Coolant fluid-glycol	Coating unchanged

Hygiene and health integrity:

White powder coating has been tested on hygiene and healthiness at the National Laboratory for health, environment and food. The results shows that the powder coating on the overall migration into simulants and regardless of the specific migration of primary aromatic amines, formaldehyde and phenols in food simulant and specific migration of BADGE, BFDGE and derivatives in food simulant, consistent with the provisions of paragraph 1a and b of the 3rd article of the Regulation of the European Parliament and Council Regulation (EC) No. 1935/2004 of 27th of October 2004 on materials and articles intended to come into contact with food and repealing Directives 80/590 / EEC and 89/109 / EEC. A copy of the original report of the National Laboratory for Health, Environment and Food can be obtained at the request of customers.

Areas of application:

- metal furniture,
- shelves,
- lighting, lights,
- white goods,
- radiators,
- ducts, pipes,
- sanitary ware,
- int. car. parts,
- the housing of electronic appliances.

EKOLAK POLYESTER PRIMID - PE/P

Super glossy SG (PE/P-01-1-xxxxx SG), high glossy (PE/P-01-1-xxxxx), glossy (PE/P-01-2-xxxxx), rough structured (PE/P-21-4-xxxxx), quality for low curing at 160 °C (PE/P-06-X-xxxxx).	Semi-glossy (PE/P-01-3-xxxxx), semi-matt (PE/P-01-4-xxxxx), matt (PE/P-01-5-xxxxx), high glossy and glossy with average mechanical properties (PE/P-04-1-xxxxx, PE/P-04-2-xxxxx), fine-structured (PE/P-11-5-xxxxx).
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General information - base

Base: binding on the basis of saturated polyester resins, specially selected according to their resistance to the weather conditions and UV radiation.

Colour shade: according to RAL-card or according to the sample.

Packaging: 25 kg cartons or big-bags of 500 kg.

Powder properties

Density (ISO 8310-3): 1,2 to 1,7 g/cm³, depending upon the shade.

Yield: 9,8 to 13,8 m²/kg at coat thickness of 60 µm, depending on the shade.

Granulation (Malvern particle sizer): above 40 µm ... 40-55%.

Method of application: traditional CORONA procedure, negative voltage 30-100 kV, possible supply of powder adequate for TRIBO system of application (mark T i.e. PE/P-XX-X-xxxxxT).

Temperature of powder coatings must be adjusted to the temperature of spraying line before the application

Pre-treatment:

	STEEL	GALVAN. STEEL	ALUMINIUM
Mechanic cleaning/sandblasting	Suitable for bulk object	Less suitable	Less suitable
Cleaning/degreasing	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment
Iron phosphating	Second phase, suitable for customary requirements	Second phase, suitable for customary requirements	Not suitable
Zinc phosphating	Second phase, advisable for large-scale corrosion requirements	Second phase, advisable for large-scale corrosion requirements	Not suitable
Chrome coating	Not suitable	Partly suitable	Advisable
Zeta coat	Suitable	Suitable	Suitable
Nano ceramics	Suitable	Suitable	Suitable

Mechanical and technological features of the Polyester/HAA Ekolak

To determine its mechanical properties the Ekolak was applied to the 0,6 mm thick cold-rolled metal sheet degreased with acetone and cured in the oven at the temperature, required for the particular type of the Ekolak.

Coat thickness: 55-80 µm (depending upon the quality).

Gloss (ISO 2813) at the angle of 60°.

Labelling	% of gloss
1 – super glossy SG	> 90
1 – high glossy	> 80
2 – glossy	60-80
3 – semi-glossy	40-60
4 – semi-matt	20-40
5 – matt	< 20

Hardness on Bucholz scale (ISO 2815): minimum 91. T-bend: minimum T4-OK/OK. Impact test (ISO 6272): direct: minimum 100 cm × kg, indirect: minimum 100 cm × kg. Adhesion (ISO 2409): Gt 0.	Hardness on Bucholz scale (ISO 2815): minimum 91. T-bend: minimum T4-OK/OK. Impact test (ISO 6272): direct: minimum 50 cm × kg, indirect: minimum 50 cm × kg. Adhesion (ISO 2409): Gt 0.
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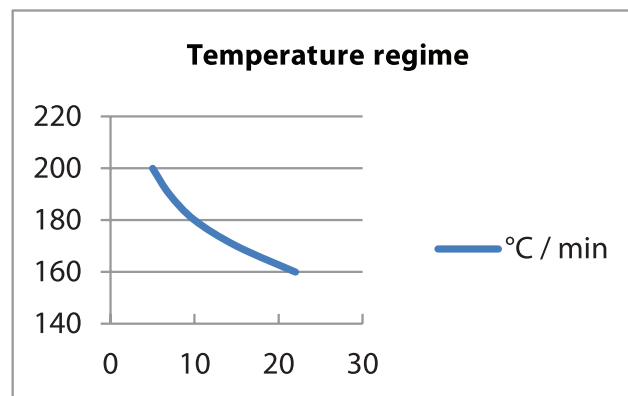
Curing conditions: 180°C/10 min or 190 °C/10 min object temperature, more reactive coatings available with 160 °C/10 min.	Curing conditions: 190 °C/10 min object temperature, for semi glossy, semi-matt, matt and fine-structured quality, 180 °C/10 min for high glossy quality.
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In case of inadequate polymerization there is a possibility that the properties of the powder coatings changes:

- by curing on an inappropriate temperature gloss could decrease due to too high temperature,
- due to lower temperatures of curing the gloss may be higher than the prescribed and
- mechanical characteristics are potentially different due to the difference in temperature regime.

Options of curing (table of declared curing for temperature regime 180 °C/10 min):

Temperature (°C)	Time (min)
160	20-25
170	15
180	10 (declared temp. regime)
190	7
200	5



Storage time: 24 months at the temperature below 25 °C for standard coatings.

Resistance to the weather conditions - accelerated aging, QUV test. Test conditions: cycle - 8h UV at 60 °C + 4h 100% humidity at 40 °C, used bulbs: UV A 340 (340 nm).	Resistance to the weather conditions - accelerated aging, QUV test. Test conditions: cycle - 8h UV at 60 °C + 4h 100% humidity at 40 °C, used bulbs UV A 340 (340 nm).
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Areas of application:

- outdoor metal furniture,
- agriculture and garden tools,
- external car parts,
- air conditioners,
- mailboxes,
- advertising boards.

EKOLAK POLYESTER QUALICOAT - PEQ15

Polyester with HAA certified Qualicoat Class 1.5 is identified by the code:

- **super glossy** (PEQ15-01-1-XXXXX SG)
- **high glossy** (PEQ15-01-1-XXXXX)
- **glossy** (PEQ15-01-2-XXXXX)

General information - base

Bond based on saturated polyester resins, specially selected according to its resistance to weathering and UV radiation.
 Colour shade: according to RAL-card or according to the sample.
 Packing: in 25 kg cartons or in big-bags of 500 kg.

Powder properties

Density (ISO 8310-3): 1,2 to 1,7 g/cm³, depending upon the shade.
 Yield: 9,8 to 13,8 m²/kg at coat thickness of 60 µm, depending on the shade.
 Granulation (Malvern particle sizer): above 40 µm ... 40-55%.
 Method of application: traditional CORONA procedure, negative voltage 30-100 kV, possible supply of powder adequate for TRIBO system of application (mark T i.e. PEQ -XX-X-xxxxT).
 Temperature of powder coatings must be adjusted to the temperature of spraying line before the application.

Pre-treatment:

	STEEL	GALVAN. STEEL	ALUMINIUM
Mechanic cleaning/ sandblasting	Suitable for bulk object	Less suitable	Less suitable
Cleaning/ degreasing	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment
Iron phosphating	Second phase, suitable for customary requirements	Second phase, suitable for customary requirements	Not suitable
Zinc phosphating	Second phase, advisable for large-scale corrosion requirements	Second phase, advisable for large-scale corrosion requirements	Not suitable
Chrome coating	Not suitable	Partly suitable	Advisable
Zeta coat	Suitable	Suitable	Suitable
Nano ceramics	Suitable	Suitable	Suitable

Mechanical and technological features of the Ekolak Polyester Qualicoat PEQ15

To determine its mechanical properties the Ekolak was applied to the 0,6 mm thick cold-rolled metal sheet degreased with acetone and cured in the oven at the temperature, required for the particular type of the Ekolak.

Coat thickness: 55-80 µm (depending upon the quality).
 Gloss (ISO 2813) at the angle of 60°.

Labelling	% of gloss
1 – super glossy SG	> 90
1 – high glossy	> 80
2 – glossy	60-80

Hardness on Bucholz scale (ISO 2815): minimum 91.
 T-bend: minimum T4-OK/OK.
 Impact test (ISO 6272): direct: minimum 50 cm × kg,
 indirect: minimum 50 cm × kg.
 Adhesion (ISO 2409): Gt 0.

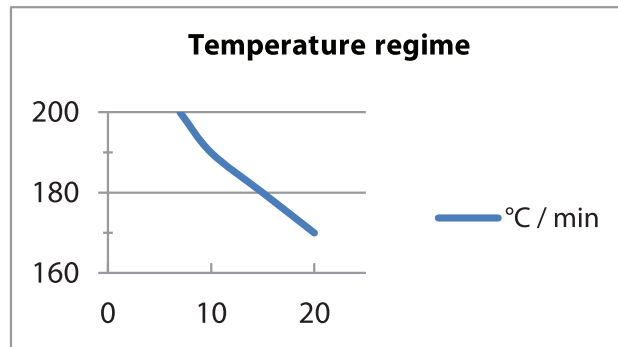
Curing conditions: 180 °C/15 min or 190 °C/10 min object temperature for high-glossy and glossy quality with standard reactivity.

In case of inadequate polymerization there is a possibility that the properties of the powder coatings changes:

- by curing on an inappropriate temperature gloss could decrease due to too high temperature,
 - due to lower temperatures of curing the gloss may be higher than the prescribed and
 - mechanical characteristics are potentially different due to the difference in temperature regime.
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Options of curing (table of declared curing for temperature regime 180 °C/15 min):

Temperature (°C)	Time (min)
170	20
180	15
190	10
200	7



Storage time: 24 months at the temperature below 25 °C for standard coatings.

Areas of application::

- metal profiles,
 - facades,
 - windows,
 - aluminium profiles ...
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HIGH TEMPERATURE POWDER COLORS – SX

Silicon powder coating shall be identified by:

- SX-AB-C-DEFGH (Corona application),

SX means silicone (siloxane) powder coating while other marks specify the quality particulars:

A – surface: 1 – fine structured surface

B – quality: 1 – combination of the polyester with a thermal stability up to 300 °C
2 – combination of the polyester with a thermal stability up to 450 °C

C – gloss: 5 – matt (< 20% at angle 60 °, ISO 2813)

DEFGH colors shade: DEFGH – the shade is according to RAL (R9005),
DEFGH – internal shade code, the first digit indicates the group shade, while other digits

General information

Sandblasting is recommended pretreatment.

Base: binder based on a combination of polyester and silicone resins crosslinked with isocyanates. Colour shade: according to RAL-card or according to the sample.

Packaging: 25 kg cartons or big-bags of 500 kg.

Powder properties

Density (ISO 8310-3): 1,2 to 1,7 g/cm³, depending upon the shade.

Yield: 9,8 to 13,8 m²/kg at coat thickness of 60 µm, depending on the shade.

Granulation (Malvern particle sizer): above 40 µm ... 45-60%.

Method of application: traditional CORONA procedure, negative voltage 30-100 kV, possible supply of powder adequate for TRIBO system of application (mark T i.e. SX-11-5-xxxxT).

Temperature of powder coatings must be adjusted to the temperature of spraying line before the application.

Pre-treatment:

	STEEL	GALVAN. STEEL	ALUMINIUM
Mechanic cleaning/ sandblasting (recommended)	Suitable for bulk object	Less suitable	Less suitable
Cleaning/ degreasing	Suitable as initial phase of pre-treatment	Suitable as initial phase of pre-treatment	Suitable an initial phase of pre-treatment
Iron phosphating	Second phase, suitable for customary requirements	Second phase, suitable for customary requirements	Not suitable
Zinc phosphating	Second phase, advisable for large-scale corrosion requirements	Second phase, advisable for large-scale corrosion requirements	Not suitable
Chrome coating	Not suitable	Partly suitable	Advisable
Zeta coat	Suitable	Suitable	Suitable
Nano ceramics	Suitable	Suitable	Suitable

Curing conditions:

- 220 °C/30 min object temperature, for quality of the SX-11 (resistant to 300 °C),
- 250 °C/35 min object temperature, for quality of the SX-12 (resistant up to 450 °C).

Storage time: 24 months at the temperature below 25°C for standard coatings.

Mechanical and technological features of the silicon powder coating Ekolak SX

To determine its mechanical properties the Ekolak was applied to the 0,6 mm thick cold-rolled metal sheet degreased with acetone and cured in the oven at the temperature, required for the particular type of the Ekolak.

Coat thickness: 60-80 µm.

T-bend: minimum T4-OK/OK.

Impact test (ISO 6272): direct: minimum 50 cm × kg,
indirect: minimum 50 cm × kg.

Adhesion (ISO 2409): Gt 0.

Areas of application:

- car exhaust systems,
- parts of the heating elements ...

ANTIMICROBIAL POWDER COATINGS

Antimicrobial powder coating is intended to protect surfaces that we constantly touch. It reduces the possibility of microbial transmission and consequently infections associated with these microbes. The use of such varnishes is therefore particularly suitable for:

- furniture and equipment in medical institutions,
- fences, hooks and other holders,
- food preparation and storage,
- surfaces where condensation moisture is formed (molds and fungi),
- areas touched by several people,
- sanitary equipment.

The active ingredient incorporated in the powder coating prevents and inhibits the multiplication of microbes and ensures that their concentration is reduced by 99.99% within 24 hours. This is confirmed by a certificate of analysis from a microbiological laboratory in the UK. Testing was carried out according to ISO 22196:2011.

ELECTROSTATIC DISCHARGE POWDER COATINGS

Electrostatic discharge powder coating is a powder coating manufactured to dissipate static charge. The substrate to be coated must be conductive and earthed.

Electrostatic discharge powder coating EKOLAK is especially suitable for applications that require a certain discharge of static electricity and thus prevent static discharge (sparks): EX-zones, explosion safety, electronic devices, etc. We can offer a coating that has DISSIPATIVE or ANTISTATIC properties. The area of resistance is explained in the figure below.



Due to the active ingredient in the powder coating, which makes it conductive, the availability in terms of shade and structure is somewhat limited. Contact the EKOLAK sales program for more details.

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