



EG SYSTEM RAPID PLUS

FAST CURING, ECONOMICAL HEAVY DUTY CORROSION PROTECTION COATING SYSTEM

Revised 07/2023 Issue 1

PRODUCT DESCRIPTION

EG System Rapid Plus is a combination of fast curing 2-pack epoxy primer and intermediate coats and accelerated polyurethane topcoats with high weather resistance. Zinc Clad® R Rapid Plus, Macropoxy® EG Phosphate Rapid and Macropoxy® EG-1 Rapid Plus have low solvent content according to Protective Coatings Directive of German Paint Industry Association (VdL-RL 04).

- Very good corrosion resistance
- Low consumption per square meter
- Suitable for application at low temperatures
- Direct to steel, hot-dip galvanized steel, zinc spraying, stainless steel and aluminium
- Good resistance to abrasion, shock and impact

Zinc Clad® R Rapid Plus

A 2-pack high solids, very fast curing epoxy zinc rich primer.

In a film thickness of approx. 20µm it can also be used as a weldable shop primer.

Macropoxy® EG Phosphate Rapid

A 2-pack high solids, very fast curing epoxy primer containing zinc-phosphate as an active anti-corrosion pigment.

Macropoxy® EG-1 Rapid Plus

A 2-pack high solids, very fast curing epoxy intermediate coat containing micaceous iron oxide.

Acrolon® EG-4 (accelerated) and Acrolon® EG-5 (accelerated)

A 2-pack solvent based acrylic-polyurethane topcoats.

By adding 1% w/w PUR Accelerator (see product data sheet for more information) a faster touch-drying and full curing will be achieved.

RECOMMENDED USE

Can be used as a robust corrosion protection coating system for steel, stainless steel, aluminium and galvanized surfaces providing a durable and decorative effect.

Mainly for bridges, pipelines, containers, industrial and harbour installations, sewage treatment plants and large machinery; submerged or non-submerged in industrial or marine environments.

Particularly suited for in shop application as heavy duty travel coat system.

The system is especially for the use at low temperature. 3 coats per day can be achieved.

PRODUCT TECHNICAL DATA

Volume Solids:	Zinc Clad® R Rapid Plus: 69 ± 2% Macropoxy® EG Phosphate Rapid: 57 ± 2% Macropoxy® EG-1 Rapid Plus (MIO): 66 ± 2% Macropoxy® EG-1 Rapid Plus (white): 70 ± 2% Acrolon® EG-4 (accelerated): 55 ± 2% Acrolon® EG-5 (accelerated): 61 ± 2% (ISO 3233-3)	Macropoxy® EG-1 Rapid Plus (MIO): 300 g/l determined practically in accordance with Protective Coatings Directive of German Paint Industry Association (VdL-RL 04). 343 g/l calculated from formulation to satisfy EC Solvent Emissions Directive. 229 g/kg calculated from formulation to satisfy EC Solvent Emissions Directive (UK).
Weight Solids:	Zinc Clad® R Rapid Plus: 88 ± 2% Macropoxy® EG Phosphate Rapid: 79 ± 2% Macropoxy® EG-1 Rapid Plus (MIO): 80 ± 2% Macropoxy® EG-1 Rapid Plus (white): 81 ± 2% Acrolon® EG-4 (accelerated): 70 ± 2% Acrolon® EG-5 (accelerated): 74 ± 2%	Acrolon® EG-4: 420 g/l determined practically in accordance with Protective Coatings Directive of German Paint Industry Association (VdL-RL 04). 437 g/l calculated from formulation to satisfy EC Solvent Emissions Directive. 312 g/kg calculated from formulation to satisfy EC Solvent Emissions Directive (UK).
VOC:	Zinc Clad® R Rapid Plus: 276 g/l determined practically in accordance with Protective Coatings Directive of German Paint Industry Association (VdL-RL 04). 303 g/l calculated from formulation to satisfy EC Solvent Emissions Directive. 132 g/kg calculated from formulation to satisfy EC Solvent Emissions Directive (UK). Macropoxy® EG Phosphate Rapid: 336 g/l determined practically in accordance with Protective Coatings Directive of German Paint Industry Association (VdL-RL 04). 351 g/l calculated from formulation to satisfy EC Solvent Emissions Directive. 219 g/kg calculated from formulation to satisfy EC Solvent Emissions Directive (UK).	Acrolon® EG-5: 338 g/l determined practically in accordance with Protective Coatings Directive of German Paint Industry Association (VdL-RL 04). 359 g/l calculated from formulation to satisfy EC Solvent Emissions Directive. 276 g/kg calculated from formulation to satisfy EC Solvent Emissions Directive (UK).



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PRODUCT TECHNICAL DATA (cont.)

Colours:	DB (MIO), RAL, NCS colour shades, further colour shades upon request. Slight colour deviations are possible due to raw material characteristics. Zinc Clad® R Rapid Plus: <ul style="list-style-type: none">• Zinc grey• Tinted red, material no. 687.03 Macropoxy® EG Phosphate Rapid: <ul style="list-style-type: none">• Sand-yellow, approx. RAL 1002, material no. 687.02• Red-brown, approx. RAL 8012, mat.-no 687.06 Macropoxy® EG-1 Rapid Plus: <ul style="list-style-type: none">• Grey metallic (MIO) approx. DB 702, material no. 687.12• Grey metallic (MIO) approx. DB 703, material no. 687.13• Green metallic (MIO) approx. DB 601, material no. 687.14• Black (MIO)• White (MIO-free) Acrolon® EG-4: <ul style="list-style-type: none">• MIO colour shades, material no. 687.30 - 687.74 Acrolon® EG-5: <ul style="list-style-type: none">• RAL colour shades, material no. 687.75 - 687.99	Mixing Ratio: By weight and by volume. Zinc Clad® R Rapid Plus: 94 parts base to 5.9 parts hardener by weight. 5.9 parts base to 1 part hardener by volume. Macropoxy® EG Phosphate Rapid: 94.7 parts base to 5.3 parts hardener by weight. 9.2 parts base to 1 part hardener by volume. Macropoxy® EG-1 Rapid Plus: 94.7 parts base to 5.3 parts hardener by weight. 9.2 parts base to 1 part hardener by volume. Acrolon® EG-4: 92 parts base to 8 parts hardener by weight. 8.9 parts base to 1 part hardener by volume.* Acrolon® EG-5: 90 parts base to 10 parts hardener by weight. 7.1 parts base to 1 part hardener by volume.* *Note: The mixing ratio by volume varies depending on the colour shade. If in doubt, please contact Sherwin-Williams. We recommend only mixing complete units.
Flash Point:	Zinc Clad® R Rapid Plus: Base: 26°C, Hardener: 26°C Macropoxy® EG Phosphate Rapid: Base: 23°C, Hardener: 34°C Macropoxy® EG-1 Rapid Plus: Base: 23°C, Hardener: 34°C Acrolon® EG-4: Base: 25°C, Hardener: 38°C Acrolon® EG-5: Base: 23°C, Hardener: 38°C	Density: Zinc Clad® R Rapid Plus: 2.3 kg/l Macropoxy® EG Phosphate Rapid: 1.6 kg/l Macropoxy® EG-1 Rapid Plus (MIO): 1.5 kg/l Macropoxy® EG-1 Rapid Plus (white): 1.4 kg/l Acrolon® EG-4: 1.4 kg/l Acrolon® EG-5: 1.3 kg/l (may vary with colours)
Cleaner/Thinner:	Cleaner 26 (for cleaning). Thinner EG for thinning with max. 5% to adapt the viscosity of Macropoxy® EG Phosphate Rapid, Macropoxy® EG-1 Rapid Plus, Acrolon® EG-4 or Acrolon® EG-5. Thinner K for thinning with max. 3% to adapt the viscosity of Zinc Clad® R Rapid Plus. If used Zinc Clad® R Rapid Plus as a weldable shop primer, thin with 15% - 20% Thinner K and apply the thinned material immediately and under constant stirring. Thinning will affect VOC compliance, sag tolerance and dry film thicknesses. Spraying equipment must be rinsed with Thinner EG before using PUR topcoats.	Shelf Life: Zinc Clad® R Rapid Plus: 1 year Macropoxy® EG Phosphate Rapid: 3 years Macropoxy® EG-1 Rapid Plus: 2 years Acrolon® EG-4: 2 years Acrolon® EG-5: 2 years PUR Accelerator: 1 year from date of manufacture, stored in originally sealed containers in a cool and dry environment.
Pack Size:	Two component materials supplied in separate containers to be mixed prior to use: Zinc Clad® R Rapid Plus: 30 kg (13 litre) and 22 kg (9.5 litre) unit when mixed Macropoxy® EG Phosphate Rapid: 28.5 kg (17.8 litre) unit when mixed Macropoxy® EG-1 Rapid Plus (MIO): 28.5 kg (19 litre) unit when mixed Acrolon® EG-4: 30 kg (21.4 litre) and 12.5 kg (8.9 litre) units when mixed Acrolon® EG-5: 30 kg (23 litre) and 10 kg (7.7 litre) units when mixed Acrolon® PUR Accelerator: 1 litre Volume will vary with colours and density.	



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PRODUCT TECHNICAL DATA (cont.)

Recommended Application Methods:

Airless Spray, Conventional Spray, Brush, Roller

Typical Thickness:

Recommended Spreading Rate Per Coat

	60 µm	80 µm
Zinc Clad® R Rapid Plus		
Dry	60 µm	80 µm
Wet	87 µm	116 µm
Theoretical Consumption*	0.200 kg/m ² 0.087 l/m ²	0.267 kg/m ² 0.116 l/m ²
Theoretical Coverage*	5.00 m ² /kg 11.50 m ² /l	3.75 m ² /kg 8.63 m ² /l
Macropoxy® EG Phosphate Rapid		
Dry	80 µm	
Wet	140 µm	
Theoretical Consumption*	0.225 kg/m ² 0.140 l/m ²	
Theoretical Coverage*	4.45 m ² /kg 7.13 m ² /l	
Macropoxy® EG-1 Rapid Plus (MIO)		
Dry	80 µm	
Wet	121 µm	
Theoretical Consumption*	0.182 kg/m ² 0.121 l/m ²	
Theoretical Coverage*	5.50 m ² /kg 8.25 m ² /l	
Macropoxy® EG-1 Rapid Plus (MIO-free)		
Dry	80 µm	160 µm
Wet	114 µm	229 µm
Theoretical Consumption*	0.160 kg/m ² 0.114 l/m ²	0.320 kg/m ² 0.229 l/m ²
Theoretical Coverage*	6.25 m ² /kg 8.75 m ² /l	3.13 m ² /kg 4.38 m ² /l
Acrolon® EG-4		
Dry	80 µm	
Wet	145 µm	
Theoretical Consumption*	0.204 kg/m ² 0.145 l/m ²	
Theoretical Coverage*	4.19 m ² /kg 6.88 m ² /l	
Acrolon® EG-5		
Dry	60 µm	80 µm
Wet	98 µm	131 µm
Theoretical Consumption*	0.128 kg/m ² 0.098 l/m ²	0.170 kg/m ² 0.131 l/m ²
Theoretical Coverage*	7.82 m ² /kg 10.17 m ² /l	5.87 m ² /kg 7.63 m ² /l

* This figure makes no allowance for surface profile, uneven application, overspray or losses in containers and equipment.

Film thickness will vary depending on actual use and specification.

Zinc Clad® R Rapid Plus: Apart from small areas the dry film thickness should not exceed 150 µm per coat.

Macropoxy® EG Phosphate Rapid: The dry film thickness should not exceed 240 µm per coat.

Macropoxy® EG-1 Rapid Plus (MIO): The dry film thickness should not exceed 240 µm per coat.

Macropoxy® EG-1 Rapid Plus (MIO-free): The dry film thickness should not exceed 240 µm per coat.

Acrolon® EG-4 and Acrolon® EG-5: The dry film thickness should not exceed 240 µm per coat.

In case of high air humidity CO₂ bubbles may occur.

Pot Life:

Zinc Clad® R Rapid Plus

+ 10°C	+ 20°C	+ 30°C
8 hours	5 hours	2 hours

Macropoxy® EG Phosphate Rapid

+ 10°C	+ 20°C	+ 30°C
8 hours	5 hours	2 hours

Macropoxy® EG-1 Rapid Plus

+ 10°C	+ 20°C	+ 30°C
8 hours	5 hours	2 hours

Acrolon® EG-4 and Acrolon® EG-5

+ 10°C	+ 20°C	+ 30°C
7 hours	6 hours	4 hours

Acrolon® EG-4 and Acrolon® EG-5 accelerated

+ 10°C	+ 20°C	+ 30°C
5 hours	3 hours	2 hours

Pot life is dependent on temperature and volume.



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AVERAGE DRYING TIMES

Zinc Clad® R Rapid Plus for 80 µm Dry Film Thickness:

	+ 0°C	+ 5°C	+ 10°C	+ 20°C
Dry to handle (Drying Stage 6*)	4 hours	1.5 hours	0.75 hours	0.5 hours
To Recoat	4 hours	1.5 hours	0.75 hours	0.5 hours

Macropoxy® EG Phosphate Rapid for 80 µm Dry Film Thickness:

	+ 0°C	+ 5°C	+ 10°C	+ 20°C
Dry to handle (Drying Stage 6*)	10 hours	5 hours	4 hours	1.5 hours
To Recoat	10 hours	5 hours	4 hours	1.5 hours

Macropoxy® EG-1 Rapid Plus for 80 µm Dry Film Thickness:

	+ 0°C	+ 5°C	+ 10°C	+ 20°C
Dry to handle (Drying Stage 6*)	12 hours	6 hours	5 hours	2.5 hours
To Recoat	12 hours	6 hours	5 hours	2.5 hours

Acrolon® EG-4 for 80 µm Dry Film Thickness:

	+ 5°C	+ 10°C	+ 20°C	+ 40°C
Dry to handle (Drying Stage 6*)	19 hours	16 hours	12 hours	1.5 hours
To Recoat	19 hours	16 hours	12 hours	1.5 hours

Acrolon® EG-5 for 80 µm Dry Film Thickness:

	+ 5°C	+ 10°C	+ 20°C	+ 40°C
Dry to handle (Drying Stage 6*)	21 hours	18 hours	14 hours	3 hours
To Recoat	22 hours	18 hours	14 hours	3 hours

Acrolon® EG-4 accelerated for 80 µm Dry Film Thickness and + 1% w/w PUR Accelerator:

	0°C	+ 5°C	+ 10°C	+ 20°C
Dry to handle (Drying Stage 6*)	48 hours	16 hours	12 hours	4 hours
To Recoat	48 hours	16 hours	12 hours	4 hours

Acrolon® EG-5 accelerated for 80 µm Dry Film Thickness and + 1% w/w PUR Accelerator:

	0°C	+ 5°C	+ 10°C	+ 20°C
Dry to handle (Drying Stage 6*)	52 hours	18 hours	13 hours	5 hours
To Recoat	53 hours	18 hours	13 hours	5 hours

*ISO 9117

Maximum recoat time is 1 year for Zinc Clad® R Rapid Plus, Macropoxy® EG Phosphate Rapid and Macropoxy® EG-1 Rapid Plus and unlimited for Acrolon® EG-4 and Acrolon® EG-5. Prior to further applications all contamination must be removed. In the case of extended recoating times consult Sherwin Williams customer service.

Final cure: 1-2 weeks, depending on film thickness and temperature.

These figures are given as a guide only. Factors such as air movement, film thickness and humidity must also be considered.

APPROVALS & ENDORSEMENTS

- EG System Rapid Plus is approved according to German standard 'TL KOR Stahlbauten, Blatt 97'.
- Certificates for C5 high and C5 very high according to ISO 12944 are available.
- Certificate for weldable shop primer according to DIN EN ISO 17652-2 is available.

SURFACE PREPARATION

Ensure surfaces to be coated are clean, dry and free from all surface contamination such as oil, grease, dirt and corrosion products to achieve satisfactory adhesion.

For contaminated and weathered surfaces e.g. primed areas we recommend to clean with Cleaner Wash.

Steel surfaces shall be blast-cleaned to Sa 2½ according to ISO 8501-1 (ISO 12944-4)

Hot-dip galvanized surfaces, stainless steel and aluminium shall be prepared by degreasing or, in case of permanent immersion or condensation, sweep blasting according to ISO 12944-4 with a non-ferrous blasting abrasive.

MIXING

Stir component A very thoroughly using an mechanical paint mixer (start slowly, then increase up to approx. 300 rpm). Add component B carefully and mix both components very thoroughly (including sides and bottom of the container). Mix for at least 3 minutes until a homogeneous mixture is achieved. We recommend to fill the mixed material into a clean container and mix again shortly as described above to avoid incorrect mixing. During mixing and handling of the materials always wear protective goggles, suitable gloves and other protective clothing.

APPLICATION CONDITIONS

Substrate temperature shall be above - 10°C (0°C for Acrolon® EG-4 and Acrolon® EG-5 by adding Acrolon PUR Accelerator) and at least 3°C above the dew point.

The surface must be dry and free from ice.

Material temperature shall be above 0°C.

Relative air humidity shall be below 85%.



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APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for satisfactory application characteristics. Always purge spray equipment before use with listed cleaner. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Airless Spray

Unit: Efficient airless equipment
Tip Size: 0.38 – 0.53 mm (0.015 – 0.021 inch)
Fan Angle: 40° - 80°
Operating Pressure: min. 180 bar (2600 psi)

The airless spray details given above are intended as a guide only.

Details such as fluid hose length and diameter, paint temperature and job shape and size all have an effect on the spray tip and operating pressure chosen. However, the operating pressure should be the lowest possible consistent satisfactory atomisation.

As conditions will vary from job to job, it is the applicators responsibility to ensure that the equipment in use has been set up to give the best results.

If in doubt consult Sherwin-Williams customer service.

Conventional Spray

Atomising Pressure: 3 - 5 bar (43 - 73 psi)
Tip Size: 1.5 – 2.5 mm (0.06 – 0.10 inch)

Brush and Roller

The coating system is suitable for brush and roller application. Application of more than one coat may be necessary to give equivalent dry film thickness to a single spray applied coat.

Note: Zinc Clad® R Rapid Plus is not suitable for roller application.

RECOMMENDED SYSTEMS

Steel:

2-coat system:

1 x Macropoxy® EG Phosphate Rapid
1 x Acrolon® EG-4 (accelerated) or 1 x Acrolon® EG-5 (accelerated)

3 or 4-coat system:

1 x Zinc Clad® R Rapid Plus or 1 x Macropoxy® EG Phosphate Rapid

1-2 x Macropoxy® EG-1 Rapid Plus

1 x Acrolon® EG-4 (accelerated) or 1 x Acrolon® EG-5 (accelerated)

In case of permanent submersion or exposure to condensation prime with Zinc Clad® R Rapid Plus only.

Hot-dip galvanized steel, stainless steel and aluminium

1 x Macropoxy® EG-1 Rapid Plus

1 x Acrolon® EG-4 (accelerated) or 1 x Acrolon® EG-5 (accelerated)

Certain shades of Acrolon® EG-5 for example, yellows and reds may require additional coats to achieve full opacity.

ADDITIONAL NOTES

Drying times, curing times and pot life should be considered as a guide only.

Chemical resistance:

Resistant to weather, water, seawater, smoke, de-icing salts, acid and alkali vapours, oils, grease and short term exposure to fuels and solvents.

Temperature resistance:

Dependent on the primer used

Zinc Clad® R Rapid Plus

Dry heat up to + 150°C, short term up to + 180°C.

Increased humid ambient temperature up to approx. + 50°C.

Macropoxy® EG Phosphate Rapid

Dry heat up to + 150°C, short term up to + 200°C.

Increased humid ambient temperature up to approx. + 50°C.

In case of higher temperatures consult Sherwin-Williams customer service.

An exposure to high temperatures can lead to colour changes.

Numerical values quoted for physical data may vary slightly from batch to batch.

HEALTH & SAFETY

Consult Product Health and Safety Data Sheet for information on safe storage, handling and application of this product.

WARRANTY

Whilst all statements made about our products (whether in this data sheet or otherwise) are correct and accurate to the best of our knowledge, we have no control over the quality or the condition of the substrate, the application conditions or the many other factors affecting your use and application of our product.

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