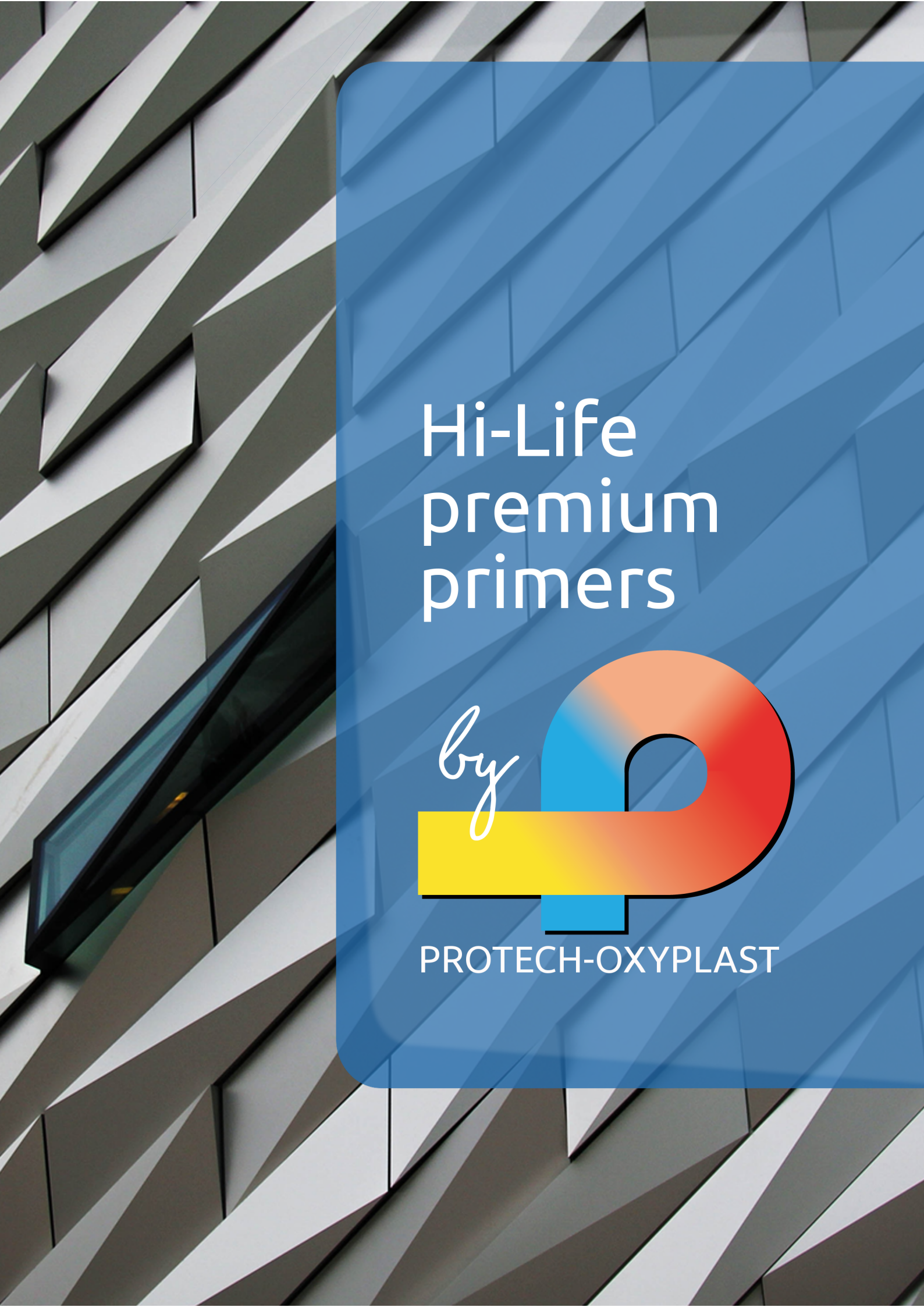


Hi-Life premium primers

by

PROTECH-OXYPLAST

INTENT

Powder coatings are extremely durable, exceptionally resistant to corrosion, and able to withstand exposure to harsh UV rays. For some projects, a two layer protection system is required to achieve optimal resistance and meet particular appearance requirements. The two layers combine purposes: the primer base coat ensures optimal corrosion resistance, whilst the topcoat adds appearance aesthetics or brings additional functionality.

We understand the many questions you may have regarding the most appropriate powder coating system that fits your project or production process. It is thanks to the multiple and various properties powder coatings have that the choice is ever so complex but important.

During the process of choosing the most appropriate powder coating solution a number of criteria need to be considered, such as life time expectancy, corrosion class resistance, product protection, image loss, method of powder application, etc.

As the industry's needs are widely diverse and an all-in-one primer can not claim its promises in every situation possible, Protech-Oxyplast has put together a diverse selection of needs-based powder coating primer systems. The systems we offer are the result of years of experience and customer-driven R&D.

We are happy to assist you in your decision making process. This brochure was created to serve as a guideline in helping you find out which of our systems match best with your purposes and production process.

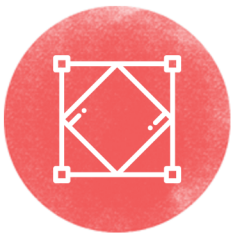
After reading through this brochure please feel free to contact your regional representative or our team with any questions you may have.

Best regards,

Protech-Oxyplast

CRITERIA FOR CHOICE OF PRIMER

SUBSTRATE



Aluminium, steel, HDG steel, zincspray,…? Mechanical or chemical pretreatment? Do you need to cover sharp edges? The nature of the metal, the shape and its thickness will affect the choice of primer.

CORROSION CLASS

A thoroughly componed combination of (mechanical and/or chemical) pretreatment + a primer + a topcoat will enable you to meet the requested corrosion class level and life time expectancy of your project.

LIFE TIME EXPECTANCY

Powder coatings maintain their finish and functionality for many years. The most durable systems are born from a correct combination of pretreatment and powder coating system.

*please consult our Protech-Oxyplast corrosion matrix overview.

FINAL APPLICATION

What kind of environment will the coated object be placed in (indoor vs outdoor, chemical atmosphere, high humidity area, …)? Will the coating have a functional or aesthetic purpose? Our primer system properties are based on your customer's specifications.

COATING PROCESS

The curing conditions (electrical, direct or indirect fired gas oven, induction, …) need to be matched with the reactivity and chemistry the primer. Will the primer undergo a full cure or partial cure (green cure)?

COST

It is not always necessary to attain the highest level of corrosion resistance. In less demanding environments or project scopes, it makes sense to choose a more budget friendly coating system. When the stakes are high however, a more expensive but superior primer- and coating solution will prove to be the cheapest over time.

TOPCOAT

Most topcoats will match any primer. However, there are things to consider. A low bake primer is recommended to combine with a low bake topcoat. We would recommend a dark toned primer for under dark topcoats and a light toned primer for light coloured topcoats.

ZINC / ZINC FREE

Zinc gives an additional cathodic anti corrosion protection on steel and can be built into the primer. Certain projects require the application of a zinc primer, while others prefer a zinc-free solution.

CERTIFICATION

The performance of a primer and/ or coating system can be evaluated according certain standards and test methods and certified by international quality associations.

TESTED PRIMER SYSTEMS

TESTS PERFORMED

The following tests are conducted to assess the validity of the various primer coating systems:

ADHESION - CROSSHATCH (ISO 2409)

Test to evaluate the adhesion of the powder coating to the metal substrate, performed by cutting a crosshatched grid pattern into the coating all the way down to the substrate. Secondly, a piece of tape is applied to the crosshatched area and removed quickly, after which the test panel is inspected to see if the coating is lifted away from the substrate.

WET ADHESION - BOILING WATER (QUALICOAT SPEC.)

This practice establishes the standard procedure for evaluating the resistance of the coating system to accelerated aging by boiling water.

SALTSPRAY (2000 hrs) (ISO 9227 / ASTM B-117)

The salt spray test is an accelerated corrosion resistance test to evaluate the performance of a coated object in a high salinity environment and its suitability as a protective finish. The test is performed by scribing a line or “X” onto the surface of a finished powder coated panel, after which the panel is placed into a simulation chamber where a corrosive mist is applied. The panel is taken out of the chamber at set time intervals to measure and describe the "creep" performance of the coating around the scribe.

HUMIDITY TEST (ISO 6270-2)

Humidity test is an accelerated corrosion test used to evaluate the performance of a coated object to continuous condensation.

CYCLIC CORROSION (ISO 12944-6 / ISO 20340)

Cyclic Corrosion Testing is a way of accelerating real-world corrosion failures, under laboratory controlled conditions. The test comprises different climates which are cycled automatically. The tested samples all undergo the same sort of changing environment that would be encountered in the natural world.

NOTE ON PRETREATMENT

A well conceived and well performed pretreatment is of utmost importance as it is the substrate’s primary protective barrier + requires full adhesion to the primer. The pretreatment layer is a major contributor to optimal anti-corrosion protection and must therefore always be considered into the coating process, either being applied mechanically or chemically.

Depending on the quality and type of the metal, there are different cleaning and pretreatment products and procedures possible. The total procedure (cleaning, pretreating, coating) must be mutually coordinated and needs to comply to the final desired properties of the coating system. Please involve your chemical supplier and powder coating producer timely into your project.

OXYPRIM - EF33

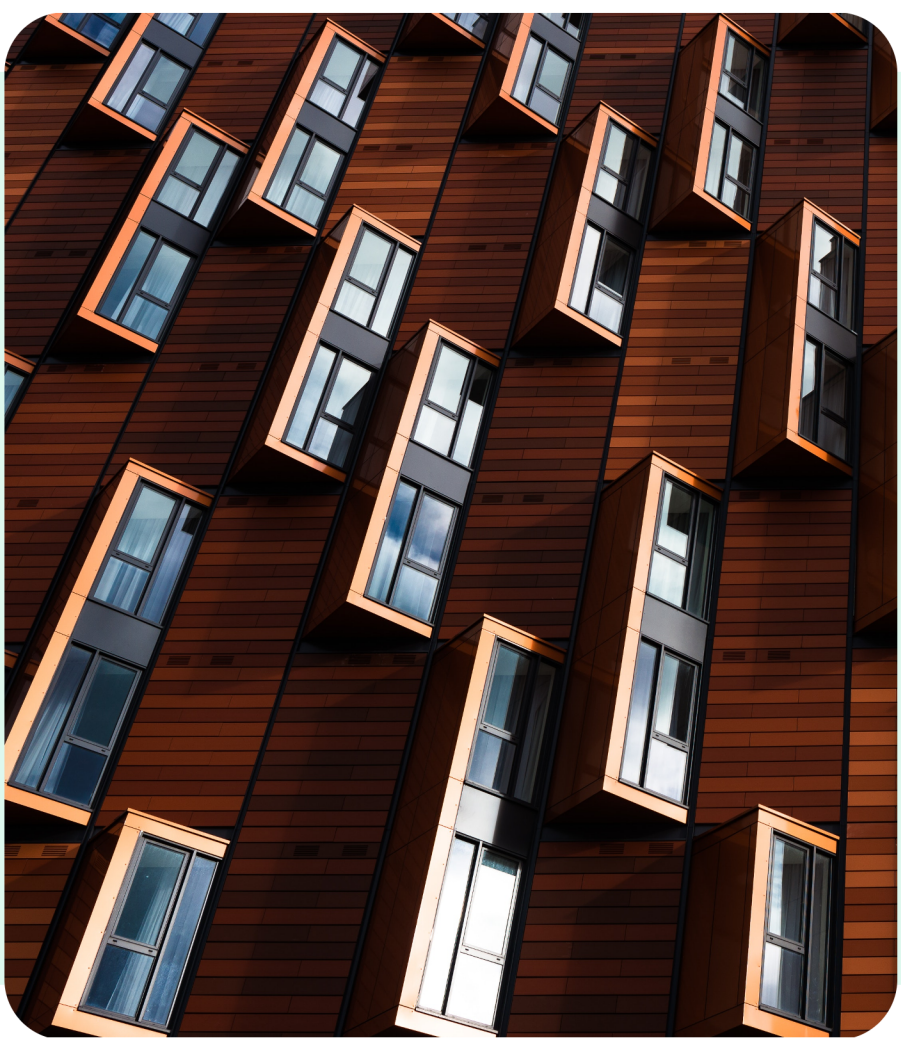
2-LAYER SYSTEM

SPECIFICS:

Oxyprim is Protech-Oxyplast's standard modified epoxy primer that is very easily applied and gets its full properties on the basis of a regular curing schedule.

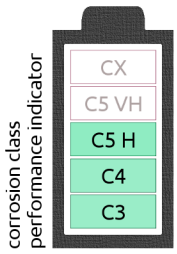
Oxyprim primer promises smooth aesthetics (excellent flow-out), optimal wetting, low film build and strong adhesion with its topcoat. Oxyprim is also particularly recommended for application onto porous substrates like cast iron, hot-dip galvanized steel or zinc metallisation thanks to its degassing properties. The two layer system principle offers ultimate corrosion protection for architectural applications and in industrial environments.

Oxyprim is a budget friendly product.



FEATURES:

- **Standard** primer
- **Easy** application
- Top **aesthetics**
- Excellent corrosion **protection**
- **Degassing** properties
- **Cost efficient**
- For **aluminium**, **steel** or **porous substrates**



PRODUCT CODE:

EF33 LIGHT GREY PRIMER (for light coloured topcoats)
ES312A8004

EF33 DARK GREY PRIMER (for dark coloured topcoats)
ES312A8001

TESTIMONIAL:

THE BENEFITS OF A "SLOWER" CURING SYSTEM.

For some production cycles we consistently choose EF33 (Oxyprim), based on its process performance and curing speed. A very responsive oven with high air flow can sometimes heat up substrate parts too quickly. In theses cases, Oxyprim is a perfect powder system to use as it is a "slower" system, making it possible for gas formation to escape from the substrate before the coating seals the part.

- anonymous customer coating heavy parts -

CURING CONDITIONS:

2-COAT SYSTEM	**PROPERTIES**
Substrate	aluminium or steel
Curing schedule EF33	nom. 10' - 180°C (substrate temp.)
layer thickness	60 µm
Curing schedule topcoat	see TDS of desired topcoat
layer thickness	80 µm

Many of the Protech-Oxyplast primers can be green cured, meaning that a **partial cure (50%) of the primer suffices**. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat) and is even advised as it promotes intercoat adhesion and reduces the risk of overcuring.

Please note that:
- **in case the degassing properties of the primer and topcoat are primarly needed, green curing is discouraged!**
- choosing for a green cure schedule, the primer needs to be finished with a topcoat immediately after having (partially) cured the primer.

GREENPRIM LB - EF36

2-LAYER SYSTEM

SPECIFICS:

Greenprim LB is a degassing modified epoxy primer that is very energy efficient and hence is characterised with our green label. Greenprim LB was developed as a basis for a two layer low bake system. The primer itself can be either fast cured or low cured. Greenprim LB delivers strong overcure robustness (up to 30 min. @ 180° C) and does not suffer from intercoat delamination. Higher film build and curing conditions are possible without loss of its properties.

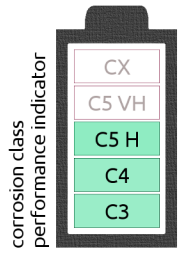
Greenprim LB's formulation focuses on industrial applications, steel and porous substrates. The primer is particularly competent with regards to edge protection.

Greenprim LB is Qualisteelcoat certified and attains the requirements for C5-environments (MS2, HD2). On top of all its advantages, the primer is an economical, budget-friendly product.

FEATURES:

- **Degassing** primer, for lowbake coating systems
- **Energy efficient**
- Strong **overcure robustness** and intercoat adhesion
- Excellent **edge protection**
- **Cost efficient**
- **Qualisteelcoat** label
- For **porous substrates**, **steel** and **industrial** applications

green label product



PRODUCT CODE:

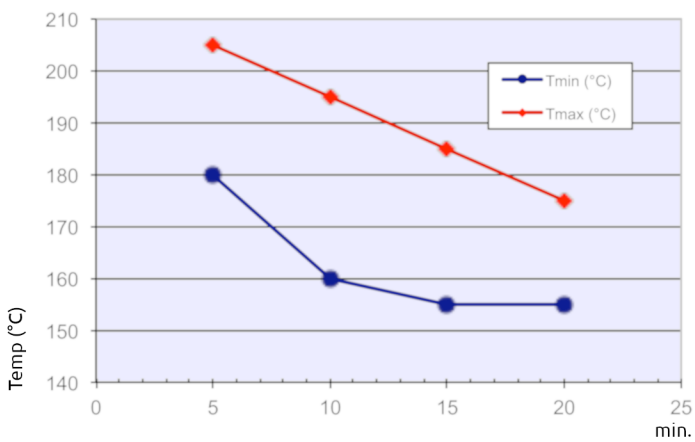
EF36 LIGHT GREY PRIMER (for light coloured topcoats)
ES322A8201

EF36 DARK GREY PRIMER (for dark coloured topcoats)
ES322A8006

CURING CONDITIONS:

2-COAT SYSTEM	**PROPERTIES**
Substrate	steel or aluminium (not advised for achitectural purposes)
Curing schedule EF36	nom. 10' - 160°C (substrate temp.)
layer thickness	60 µm
Curing schedule topcoat	see TDS of desired topcoat
layer thickness	80 µm

Greenprim's properties secure overbake robustness, but also allow shorter curing cycles (possible curing schedules: 10'-160°C or 5'-180°C)



CERTIFICATE:

quali steel coat

According to Qualisteelcoat testings, EF36 is labeled in category C5. Certificate n°:

PE-0043 (HD2)
PE-0058 (MS2)

Many of the Protech-Oxyplast primers can be green cured, meaning that a **partial cure (50%) of the primer suffices**. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat) and is even advised as it promotes intercoat adhesion and reduces the risk of overcuring.

Please note that:
- **in case the degassing properties of the primer and topcoat are primarly needed, green curing is discouraged!**
- choosing for a green cure schedule, the primer needs to be finished with a topcoat immediately after having (partially) cured the primer.

TOP PRODUCT

ULTRAPRIM - EF17

2-LAYER SYSTEM

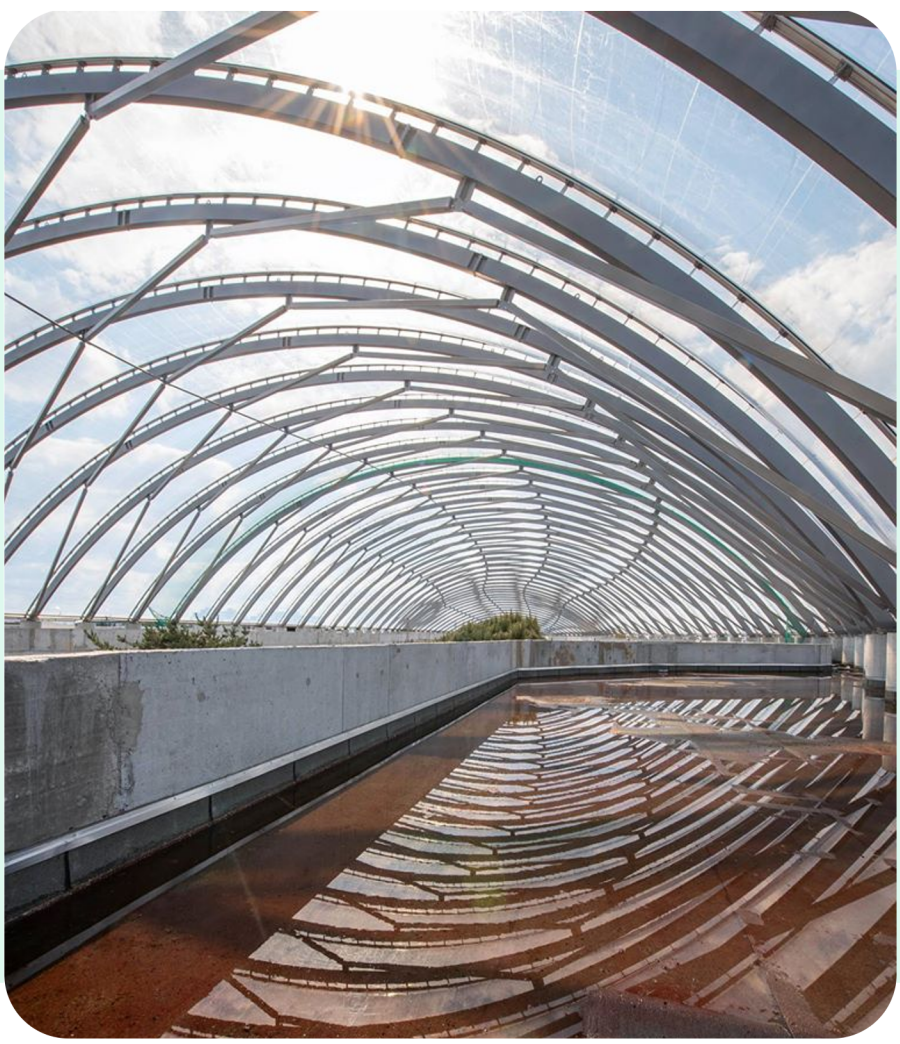
SPECIFICS:

Ultraprim, hence the name, is our ultimate primer product.

Ultraprim is a zinc-free, pure epoxy coating that delivers superior corrosion protection. It is therefore a superb product to use on all sorts of metal substrates, in the most demanding environments.

Ultraprim is also a champion in edge protection and is extremely useful when coating parts with perforations, laser cuts, sharp edges, ...

Ultraprim proves to have a robust curing window, allowing excellent overbake stability and intercoat adhesion in all oven types.

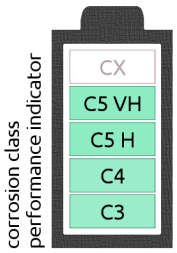


© SD VICITY - Lillenium (FR) roof

FEATURES:

- **Superb edge protection**
- Excellent **overcure stability** and **intercoat adhesion**
- Ultimate **corrosion protection**
- For **all sorts of metal** substrates
- **matt** appearance

TOP PRODUCT



PRODUCT CODE:

EF17 LIGHT GREY MATT PRIMER
ES512A8530

EF17 DARK GREY MATT PRIMER
ES512A8029

CURING CONDITIONS:

2-COAT SYSTEM	**PROPERTIES**
Substrate	aluminium and steel
Curing schedule EF17	nom. 10' - 180 °C (substrate temp.)
layer thickness	60 µm
Curing schedule topcoat	see TDS of desired topcoat
layer thickness	80 µm

TEST REPORTS ULTRAPRIM:

EDGE PROTECTION: Ultraprim was tested by the independent laboratory MetaLogic and proves to provide excellent edge protection at sharp corners, laser cuts, perforations, etc.

CYCLIC CORROSION TESTING:

Results after 16 cycles (2688h) of cyclic corrosion testing according to ISO 12944-6
Score: **C5 category (very high)**

SUBSTRATE	**GRITBLASTED STEEL**	**ZINC PHOSPHATED STEEL**
BLISTERING	0(S)0	0(S)0
RUSTING	Ri 0	Ri 0
SCRIBE CORROSION	<3 mm	<1 mm

Ultraprim EF17 meets the requirements for C5-Very High (>25 years).

Many of the Protech-Oxyplast primers can be green cured, meaning that a **partial cure (50%)** of the primer suffices. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat) and is even advised as it promotes intercoat adhesion and reduces the risk of overcuring.

Please note that:
- **in case the degassing properties of the primer and topcoat are primarly needed, green curing is discouraged!**
- choosing for a green cure schedule, the primer needs to be finished with a topcoat immediately after having (partially) cured the primer.

DRYPRIM - EF26

2-LAYER
1 CURE
SYSTEM

SPECIFICS:

Dryprim is a primer that excells in simplicity. Thanks to its "powder-in-powder" technology, Dryprim provides the advantages of a two layer powder coating system but needs only one cure cycle to obtain its full potential. After applying the 2 dry powder layers one after the other, both layers are cured in the same time span, eliminating the step of intermediate curing. Moreover, to apply this well thought-out primer system, standard equipment suffices.

Dryprim promises excellent intercoat adhesion, high corrosion and edge protection. Our green label recognises Dryprim's energy efficiency. The system performs best with a PE40 low bake topcoat. Nevertheless, other desired topcoats can be endorsed by Protech-Oxyplast for system validity upon request.

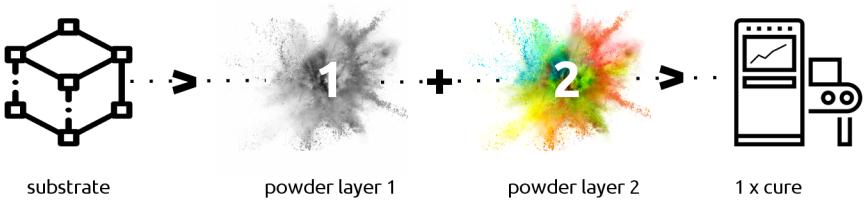
note: the Dryprim process is easy, but a correct process start-up is of vital importance for the product's succes. It is therefore necessary to allow Protech-Oxyplast to help you set the parameters of your process correct from start.

FEATURES:

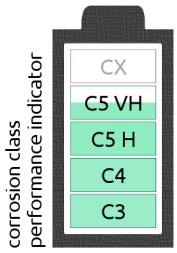
- **2-in-1** primer
- **dry-on-dry principle:** 2 layers, only 1 cure
- **Energy efficient**
- **Accelerated production** process
- Excellent **intercoat adhesion**
- Excels in **simplicity**

Protech-Oxyplast is your guide through the start-up process.

green label product



substrate | powder layer 1 | powder layer 2 | 1 x cure



excellent finish!

PRODUCT CODE:

EF26 LIGHT GREY PRIMER
ES222A8030

EF26 DARK GREY PRIMER
ES222A8025

CURING CONDITIONS:

2-COAT SYSTEM	**PROPERTIES**
Substrate	aluminium and steel
Curing schedule EF26	**no curing (*)**
layer thickness	≤ 50 µm
Curing schedule topcoat	see TDS of desired topcoat
layer thickness	80 µm

* the primer cures in the same time span as the topcoat

When first starting to use Dryprim in your production process, supervision of Protech-Oxyplast is required, to ensure you achieve the optimal results.

ZINCOPRIM - ZINC RICH

2-LAYER SYSTEM

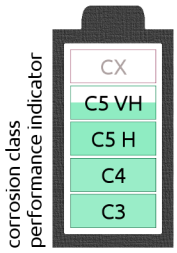
SPECIFICS:

Zincoprim is a zinc rich epoxy-based primer that is excellent to use on shot blasted steel. Zincoprim can be produced both as a normal cure or a low cure product (Zincoprim Lowbake is Protech-Oxyplast's accelerated version of Zincoprim).

The zinc content processed in the coating allows the substrate to benefit from extra protection against corrosion. Apart from the cathodic protection zinc offers, it also has the inherent ability to form a very dense film that serves as a protective barrier on metal surfaces. The highly impermeable layer helps keeping out moisture that can significantly speed up the corrosion process. An extra zinc protection layer is therefore not only useful in outdoor settings, but also in many agressive and indoor industrial environments.

FEATURES:

- **Zinc rich** primer
- Recommended for **shot blasted steel**
- Excellent **corrosion protection**



PRODUCT CODE:

ZINCOPRIM NEW (very high zinc content)
ES112A8203

ZINCOPRIM (high zinc content)
ES312A162

ZINCOPRIM LOWBAKE (accelerated formulation)
ES212A8503

CURING CONDITIONS:

2-COAT SYSTEM	**PROPERTIES**
Substrate	steel
Curing schedule Zincoprim	10' - 180°C (160°C LB) (substrate temp.)
layer thickness	60 - 80 µm
Curing schedule topcoat	see TDS of desired topcoat
layer thickness	80 µm

TEST REPORTS ZINCOPRIM:

SALT SPRAY (ASTM B-117)

Results after 1440h of NSS
according to ASTM B-117/ISO 9227

SUBSTRATE	GRITBLASTED STEEL
BLISTERING	0(S)0
RUSTING	Ri 0
SCRIBE CORROSION	<3 mm

HUMIDITY CABINET (DIN 50017)

Shotblasted steel
After 500 hours: no blistering
Peel off at scratch: 0 mm

These results are directly related to a correct pretreatment and can therefore not strictly be guaranteed.

Many of the Protech-Oxyplast primers can be green cured, meaning that a **partial cure (50%)** of the primer suffices. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat) and is even advised as it promotes intercoat adhesion and reduces the risk of overcuring.

Please note that:
- **in case the degassing properties of the primer and topcoat are primarly needed, green curing is discouraged!**
- choosing for a green cure schedule, the primer needs to be finished with a topcoat immediately after having (partially) cured the primer.

MULTIPRIM - 3 III

3-LAYER SYSTEM

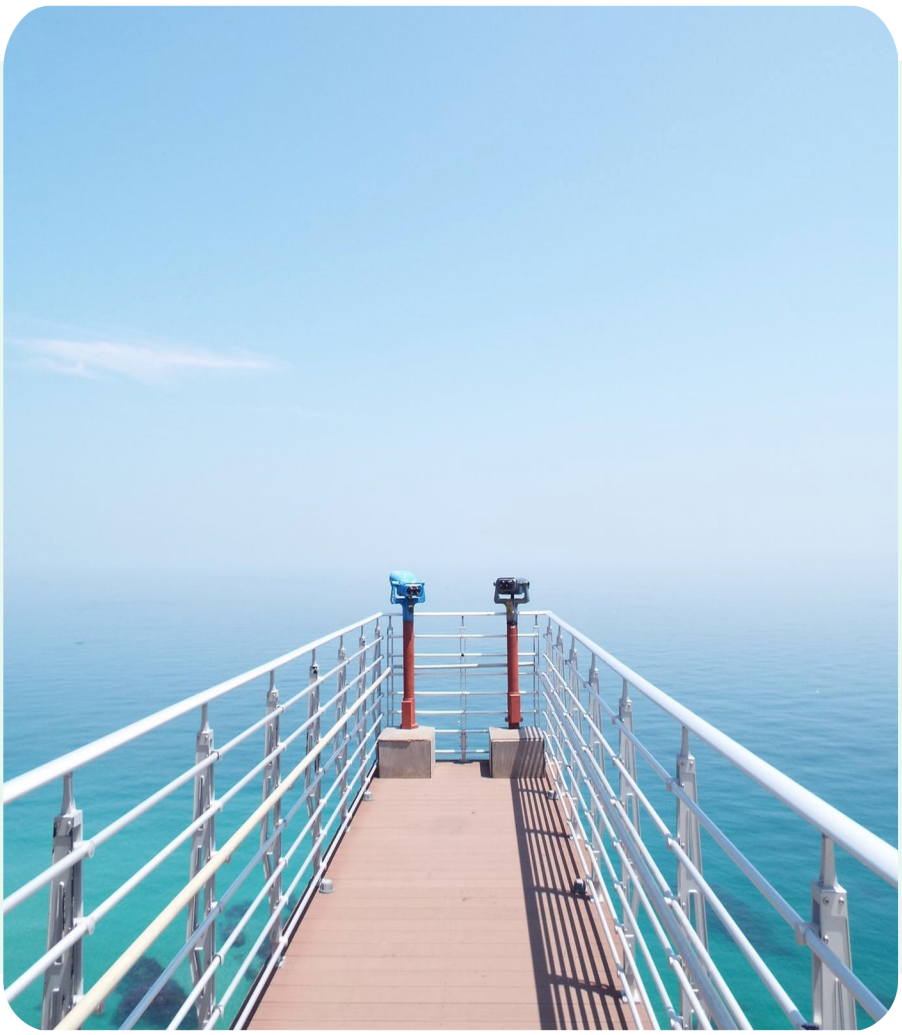
SPECIFICS:

Multiprim is a multi-layer system that combines Protech-Oxyplasts's zinc-rich primer with Ultraprim, a perfect marriage that ensures the best corrosion protection on shotblasted steel.

The system's high anti-corrosion performance is built on combining strong features such as impermeability, cathodic protection, excellent adhesion of the primer layers and high layer thickness. In cases where very strong protection is required, the substrate will benefit from an additional chemical pretreatment.

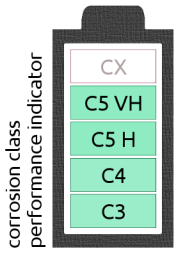
When using our Multiprim, Protech-Oxyplast strongly advises to follow the greencure process, and shorten the curing cycles per layer. In total, the substrate will undergo 3 curing cycles, meaning that cross-linking of the first layers will proceed when curing the layers on top*.

*Protech-Oxyplast advises to use Z-Series Superdurable topcoats



FEATURES:

- **High layer** thickness (3-layer system)
- Recommended for **coastal and offshore projects**
- Excellent **corrosion resistance**
- For **shot blasted steel**
- Very high **edge protection**

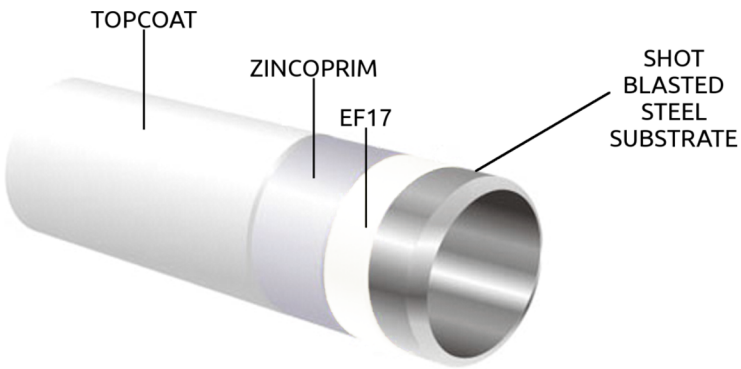


PRODUCT CODE:

EF17 LIGHT GREY MATT PRIMER
ES512A8530

+ ZINCOPRIM NEW
ES112A8203

+ TOPCOAT OF CHOICE (Z-Series advised)



CURING CONDITIONS:

3-COAT SYSTEM	**PROPERTIES**
Substrate	shot blasted steel
Curing schedule EF17	greencure is necessary!
layer thickness	60 µm
Curing schedule Zincoprim	greencure is necessary!
layer thickness	60 µm
Curing schedule topcoat	see TDS of superdurable product (or other)
layer thickness	80 µm

CYCLIC CORROSION TEST RESULTS:

Results after 16 cycles (2688h) of cyclic corrosion testing according to ISO 12944-6
Score: **C5 category (very high)**

SUBSTRATE	**GRITBLASTED STEEL**
BLISTERING	0(S)0
RUSTING	Ri 0
SCRIBE CORROSION	<3 mm

Multiprim meets the requirements for min. C5-Very High (>25 years).

*further tests in CX simulated environments (25 cycles, ISO 12944-9) prove to be very promising. Contact Protech-Oxyplast for the test results.

Using the 3-layer primer system Multiprim, **green curing** the primer (EF17) and 2nd layer coat (Zincoprim) is advised to avoid overcuring. Green cure means that a partial cure (50%) of the primer suffices. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat).

Please note that:
- choosing for a green cure, the primered substrates need to be finished with a topcoat immediately after having (partially) cured the primer.

PRIMER CHARACTERISTICS:

		CODE/ COLOUR	SUPPORT	GLOSS	THEORETICAL CURING CONDITIONS * temperature substrate ** deviations might be necessary, according to your production process
OXYPRIM - STANDARD PRIMER	**EF33**	ES312A8004 (± RAL 7035) ES312A8001 (± RAL7016)	Fe / Alu	Satin	10 min - 180 °C
GREENPRIM - LOW CURE PRIMER	**EF36**	ES322A8201 (± RAL 7035) ES322A8006 (± RAL7016)	Fe / Alu (not advised for architectural purposes)	Satin	10 min - 160 °C
ULTRAPRIM - HIGH PERFORMANCE PRIMER	**EF17**	ES512A8530 (± RAL 7035 matt)	Fe/ Alu	Matt	10 min - 180 °C
DRYPRIM - DRY-ON-DRY PRIMER	**EF26**	ES222A8030 (± RAL 7035) ES222A8025 (± RAL 7016)	Fe/ Alu	Satin	N.A.: only 1 cure, after dry applying both primer + topcoat
MULTIPRIM - 3-LAYER PRIMER	**EF17 + ZINCOPRIM NEW + TOPCOAT**	ES512A8530 (± RAL 7035 matt) + ES112A8203 (middle grey) + TOPCOAT	Fe SA 2,5 *	Satin	10 min - 180 °C 10 min - 180 °C according to TDS of chosen topcoat
ZINCOPRIM - ZINC-RICH PRIMER	**ZINCOPRIM NEW ZINCOPRIM ZINCOPRIM LB**	ES112A8203 ES312A162 ES212A8503	Fe SA 2,5 *	Satin	10 min - 180 °C 10 min - 180 °C 10 min - 160 °C

* gritblasted Fe
min. Ra: 6-7 µm

For many of the Protech-Oxyplast suggested primers, an **economical green cure** is possible, meaning that a **partial cure (50%)** of the primer suffices. This green cure has no negative influence on the corrosion resistance of the powder coating system (as the crosslinking is further completed whilst curing the topcoat) and is even advised as it promotes intercoat adhesion and reduces the risk of overcuring.

Please note that:

- **in case the degassing properties of the primer and topcoat are primarly needed, green curing is discouraged.**
- choosing for a green cure, the primered substrates need to be finished with a topcoat immediately after having (partially) cured the primer.

PRIMER SYSTEMS COMPARISON:

	DEGASSING	LOW CURING	OVERBAKE RES.	EDGE PROTECTION
OXYPRIM EF33	●	○	●	○
GREENPRIM LB EF36	●	●	●	◒
ULTRAPRIM EF17	◒	○	●	●
DRYPRIM EF26	○	●	●	◒
ZINCOPRIM ZINC	○	○ (*)	◒ (*)	◒
MULTIPRIM 3-LAYER	○	○	◒ (*)	●

* Zincoprim is available in different varieties, each with their own specific characteristics, such as lowbake properties, overbake robustness, etc. Depending on the type of Zincoprim used, contact Protech-Oxyplast for an overview of its characteristics.

GUARANTEED EFFECTIVENESS:

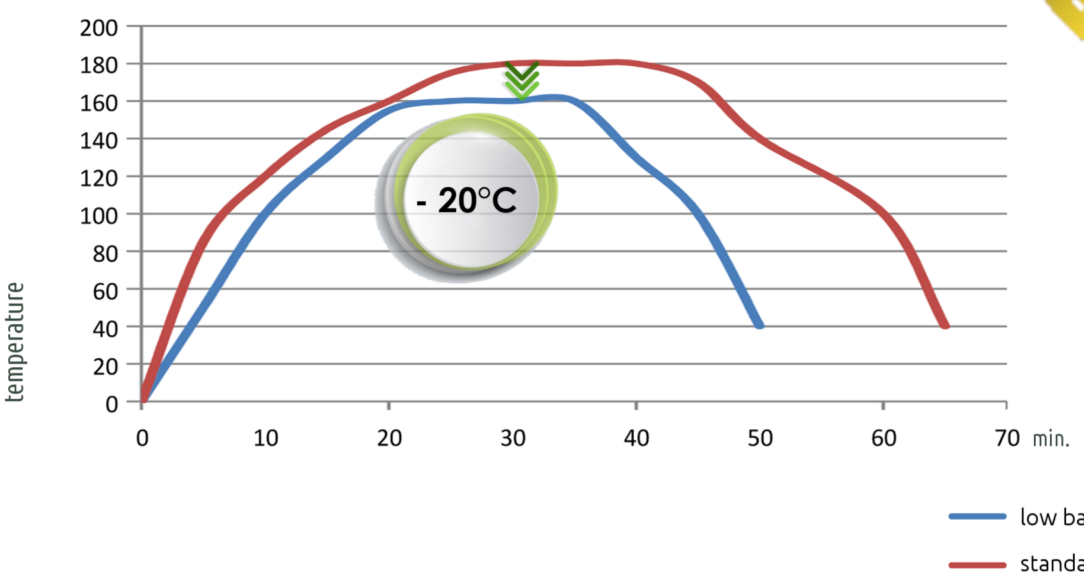
green label products

"Why using lowbake powder systems?"

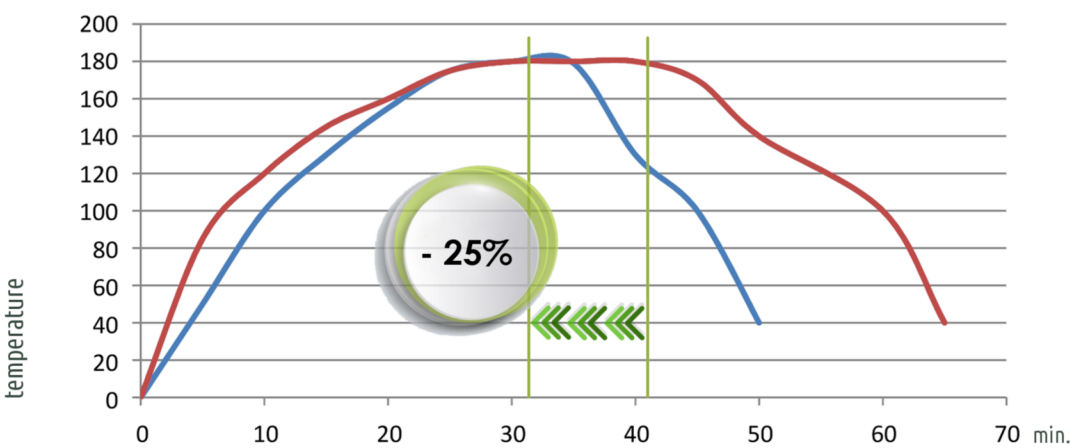
Our green label products ensure improved coating efficiency, production & energy savings and a reduced carbon footprint. Moreover, these products with huge benefits are also Qualicoat, Qualisteelcoat and GSB approved.

» **GREENPRIM** - EF36
» **DRYPRIM** - EF26
» **PE40** topcoat

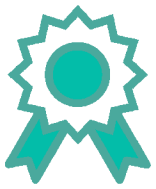
Lower gas consumption



Higher productivity



Your production process will benefit from reduced curing time (accelerated formulation) and/ or reduced energy input (lower curing temperatures necessary).



certificates

Protech-Oxyplast strives for continuous optimalisation. We regularly register products for external, objective qualifications and are pleased being able to offer you a range of certified products. In our primer system range, the following certifications are available:

» **EF36**	QSC HD2	PE-0043
	QSC MS2	PE-0058
	GSB Zn & Fe	914 b
» **EF26**	QSC pending	
» **PE40**	QC	P-1563
	GSB Zn & Fe	914 a
	QSC MS1	PE-0057
	QSC HD1	PE-0042

* QC = Qualicoat
**QSC = Qualisteelcoat

ISO

Correct quality standards and procedures are key at Protech-Oxyplast. To maintain a good working process, we follow ISO regulations. Our ISO certificate is available upon request. We are registered as being compliant to:

» **ISO 9001:2015**

FREQUENTLY ASKED QUESTIONS

How could a primer be useful?

Topcoat layers, mainly polyester based, are more or less permeable. Rain, humid environments or water present will affect the coating and oxidize the metal. On steel, “red” rust will be formed, on zinced substrates it will be “white” rust. This oxidation proces will attack the metal, causing adhesion loss of the coating on the metal, and shorten the life time expectancy of your object. A powder coating primer with a high content of epoxy is not permeable. It will function as a barrier and block water penetration, preventing it to get in contact with the metal.

Another very important surplus of using a primer layer is edge protection. Especially the specially designed edge primers are utterly useful in covering sharp edges. The additional primer layer, thanks to his specific rheology, will not only build up a thicker layer on the edge than most topcoats would, but it will also allow the second layer to settle better on the edge. The rule of thumb defines that 30% of the nominal layer thickness is required on the edges.

Do I need a chemical or mechanical cleaning before primer application ?

For many industries, lengthening the lifespan of essential parts is a critical concern. Logically, powder coating is a time and cost-effective way of doing so. Of course, this process has to be done right to be worthwhile, which is why a good mechanical and/or chemical cleaning is a key element of any preservation policy. Powder coating is one of the surest ways of preserving substrates, but can only adhere on a clean surface. Apart from appropriate precleaning, a conversion layer is advised to increase the life time expectation.The kind of pretreatment will depend on type of metal and the required level of corrosion resistance.

Can salt spray test results of powder coating primers be provided?

Yes and No. The corrosion resistance (of which a salt spray test can give a good idea) is not only determined by the primer but by the whole coating system. This means that every step in the coating process will have an influence on the test result and the corrosion resistance. In other words, if you would like to determine and compare the corrosion resistance of a primer you need to test it on a comparable substrate-cleaning-pretreatment-primer-topcoat combination. The primer layer is just one aspect to consider, though a very important one.

Is layer thickness of the primer important?

Absolutely! The higher the layer thickness, the better the part will be protected against corrosion. When the primer layer is too thick however, it will become more difficult to apply a second layer and the mechanical strength might drop. Generally we advise approx. 60µ of primer and 60-80µ of topcoat. In multiple layer systems, make sure not to overcure the first layer, as it will pass the oven several times during the whole coating process. In those cases, we strongly advise following the "greencure" curing time and temperature.

Are the primers available in any color?

All colours can be tailormade. However, Protech-Oxyplast already offers two basic colours that are immediately available: a neutral light grey primer which works best under most light colours, and a RAL 7016 primer for darker colour purposes. Slight color differences with the topcoat can allow you to easily determine if the topcoat (second layer) is applied sufficiently thick.

How to prevent intercoat adhesion loss?

A substantial amount of complaints and claims are caused due to adhesion loss between the topcoat and the primer. Overcure and the deposition of substances in direct gas ovens are often the reason why the top layer does not adhere to the primer. In the past, primers were mainly 100% based on epoxy resins. These pure epoxy powders became very hard when cured too high or too long, in combination with gas release in the oven. Continuous development and optimisation led to the modification of these epoxy primers. Thanks to our research, Protech-Oxyplast today also has a very high-end pure epoxy primer available, which is safe to use in all circumstances and offers ultimate corrosion protection.

Can powder coating be used for CX-/ offshore projects?

The CX environment class refers to extreme circumstances, of which the most common extreme environment is off-shore application. So far only heavy duty liquid coatings with a very high layer thickness of over 600 µ got tested and are officially approved for CX. In theory powder coating should also be an option, but until now there are no official approvals awarded.

note on corrosion classes:

Generally acknowledged, there are 6 atmospheric- corrosivity categories:

C1 - very low
C2 - low
C3 - medium
C4 - high
C5- very high
CX - extreme

CX covers different extreme environments, one of which is the offshore enviroment covered by ISO 12944-9.

Moreover, durability can be expressed in terms of time ranges:

Low (**L**)	< 7 years
Medium (**M**)	7 - 15 years
High (**H**)	15 - 25 years
Very High (**VH**)	> 25 years

Our R&D department is doing research in order to determine the best system for a CX environment. Please get in touch with your contact person at Oxyplast to assist you further.

How to choose the most appropriate system for a specific purpose and production process?

Protech-Oxyplast recommends to make a list of all the requirements the powder coating system needs to meet, such as performance requirements (adhesion, appearance, and mechanical and resistance properties), conditions under which the coating must perform and life time expectancy*, coating equipment in use and cure time in process, image loss, gloss level, ... Let this brochure and its overviews assist you, or simply contact us. Your regional salesperson, as well as our entire team are available to personally support you.

(* please consult our corrosion categories matrix, easily available upon request)

Does primer / powder coating in general fill imperfections?

No. Powder coating can only cover very minor scratches and very small imperfections. Smooth glossy powders are the most demanding and matte or textured powders the most forgiving for surface preparation. However, as with any coating, the end result is only as good as the surface it was applied on. Paintable fillers to smoothen or camouflage imperfections are available on the market.

What kind of properties powder coating can add to the coated substrate?

Static and dynamic mechanical properties, flexibility, toughness, adhesion, hardness, abrasion resistance, slip, chemical resistance, aesthetic appearance, ... are only some of the very specific abilities you can choose from when

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