Max Perlès

advanced industrial linings

technical manual
wines & liquid foods

OENOPERL systems

Max Perlès

FOODSTUFFS
and *Max perlès OENOPERL® and AR100/CLX*
coatings for storage tanks and silos

Why capacities should be protected :

Optimized Asset Management :

To prevent or to stop the degradation of infrastructure, hence significantly increasing its life expectancy and operating period , therefore generating a *positive return on the investment in the coating.*

Functionally :

- **on a concrete substrate :** to obtain a waterproof or watertight surface that can furthermore resist certain degrees of cracking in a concrete substrate as well as counter-pressure through the concrete . The coating is either single-coat , « watertight « , resisting future cracking in the substrate of up to 2/10ths of a mm , or is a waterproof composite of epoxy resin reinforced with glass tissue or mat , that will resist future cracking in the substrate of up to 20/10ths of a mm , depending on the weight of the glass reinforcement used .
- **on a steel substrate :** to apply an anti-corrosion and protective film to the steel surface.

Technically :

To stop rough or calcified surfaces from impacting foodstuff quality and to benefit from a *chemically neutral* material in contact with liquid, solid and powder foodstuffs, with *fast and easy cleaning*, in accordance with existing toxicological, sanitary and food regulations.

To protect and preserve at the same time container ***and*** content.

Advantages of max perlès coatings :

Health and Safety :

They have ***very low VOC content.***. This ***protects the environment*** and allows them to be applied under *health and safety conditions* vital for both the personnel involved and the quality of the implementation.

Experience and references :

They are the result of unmatched expertise and experience : our epoxy *coatings* for the protection of storage capacities have been implemented by qualified applicators on worksites worldwide *since 1965*.

Quality Assurance :

Our Research & Development and Technical Assistance Departments work in collaboration to develop our products' reliability, as well as to fine-tune new products, for a quality that we strive to always improve – *a must for ISO 9001-2015 certification* – to better meet the users' expectations and those of an *environment* more and more strictly governed by *regulations*.

Technical Assistance :

Our Technical Assistance department offers upon request training or advice to application companies by assisting them before and/or during their work. It also operates post-application visits upon request by the Applicator or the end customer to detect possible defects.

Independent Testing :

Our coatings are tested by certified laboratories, of which one delivers the ***overall and specific migrations Compliance Certificate***.

Guaranteed reliability :

Max Perlès coating systems are guaranteed for the duration indicated on the specification supplied for each project . This guarantee is based on a specific *Insurance Policy* issued by a world-class Insurance Company . Our Application partners , once trained by us , should supply a similar guarantee on their workmanship . The end customer can then request from the manufacturer/applicator partnership a *Joint Guarantee* indicating that any failure of the coating during the warranty period resulting from bad product quality or its incorrect application will be corrected free of charge for the client.

UPWARDS OF 10 MILLION SQM OF CAPACITIES HAVE BEEN PROTECTED WITH OUR PRODUCTS OVER THE LAST 60 YEARS .

Max Perlès

Foreword : Applicable Norms , Rules and Regulations

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Technical advices n°1, 2, 3, 4, 5, 7, 14, 17 and 21

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Foreword : Applicable Norms , Rules and Regulations

Concrete substrates

Fascicule 74
NF EN 1992-1 Chapter 7.3.1
NF EN 1992-3 Chapter 7.3.1
NF EN 206
DTU 65
DTU 14.1
DTU 56
NF EN 1504-2

Steel substrates

NF T 36-001: Technical Dictionnary of Paints and Paintwork
ISO 12944 : applicable to new work only
ISO -8501-1-2& 3
ISO 8502 -1-2-3-4 & 5
Circular G31 or G37 of the OHGPI

Bibliography

ITBTP Publications : « Recommandations professionnelles Mai 1990 « (how to calculate and implement waterproofing to reservoirs , basins and tanks , whether overground or underground , open or closed)

OHGPI : Circular G31 or G37

Laboratoire de Recherche des Monuments Historiques : visible alterations in concrete , diagnosis

SETRA /LCPC : Choice and implementation of products for the repair and protection of concrete

French Civil Works Association : November 2003 - Rehabilitation of degraded concrete

GESIP –UIC-UFIP : Catalog and classification of Civil Works disorders (SEVESO III retentions)

It is the application company's responsibility to respect all the rules and regulations applicable in the country where the work is carried out .

1. Uses of OENOPERL®and AR100/CLX systems

OENOPERL® and AR100/CLX systems are epoxy coatings based on thermo-hardening polymers , presented in pre-dosed kits of two separate components (a base and a hardener) , to be applied *in situ* , in one or more coats , inside reservoirs , basins , tanks silos and their different parts, containing liquid, solid or powder foodstuffs.

Main Uses :

OENOPERL ® and AR100/CLX systems constitute an interior , watertight screen for reservoirs , tanks , basins, silos and any other capacities containing or in contact with products that are destined for human consumption.

They therefore apply to both concrete and steel works , whether new or being rehabilitated or repaired :

- For new concrete coating work : single-layer watertight epoxy systems , capable of resisting future cracking in the concrete substrate of up to 2/10 ths of a mm – see system sheets 301 and 311 .
- For both new and remedial coating work on concrete : multi-layer waterproof epoxy systems , reinforced with a multi-axial glass tissue that provides the capability of absorbing without damage existing and future cracking in the concrete substrate of 5/10 ths , 10/10 ths and 20/10 ths of a mm , depending on the weight of the glass tissue reinforcement chosen - see system sheets 101, 111, 130, 131, 201 and 203 .
- For both new and remedial protective coating work on steel : single-layer anti-corrosion epoxy systems as per the French OHGPI G31 regulation – see system sheets 401B, 402B,403B,410A, 432A.

Limits of use :

These types of coatings are not applicable to “D” type structures (prefabricated elements) , as mentioned in 3.3.4. of the Professional Recommendations of the ITBTP Publications (DTU 56/ Fascicule 74 and NF EN 1992-3) .

2. Description of OENOPERL® functionalities

The distinction between waterproofing and watertightening refers to current european normalisation - NF EN 1504-2 – as well as to the ITBTP publications mentioned above.

Adherent waterproofing, applicable to class C new or existing concrete works :

Consists of a coating capable of absorbing without damage mechanical stresses generated in particular by quantified substrate crackings and some counterpressures, while ensuring perfect inertia with respect to the chemical environment (cf. 4.1.2.1. of the ITBTP Publication) with which it is in contact.

This system consists of a jointless, reinforced coating based on OENOPERL® S epoxy resin reinforced with glass tissue and with an OENOPERL® T or AR100/CLX topcoat, depending on the alcoholic degree

Adherent watertightness, applicable to class B new or existing concrete works:

Consists of a coating that brings watertightness to a concrete capacity as long as this remains stable as per NF EN 1992-3 : no cracking above 2/10 ths of a mm and no un-drained counter-pressure. Ensures perfect inertia with respect to the chemical environment (cf. 4.1.2.1. of the ITBTP Publications) with which it is in contact.

This system consists of a continuous OENOPERL® T single-layer coating, non-reinforced and adherent to the substrate except on existing cracks which must be bridged over with a reinforcement.

Anticorrosion protection, applicable to new or existing steel works:

Consists of a coating that will remain inert in contact with foodstuffs (cf. 4.1.2.1 of the ITBTP Publication), while providing anti-corrosion protection to the steel on which it is applied.

This system consists of a a continuous OENOPERL® T or AR100/CLX single-layer coating, non-reinforced and adherent. If the alcoholic degree is > 20°GL, then the topcoat must be preceded by an OENOPERL S glass tissue reinforced system.

3. Nature and quality of acceptable substrates.

Whether new or old, substrates should be the object of a written assessment carried out jointly by the civil works contractor and the application contractor before proceeding with the coating works, describing the condition of the surface, quantifying and qualifying any existing disorders and determining who is responsible to carry out the necessary corrections.

- *New concrete must be left to dry for at least 28 days before coating and old concrete must be in good condition* , designed, calculated and constructed in conformity with the prescriptions of the regulatory texts mentioned in the reference documents.

This applies in particular to the state of the surface : are deemed acceptable surface conditions obtained and/or restored using solutions proposed in our system sheets – see Chapter 4 below - and in our *Technical Advice Nr. 1 "Specification for preparation of concrete"* - see Appendix 3.

The state of the surface must be of a good quality as indicated in the NFP 18-201 Standard – Technical Specification – ref. DTU 23.1 and in chapters 7-3-1 of Norm NF EN 1992-1 & 1992-3 (EUROCODE N°2).

Any products used for the repair of the concrete must be validated prior to application by the application contractor to make sure they are compatible with our coatings and that no risk exists of them creating a difference in potential between old and new concrete parts that could cause degradation in the concrete and corrosion of the steel reinforcement .

- *New or old steel* structures must be within the limits defined in ISO 8501-1 standard (1988) – page 15, and referred to in the OHGPI circular G31 or G37.

4. Specifications :

Waterproofing

On new concrete or good quality existing concrete

Sheet	101 & 111 :	**Reinforced coating 450g** Oenoperl S with Oenoperl T topcoat	– 2.0 mm
	130 & 131:	**Reinforced coating 450g** Oenoperl S with AR100/CLX topcoat	– 2.2 mm

Watertightness

On new concrete

Sheet	301 & 311 :	**Single coat** Oenoperl T	– 0.6 mm

Anti-corrosion protection

On new or existing steel substrates

Fiches	401B :	**Single coat** Oenoperl T	– 0.6 mm
	402B :	**Single coat** Oenoperl T	– 0.8 mm
	403B :	**Single coat** Oenoperl T	– 1.0 mm
	410A :	**Reinforced coating 450g** Oenoperl S with Oenoperl T topcoat	– 2.0 mm
	432A :	**Reinforced coating 450g** Oenoperl S with AR100/CLX topcoat	– 2.2 mm

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sheet ex.nr.101
Oenoperl® / T45 – Primer EDO

Waterproof fiberglass-reinforced epoxy coating

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities and silos
in contact with: fruit juices, melasses, cider, beer, grapes, wines up to 20% vol. and other food products, up to 50°C

substrate: new concrete or good looking existing concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with waterborne epoxy **Primer EDO** using a roller, 250 g/sqm each
- **Bridging** [3] of existing cracks with a 10 cm wide plasticized adhesive tape
  (except if there exists a risk of u-drained cpunter pressure)
- **Rendering** of surface defects with epoxy **render AR100**

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

System: Oenoperl® / T45 – *thickness:* 2 mm

- **Uninterrupted laminate** of fiberglass/epoxy as per *Technical Advice nr 14*, comprising:
  Oenoperl® S coat for impregnation, using a roller, 550 microns, 750 g/sqm
  Glassfabric T45 to be unrolled, and debubblized using a special roller, 450 g/sqm
  Oenoperl® S coat for saturation, using a roller, 400 microns, 550 g/sqm
  Silica SB0 to be sprinkled while progressing by mechanical projection, 400 g/sqm
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"
- **Topcoat** one coat of **Oenoperl® T**, using airless spray or roller, **600** microns, 850 g/sqm

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for C Class Structures.

Guarantee:10 years

Including **resistance to existing and bridged substrate cracks of up to 20/10th mm, resistance to new cracks of up to 10/10th mm** and **resistance to counter-pressure through the substrate of up to 1 bar** (10 meters of water).
This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

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sheet ex.nr.111
Oenoperl® / T45 – Aquaprim

Waterproof fiberglass-reinforced epoxy coating

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities and silos
in contact with: fruit juices, melasses, cider, beer, grapes, wines up to 20% vol. and other food products, up to 50°C

substrate: new concrete or good looking existing concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with solvent-free epoxy **Aquaprim** using a roller, 300 g/sqm each **Silica SB 0** to be sprinkled after 1h minimum and before 2h30 maximum
- **Bridging** of existing cracks with a 10 cm wide plasticized adhesive tape *(except if there exists a risk of u-drained cpunter pressure)*
- **Rendering** of surface defects with epoxy **render AR100**

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

System: Oenoperl® / T45 – *thickness:* 2 mm

- **Uninterrupted laminate** of fiberglass/epoxy as per *Technical Advice nr 14*, comprising:
  Oenoperl® S coat for impregnation, using a roller, 550 microns, 750 g/sqm
  Glassfabric T45 to be unrolled, and debubblized using a special roller, 450 g/sqm
  Oenoperl® S coat for saturation, using a roller, 400 microns, 550 g/sqm
  Silica SB0 to be sprinkled while progressing by mechanical projection, 400 g/sqm
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"
- **Topcoat** one coat of **Oenoperl® T**, using airless spray or roller, **600** microns, 850 g/sqm

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for C Class Structures.

Guarantee:10 years

Including **resistance to existing and bridged substrate cracks of up to 20/10th mm, resistance to new cracks of up to 10/10th mm** and **resistance to counter-pressure through the substrate of up to 1 bar** (10 meters of water).
This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
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sheet ex.nr.130
Oenoperl®/T45 – topcoat AR100/CLX–Primer EDO

Waterproof fiberglass-reinforced epoxy coating

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities and silos
in contact with: alcohols containing up to 96% vol., foodstuffs

substrate: new concrete or good looking existing concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with waterborne epoxy **Primer EDO** using a roller, 250 g/sqm each
- **Bridging** [3] of existing cracks with a 10 cm wide plasticized adhesive tape
  (except if there exists a risk of u-drained cpunter pressure)
- **Rendering** of surface defects with epoxy **render AR100**

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

System: Oenoperl® / T45 *with* AR100/CLX *– thickness:* 2.2 mm

- **Uninterrupted laminate** of fiberglass/epoxy as per *Technical Advice nr 14*, comprising:
  Oenoperl® S coat for impregnation, using a roller, 550 microns, 750 g/sqm
  Glassfabric T45 to be unrolled, and debubblized using a special roller, 450 g/sqm
  Oenoperl® S coat for saturation, using a roller, 400 microns, 550 g/sqm
  Silica SB0 to be sprinkled while progressing by mechanical projection, 400 g/sqm
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"

Topcoat one coat of **AR100/CLX**, using a 2-component hot spraying machine, **800 microns**, **1250 g/sqm**

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for C Class Structures.

Guarantee:10 years

Including **resistance to existing and bridged substrate cracks of up to 20/10th mm, resistance to new cracks of up to 10/10th mm** and **resistance to counter-pressure through the substrate of up to 1 bar** (10 meters of water).
This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

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sheet ex.nr.131
Oenoperl®/T45 – topcoat AR100/CLX–Aquaprim

Waterproof fiberglass-reinforced epoxy coating

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities and silos
in contact with: alcohols containing up to 96% vol., foodstuffs

substrate: new concrete or good looking existing concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with wsolvent-free epoxy **Aquaprim** using a roller, 300 g/sqm each
  Silica SB 0 to be sprinkled after 1h minimum and before 2h30 maximum
- **Bridging** of existing cracks with a 10 cm wide plasticized adhesive tape
  (except if there exists a risk of u-drained cpunter pressure)
- **Rendering** of surface defects with epoxy **render AR100**

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

System: Oenoperl® / T45 *with* AR100/CLX *– thickness:* 2.2 mm

- **Uninterrupted laminate** of fiberglass/epoxy as per *Technical Advice nr 14*, comprising:
  Oenoperl® S coat for impregnation, using a roller, 550 microns, 750 g/sqm
  Glassfabric T45 to be unrolled, and debubblized using a special roller, 450 g/sqm
  Oenoperl® S coat for saturation, using a roller, 400 microns, 550 g/sqm
  Silica SB0 to be sprinkled while progressing by mechanical projection, 400 g/sqm
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"

Topcoat one coat of **AR100/CLX**, using a 2-component hot spraying machine, **800 microns, 1250 g/sqm**

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for C Class Structures.

Guarantee:10 years

Including **resistance to existing and bridged substrate cracks of up to 20/10th mm, resistance to new cracks of up to 10/10th mm** and **resistance to counter-pressure through the substrate of up to 1 bar** (10 meters of water).
This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
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sheet ex.nr.301
Oenoperl® 0.6 mm – Primer EDO

Watertight coating

made of: single-layer solvent-free epoxy

for: inside of storage capacities and silos
in contact with: fruit juices, melasses, cider, beer, grapes, wines up to 20% vol. and other food products, up to 50°C

substrate: new concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with waterborne epoxy **Primer EDO** using a roller, 250 g/sqm each
- **Bridging** of existing cracks with a 10 cm wide plasticized adhesive tape
  (except if there exists a risk of un-drained counter-pressure)
  Overlaid with 20cm wide strip of glassfabric tissue **R45, 450g/sqm,**
  Impregnated and **satured** with **Oenoperl®S** at **250g/lm,** and sprinkled with **Silica SB0** while progressing
- **Complete rendering of the concrete surface** using our epoxy **Render AR100,** 600-800g/sqm, depending on state of surface

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

Oenoperl® *coating - thickness:* 0.6 mm

- **Application** of **Oenoperl® T** : in 1 layer using airless spray gun 45/1 minimum
  Theorical consumption : **850 g/sqm** for **600 microns**
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for B Class Structures.

Guarantee:10 years

Excluding **any defects resulting from :**
- **an existing, un-bridged and/or un-reinforced crack, as per treatment specified above ("bridging")**
- **a crack of more tha 2/10th mm appearing after coating**
- **the counter-pressure exercised at the back of the coating by un-drained water.**

This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

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sheet ex.nr.311
Oenoperl® 0.6 mm – Aquaprim

Watertight coating

made of: single-layer solvent-free epoxy

for: inside of storage capacities and silos
in contact with: fruit juices, melasses, cider, beer, grapes, wines up to 20% vol. and other food products, up to 50°C

substrate: new concrete

Preparations as per Technical Advice nr 1 "Specification for preparation of concrete", and as a minimum:

- **Obtaining** a healthy and homogeneous [2] substrate, free from laitance, loose particles and dust, over 100 microns surface roughness, using appropriate mechanical means
- **Removal** of dust with industrial vacuum cleaner
- **Impregnation** of concrete with solvent-free epoxy **Aquaprim** using a roller, 300 g/sqm each **Silica SB 0** to be sprinkled after 1h minimum and before 2h30 maximum
- **Bridging** of existing cracks with a 10 cm wide plasticized adhesive tape *(except if there exists a risk of un-drained counter-pressure)* Overlaid with 20cm wide strip of glassfabric tissue **R45, 450g/sqm, Impregnated** and **satured** with **Oenoperl®S** at **250g/lm,** and sprinkled with **Silica SB0** while progressing
- **Complete rendering of the concrete surface** using our epoxy **Render AR100,** 600-800g/sqm, depending on state of surface

Proper adherence of a coating depends on the quality of the substrate and on its surface preparation. **Surface cohesion must be 1,5 MPa minimum** in the case of new concrete and **1 MPa minimum** in the case of rehabilitation of existing concrete.

Oenoperl® *coating - thickness:* 0.6 mm

- **Application** of **Oenoperl® T** : in 1 layer using airless spray gun 45/1 minimum Theorical consumption : **850 g/sqm** for **600 microns**
- **Checking** as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** of defects as per *Technical Advice nr 5* "Retouching"

Application conditions:

A loss factor has to be added for practical consumption, **about 15%**, according to means and methods used.

Reference documents :

Civil Works Fascicule 74 and NF EN 1992-3– May 1990, for B Class Structures.

Guarantee:10 years

Excluding **any defects resulting from :**
- **an existing, un-bridged and/or un-reinforced crack, as per treatment specified above ("bridging")**
- **a crack of more tha 2/10th mm appearing after coating**
- **the counter-pressure exercised at the back of the coating by un-drained water.**

This proposal is based on our n° FA0095300 , products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

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Sheet ex.nr.401B
Oenoperl® 600µ, on Sa2.5 & Aquaprim

Anti-corrosion food-grade protection

made of: single-layer solventfree epoxy

for: inside of storage capacities
in contact with: fruit juices, cider, beer, grapes, wines up to 20% vol., and other food products at t° ≤ 50°C

substrate: new steel or steel in good looking surface state (1)

Preparations as per Technical Advice nr.2 « Specification for steel preparation», and as a minimum:

- **Grinding** — of barbs and welding projections until elimination, and of the weld beads and sharp angles for softening
- **Blasting**(2) — by any appropriate means to obtain equivalent to Sa 2.5 standard, with an average Rough G - Rt 50-75 microns profile
- **Removal** — of dust with industrial vacuum cleaner
- **Application** — while progressing and before any flash-rusting of one stand-by coat of Solvent-free epoxy **Aquaprim**, 50 µm dry film, **80 g/sqm**. **Silica SB 0** to be sprinkled after 1h minimum and before 2h30 maximum

Oenoperl® *coating – thickness* 0.6 mm*:*

- **Application** — of **Oenoperl® T**: In 1 layer using airless spray 45/1 minimum, preceded by a stripecoat on the weld beads while progressing. Theoretical consumption: **850 g/sqm** for **600 microns** except extra thickness along the weldings
- **Checking** — as per *Technical Advice nr.3* "Performance testing" and *nr.4* "Dielectric testing"
- **Repair** — of defects as per *Technical Advice nr.5* "Retouching"

Application conditions:

A loss factor has to be added for practical consimptio, **about 15%,** according to means an methods used.

Guarantee: 5 years

In accordance with Circular G31 of the OHGPI.
This proposal is based on our n°FA0095300, products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

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(1) **This specification is for steel corroded to the maximum of state C of the standard ISO 8501-1:**
• On the assumption of an important corrosion where the state D would be reached without however being exceeded, a specific rendering of the corrosion cankers is necessary with **Render AR100**, solventfree epoxy gel charged with silica.
• If corrosion exceeds state D, the implementation of an **Oenoperl® S system reinforced with glassfiber** is necessary before the application of the topcoat **Oenoperl® T**.

(2) **In case of sweating of steel plates loaded with oily products, observe a 48 h delay after blasting before application.**
If brown stains appear within the 48h, a new blasting of the affected areas must be done until they disappear.

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Sheet ex.nr.402B
Oenoperl® 800µ, on Sa2.5 & Aquaprim

Anti-corrosion food-grade protection

made of: single-layer solventfree epoxy

for: inside of storage capacities
in contact with: fruit juices, cider, beer, grapes, wines up to 20% vol., and other food products at t° ≤ 50°C

substrate: new steel or steel in good looking surface state (1)

Preparations as per Technical Advice nr.2 « Specification for steel preparation», and as a minimum:

- **Grinding** — of barbs and welding projections until elimination, and of the weld beads and sharp angles for softening
- **Blasting**(2) — by any appropriate means to obtain equivalent to Sa 2.5 standard, with an average Rough G - Rt 50-75 microns profile
- **Removal** — of dust with industrial vacuum cleaner
- **Application** — while progressing and before any flash-rusting of one stand-by coat of Solvent-free epoxy **Aquaprim**, 50 µm dry film, **80 g/sqm**
  Silica SB 0 to be sprinkled after 1h minimum and before 2h30 maximum

Oenoperl® *coating – thickness* 0.8 mm*:*

- **Application** — of **Oenoperl® T**:
  In 1 layer using airless spray 45/1 minimum,
  preceded by a stripecoat on the weld beads while progressing
  Theoretical consumption: **1150 g/sqm** for **800 microns**
  except extra thickness along the weldings
- **Checking** — as per *Technical Advice nr.3* "Performance testing" and *nr.4* "Dielectric testing"
- **Repair** — of defects as per *Technical Advice nr.5* "Retouching"

Application conditions:

A loss factor has to be added for practical consimptio, **about 15%,** according to means an methods used.

Guarantee: 7 years

In accordance with Circular G31 of the OHGPI.
This proposal is based on our n°FA0095300, products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

♦♦♦♦♦♦

(1) **This specification is for steel corroded to the maximum of state C of the standard ISO 8501-1:**
- On the assumption of an important corrosion where the state D would be reached without however being exceeded, a specific rendering of the corrosion cankers is necessary with **Render AR100**, solventfree epoxy gel charged with silica.
- If corrosion exceeds state D, the implementation of an **Oenoperl® S system reinforced with glassfiber** is necessary before the application of the topcoat **Oenoperl® T**.

(2) **In case of sweating of steel plates loaded with oily products, observe a 48 h delay after blasting before application.**
If brown stains appear within the 48h, a new blasting of the affected areas must be done until they disappear.

Max Perlès

Sheet ex.nr.403B
Oenoperl® 1000µ, on Sa2.5 & Aquaprim

Anti-corrosion food-grade protection

made of: single-layer solventfree epoxy

for: inside of storage capacities
in contact with: fruit juices, cider, beer, grapes, wines up to 20% vol., and other food products at t° ≤ 50°C

substrate: new steel or steel in good looking surface state (1)

Preparations as per Technical Advice nr.2 « Specification for steel preparation», and as a minimum:

- **Grinding** — of barbs and welding projections until elimination, and of the weld beads and sharp angles for softening
- **Blasting**(2) — by any appropriate means to obtain equivalent to Sa 2.5 standard, with an average Rough G - Rt 50-75 microns profile
- **Removal** — of dust with industrial vacuum cleaner
- **Application** — while progressing and before any flash-rusting of one stand-by coat of Solvent-free epoxy **Aquaprim**, 50 µm dry film, **80 g/sqm**
  Silica SB 0 to be sprinkled after 1h minimum end before 2h30 maximum

Oenoperl® *coating – thickness* 1.0 mm*:*

- **Application** — of **Oenoperl® T**:
  In 1 layer using airless spray 45/1 minimum,
  preceded by a stripecoat on the weld beads while progressing
  Theoretical consumption: **1450 g/sqm** for **1000 microns**
  except extra thickness along the weldings
- **Checking** — as per *Technical Advice nr.3* "Performance testing" and *nr.4* "Dielectric testing"
- **Repair** — of defects as per *Technical Advice nr.5* "Retouching"

Application conditions:

A loss factor has to be added for practical consimptio, **about 15%,** according to means an methods used.

Guarantee: 10 years

In accordance with Circular G31 of the OHGPI.
This proposal is based on our n°FA0095300, products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

♦♦♦♦♦♦

(1) **This specification is for steel corroded to the maximum of state C of the standard ISO 8501-1:**
- On the assumption of an important corrosion where the state D would be reached without however being exceeded, a specific rendering of the corrosion cankers is necessary with **Render AR100**, solventfree epoxy gel charged with silica.
- If corrosion exceeds state D, the implementation of an **Oenoperl® S system reinforced with glassfiber** is necessary before the application of the topcoat **Oenoperl® T**.

(2) **In case of sweating of steel plates loaded with oily products, observe a 48 h delay after blasting before application.**
If brown stains appear within the 48h, a new blasting of the affected areas must be done until they disappear.

Max Perlès

Sheet ex.nr.410A
Oenoperl® / 1 glassfabric T45

Anti-corrosion reinforced protection

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities
in contact with: fruit juices, melasses, cider, beer, grapes, wines up to 20% vol. and other food products, up to 50°C

substrate: new steel or existing with non-penetrating internal corrosion

Preparations as per Technical Advice nr.2 « Specification for steel preparation», and as a minimum:

- **Grinding** — of barbs and welding projections until elimination, and of the weld beads and sharp angles for softening
- **Blasting** (1) — by any appropriate means to obtain equivalent to Sa 3 standard, with an average Rough G - Rt 100 microns profile
- **Removal** — of dust with industrial vacuum cleaner
- **Maintenance** — of the degree of care by any appropriate means, such as the use of dehydrator(s)

System Oenoperl® / 1 glassfabric T45 – *thickness* 2 mm:

- **Uninterrupted laminate** — of fiberglass/epoxy as per *Technical Advice nr 14*, comprising:
  Oenoperl® S coat for **impregnation**, using a roller, **550 microns**, **750 g/sqm**
  Glassfabric T45 to be unrolled, and debubblized using a special roller, **450 g/sqm**
  Oenoperl® S, coat for **saturation**, using a roller, **400 microns**, **550 g/sqm**
  Silica SB0 to be sprinkled while progressing by mechanical projection, **400 g/sqm**
- **Checking** — as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
- **Repair** — of defects as per *Technical Advice nr 5* "Retouching"
- **Topcoat** — one coat of Oenoperl®T, using airless(or roller), 600 microns, 850 g/sqm

Application conditions:

A loss factor has to be added for practical consimptio, **about 15%,** according to means an methods used.

Guarantee: 10 years

In accordance with Circular G31 of the OHGPI.
This proposal is based on our n°FA0095300, products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

♦♦♦♦♦♦

Max Perlès

Sheet ex.nr.432A
Oenoperl® / T45/ topcoat AR100/CLX

Anti-corrosion reinforced protection

made of: reinforced epoxy with 450 g/sqm of fiberglass

for: inside of storage capacities
in contact with: alcohols containing up to 96% vol., up to 50°C

substrate: new steel or existing with non-penetrating internal corrosion

Preparations as per Technical Advice nr.2 « Specification for steel preparation», and as a minimum:

♦ **Grinding**	of barbs and welding projections until elimination, and of the weld beads and sharp angles for softening
♦ **Blasting** (1)	by any appropriate means to obtain equivalent to Sa 3 standard, with an average Rough G - Rt 100 microns profile
♦ **Removal**	of dust with industrial vacuum cleaner
♦ **Maintenance**	of the degree of care by any appropriate means, such as the use of dehydrator(s)

System Oenoperl® / 1 glassfabric T45 – *thickness* 2 mm:

♦ **Uninterrupted laminate**	of fiberglass/epoxy as per *Technical Advice nr 14*, comprising: **Oenoperl® S** coat for **impregnation**, using a roller, **550 microns**, **750 g/sqm** **Glassfabric T45** to be unrolled, and debubblized using a special roller, **450 g/sqm** **Oenoperl® S**, coat for **saturation**, using a roller, **400 microns**, **550 g/sqm** **Silica SB0** to be sprinkled while progressing by mechanical projection, **400 g/sqm**
♦ **Checking**	as per *Technical Advice nr 3* "Performance testing" and *nr 4* "Dielectric testing"
♦ **Repair**	of defects as per *Technical Advice nr 5* "Retouching"
♦ **Topcoat**	one coat of **AR100/CLX**, using a 2-component hot spraying machine, **800 microns**, 1250 g/sqm

Application conditions:

A loss factor has to be added for practical consimptio, **about 15%,** according to means an methods used.

Possible guarantee:

→ degree of alcohol up to 49% vol. **up to 10 years**
→ degree of alcohol from 50 to 89% vol. **up to 5 years**
→ degree of alcohol from 90 to 96% vol. **up to 3 years**
In accordance with Circular G31 of the OHGPI.
This proposal is based on our n°FA0095300, products civil liability insurance policy "after delivery", within its terms and limitations
To become effective, it must have been formalised in a duly signed guarantee commitment certificate.

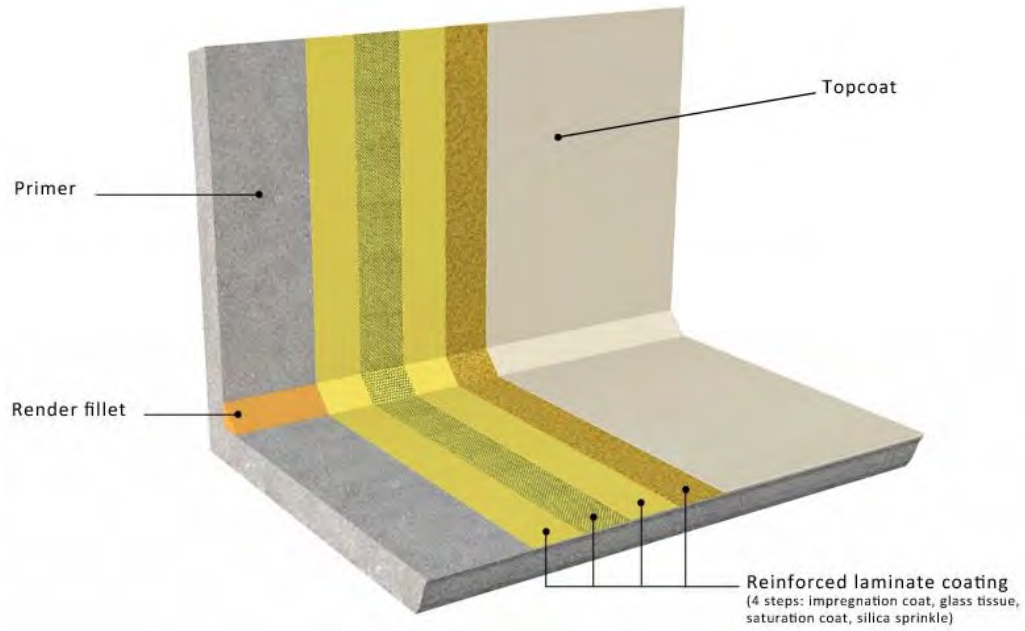
♦♦♦♦♦♦

Max Perlès
advanced industrial coatings

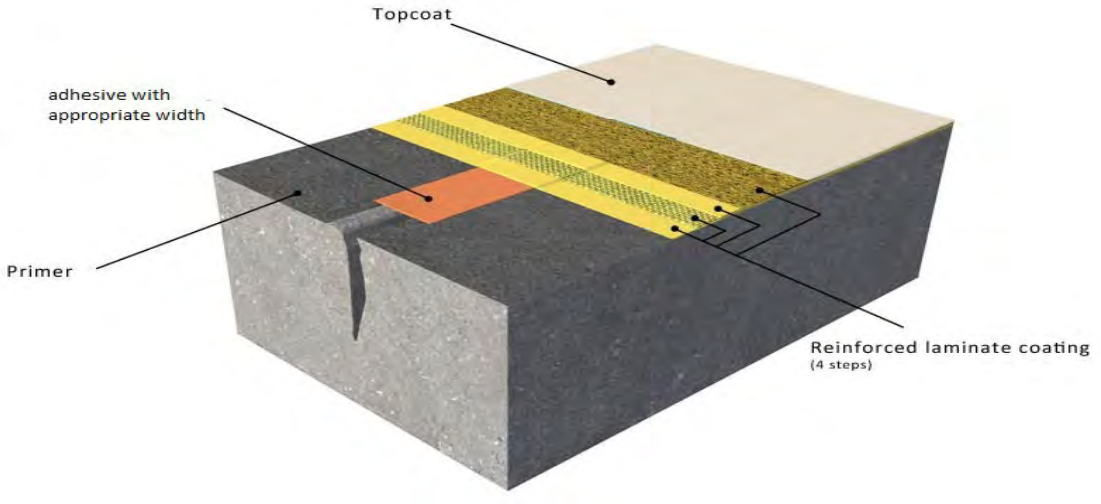
Coating of concrete structures
December 2024

Dealing with singular points: Sketch Book

Layered presentation of a laminate coating

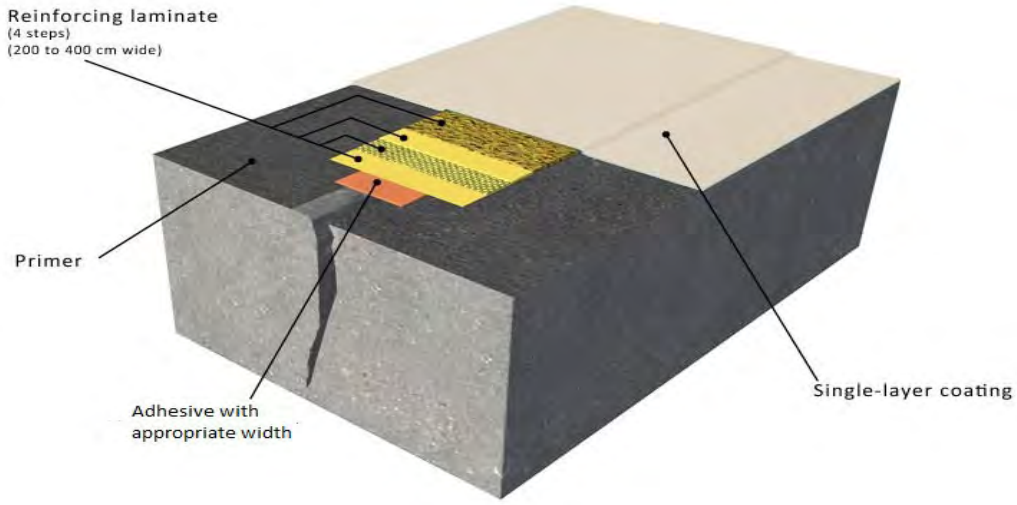


Sketch no.1: Treating a non active and non penetrating crack when applying a laminate coating

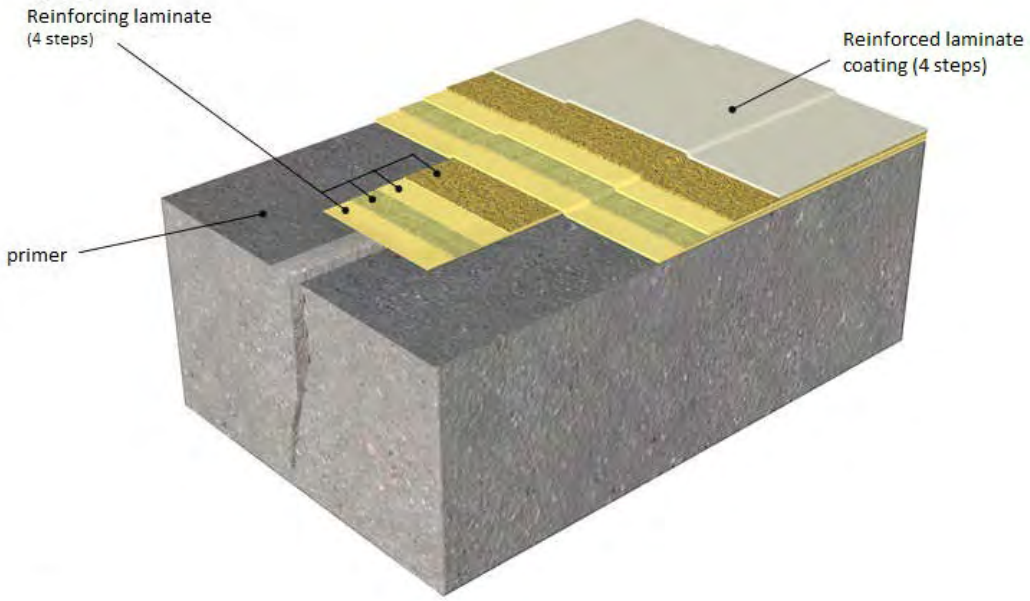


ISO 9001 certified
4 rue du Professeur Dubos – BP 80439 – 60119 Hénonville Cedex (France) – Tél : 33 (0) 3 44 49 86 22 – Web : www.maxperles.com

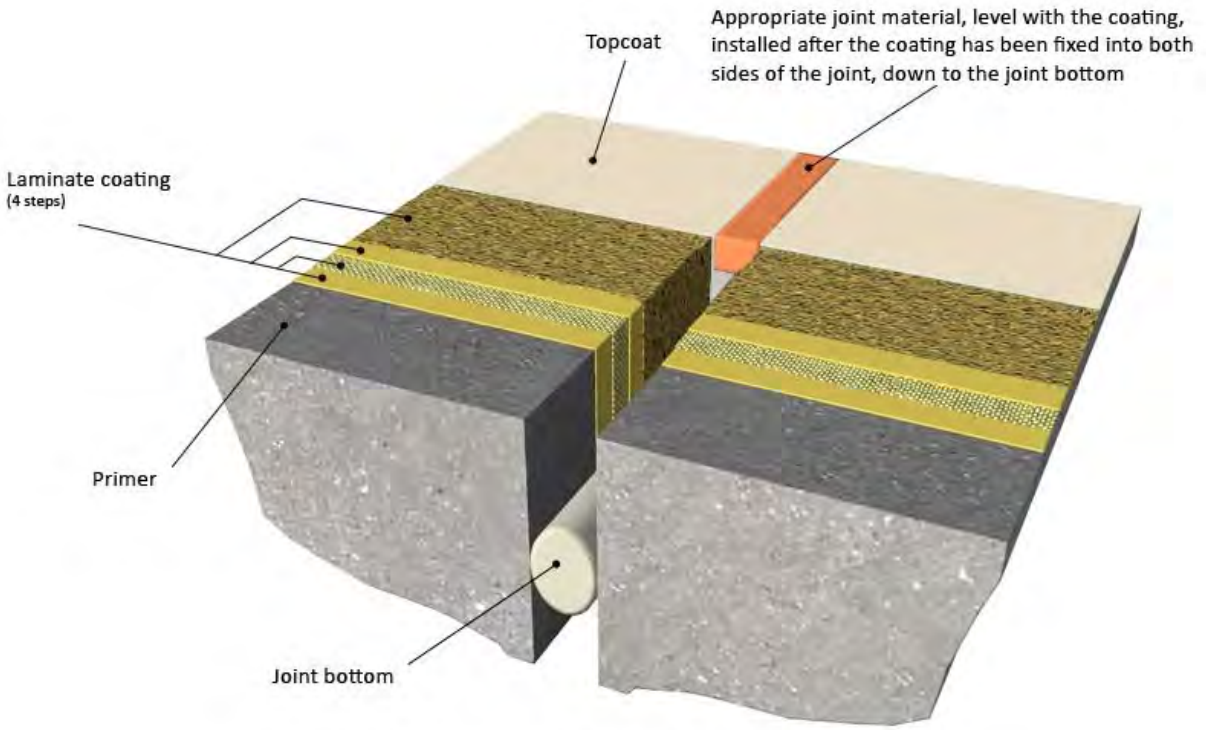
Sketch no.2: Treating a crack when applying a single-layer coating



Skectch no.3: Treating a crack when applying a laminate coating

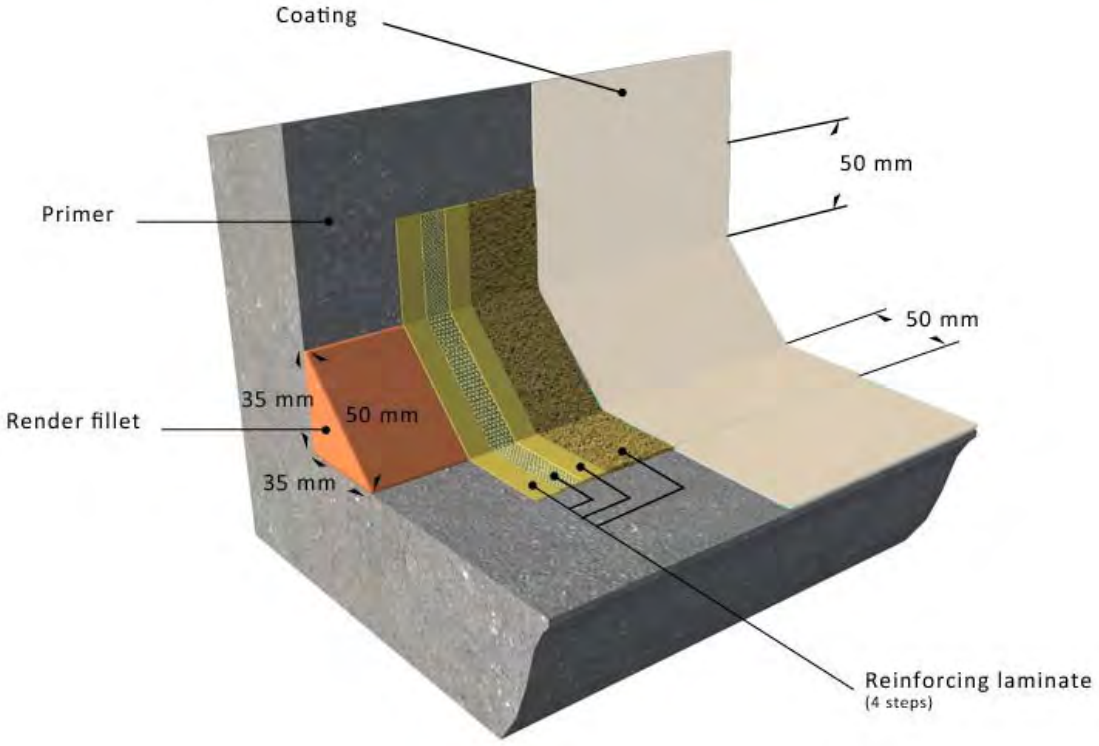


Sketch no.4: Treating an expansion joint or an active and penetrating crack when applying a laminate coating

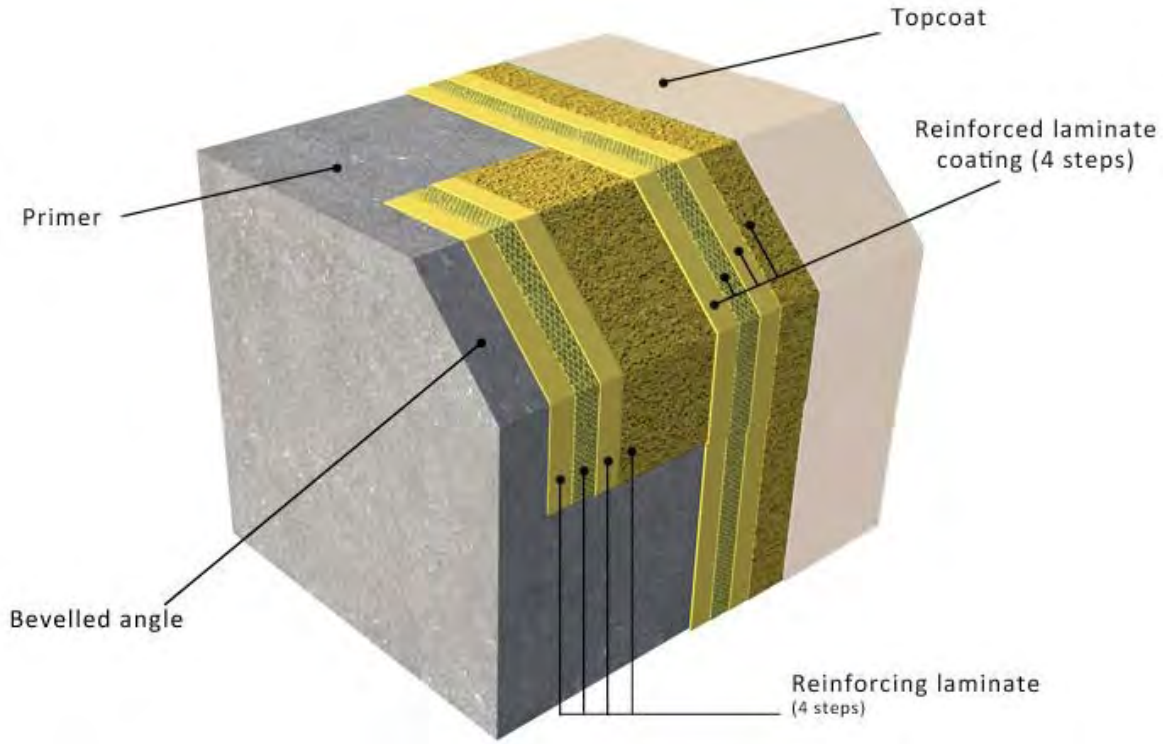


Treatment is the same when applying a single-layer coating

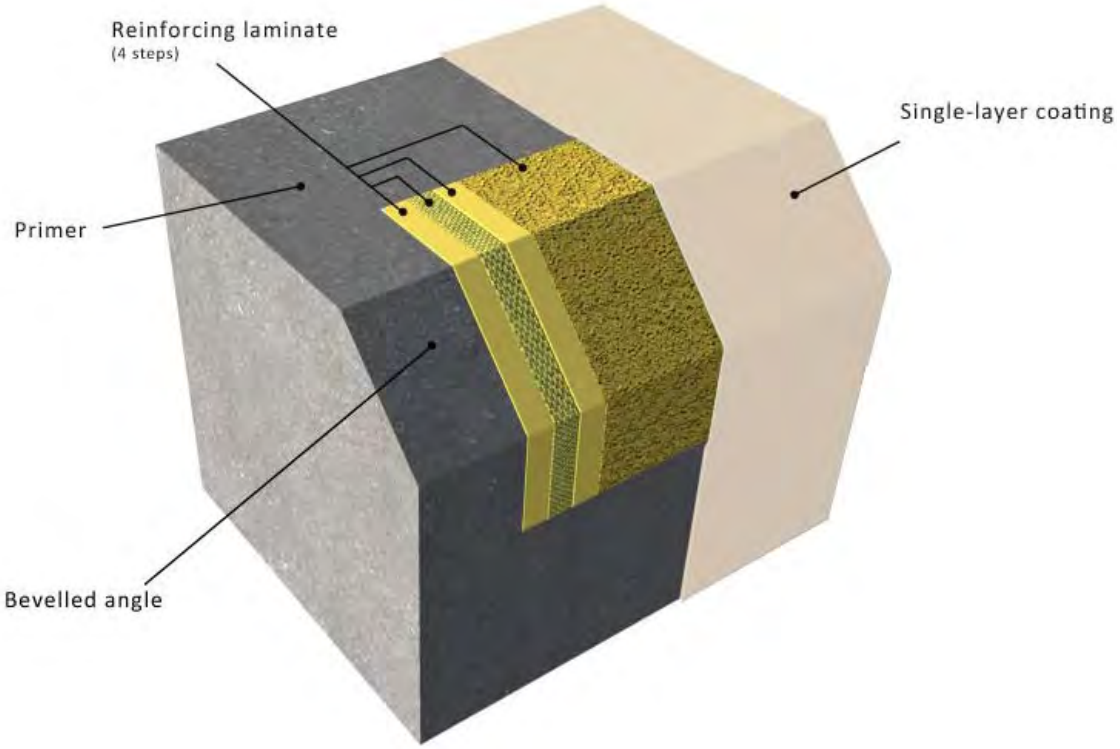
Sketch no.5: Treating a closed angle corner



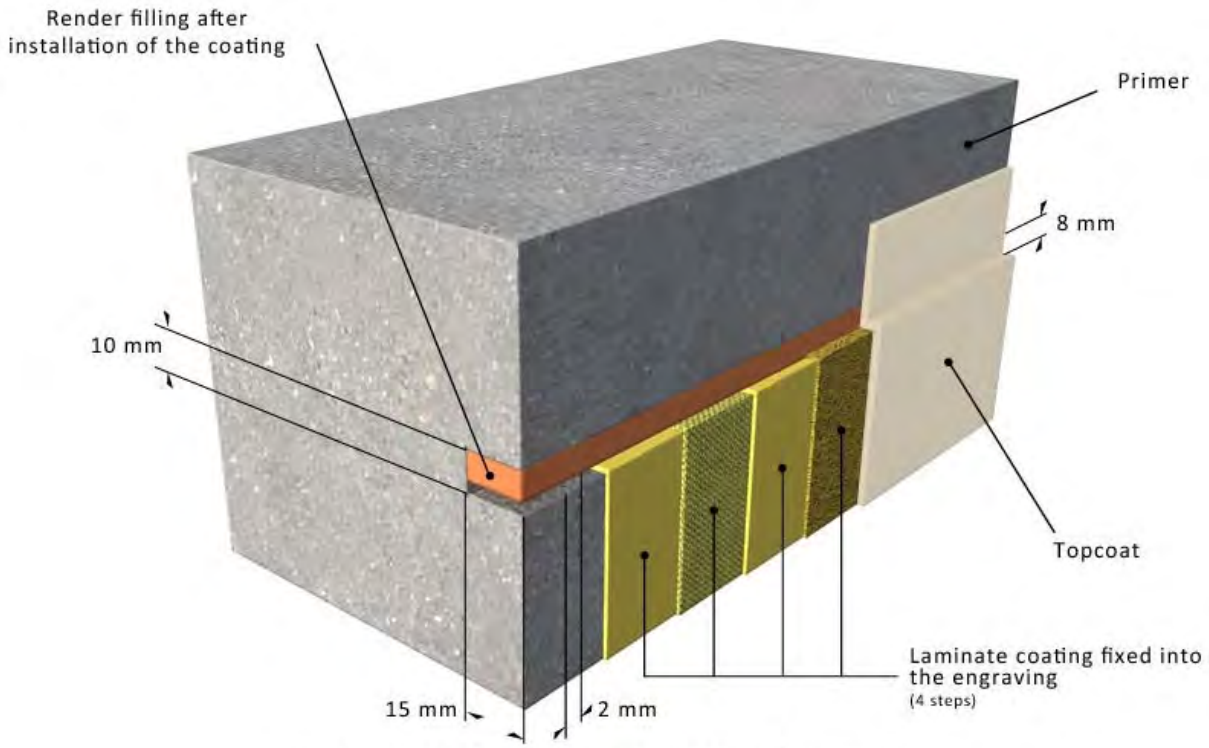
Sketch no.6: Treating an open angle when applying a laminate coating



Sketch no.7: Treating an open angle when applying a single-layer coating

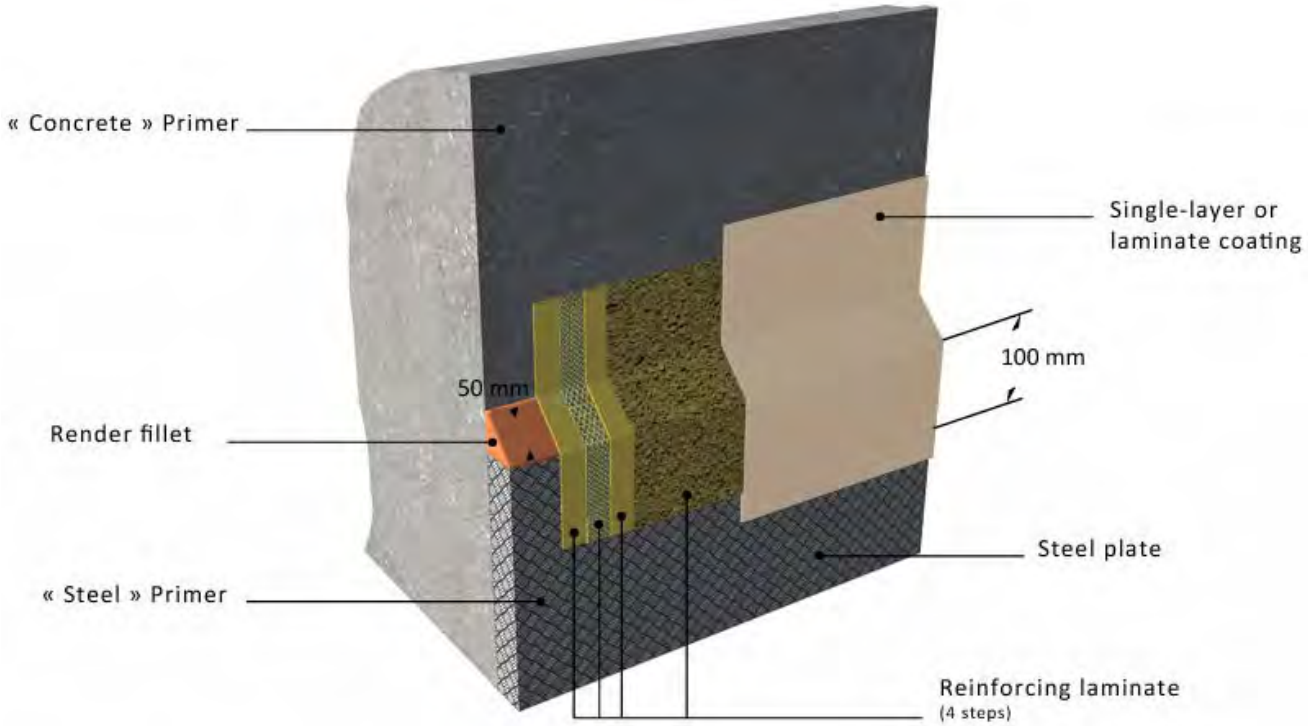


Sketch no.8: Treating an engraving when applying a laminate coating

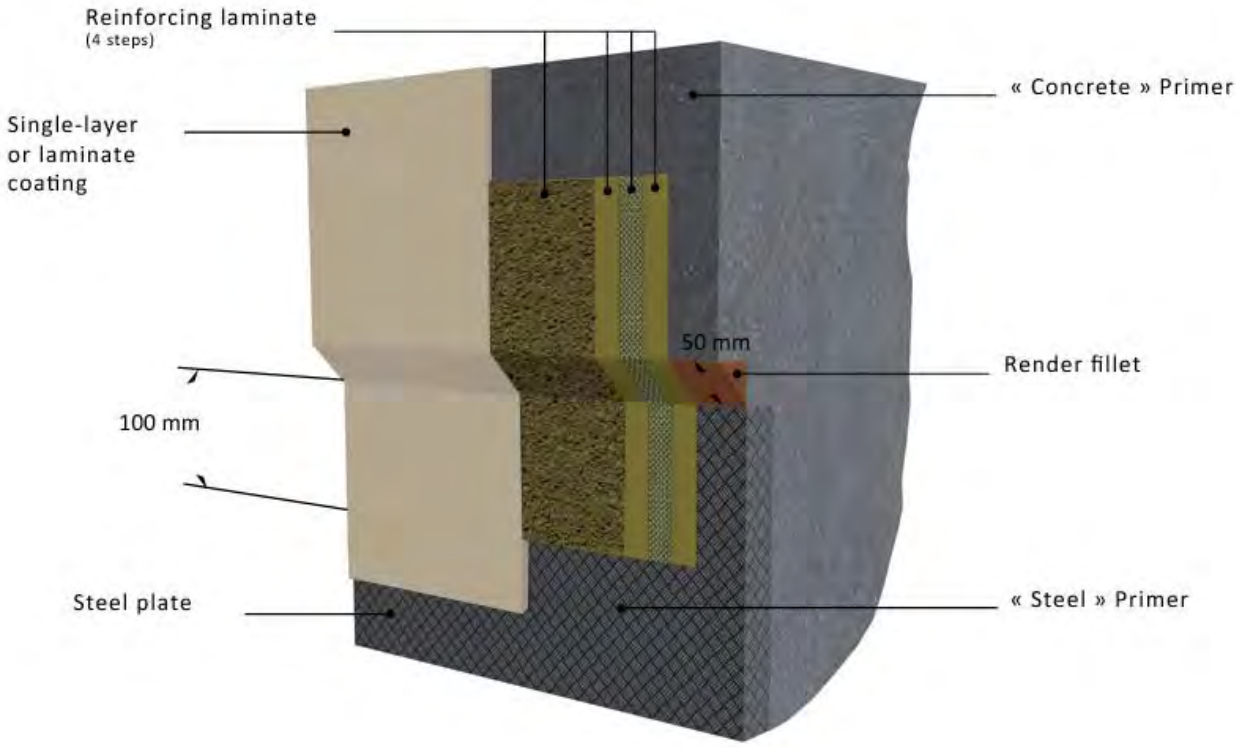


Treatment is the same when applying a single-layer coating

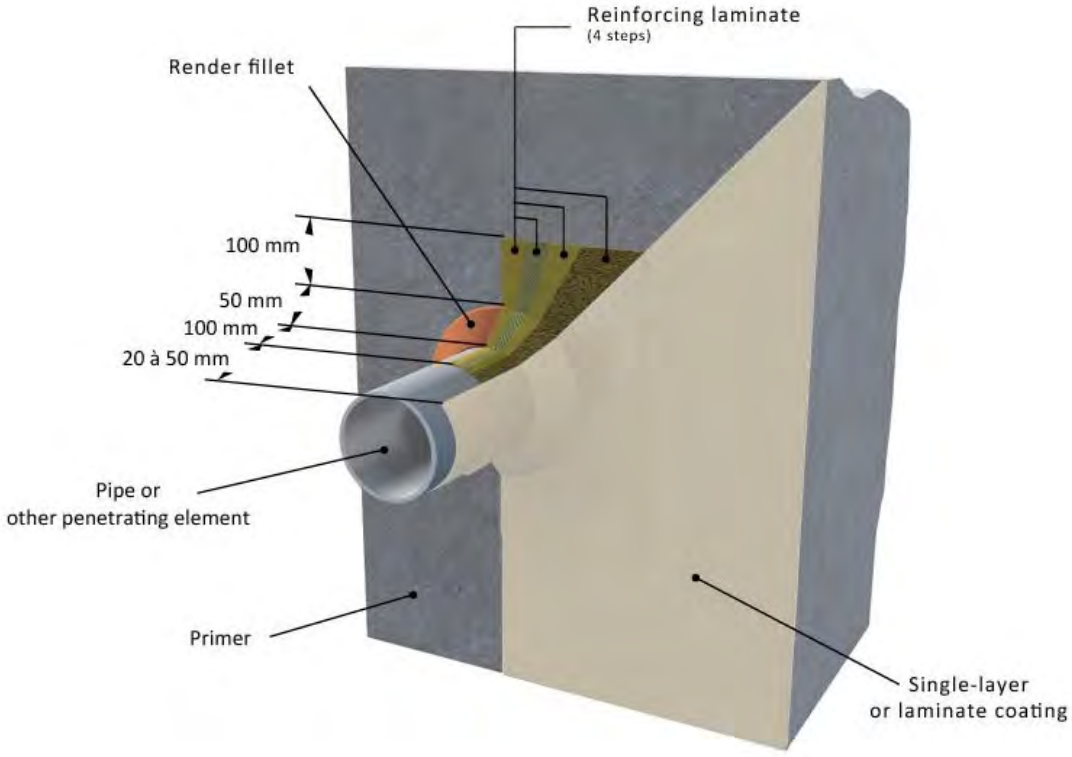
Sketch no.9: Treating an outgoing steel plate



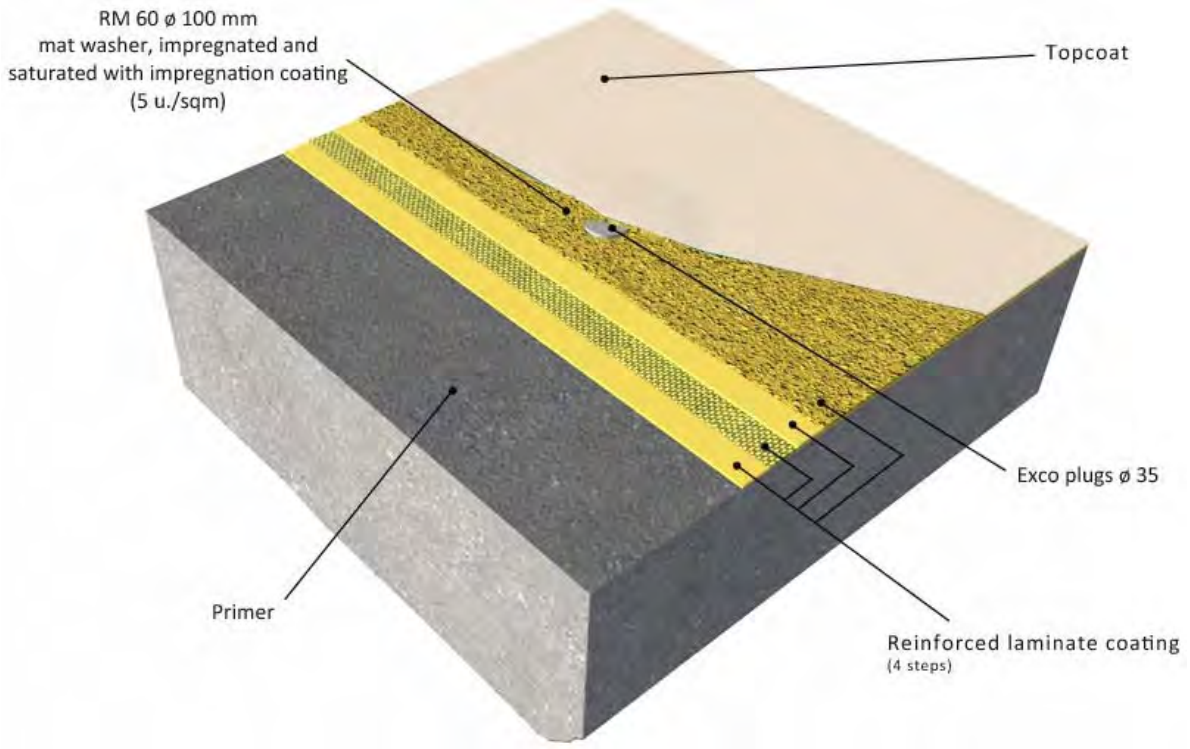
Sketch no.10: Treating an ingoing steel plate



Sketch no.11: Treating an incoming pipe or other penetrating element



Sketch no.12: Treating a mechanically-fixed (or anchored) coating



5. Performance testing and retouching

Testing is performed by the application contractor to check the reliability of his work.

Tests take place:

- during the application
- after the application.

They are carried out in conformity with the processes described in our *Technical Advice Nr. 3 "Performance Testing"* and *Technical Advice Nr. 4 "Dielectric Testing"* - see appendix 3.

They may lead to repairs or retouches using the *Technical Advice Nr. 5 "Retouching"* – see appendix 3.

6. Technical assistance

It is provided by our **Technical Assistance Department** upon request from the application contractor.

It comprises :

- theoretical and practical training
- recapitulating the main implementation phases
- performing jointly with the application contractor a **"reference zone"** on a representative area.

7. Commissioning

It can take place after a certain waiting time which varies according to the curing time of the coating at different temperatures:

- 10°C: 10 days
- 20°C: 7 days
- 30°C: 4 days
- 40°C: 3 days

8. Servicing / maintenance / repairs

They must be ensured in compliance with the principles described in Chapter 10 of the ITBTP Publication .
Refer also to the appropriate specific details in the *Technical Advice Nr. 5 "Retouching"* - see appendix 3.

9. Qualification of application companies

They must:

- either give proof of successful and equivalent experience under similar conditions
- or have received from us significant training specific to the products to be applied , borne out by the certification of the operators by one of our Technician-trainers .

10. Warranty - modalities and operation :

- Principle of operation:

It operates on the principle described in Chapter 11 of the ITBTP Publication.

- Definition:

This is a **performance guarantee** meaning that the coating implemented is capable of fulfilling the functions of:

- waterproofing or watertightness of the interior surfaces of a concrete structure
- protection of the interior surfaces of a steel structure
- non pollution of the contents, where appropriate, under specified conditions and for a specified time.

- Criteria:

They are studied according to the structure's specific operating parameters.
These criteria are notably:

- the degree of allowable cracking for the waterproofing or watertightness function
- the aptitude characteristic for contact with foodstuffs
- possible nature, concentration, pH and temperature of the cleaning/disinfection products.

- Operating mode :

The warranty is jointly agreed to by ***max perlès et cie*** and the application contractor .

It is materialized in a **Joint guarantee** co-signed by the two parties and handed over to the beneficiary client / building owner.

It stipulates that , in case of a problem , the costs for removing the defective coating and supplying and applying a new coating are covered.

It is covered by an insurance policy taken out by each of the joint parties for its own liability according to the model hereafter .

Max Perlès

Insurance Certificate – General Liability

The undersigned, SCOR Europe SE, having its head office at 5 Avenue Kléber - 75 116 Paris - France, hereby certifies that the company:

MAX PERLES et Cie
4 rue du Professeur René Dubos
60119 HENONVILLE

is insured under the policy n° **FA0095300** underwritten with our company in respect of the pecuniary consequences of its civil liability risks that may incur as a result of bodily injury, material and immaterial damage caused to third parties and attributable to the activities insured by this policy.

Activity: Sale of products for the execution of covering work for storage and transport capacities in the field of soft and alcoholic beverages.

The guarantees of the contract are exercised up to the amounts indicated below:

Combined Insurance limit:

PUBLIC LIABILITY / PRODUCT LIABILITY

ALL DAMAGES COMBINED (bodily injuries, property damages et financial losses) .....**10 000 000 €** per year
Including:

- Pure Financial Losses ("D.I.N.C.") with the amount of **5 000 000 €** per year
- "Faute inexcusable de l'employeur" with the amount of **5 000 000 €** per year
- Dismantling/Reinstalling costs with the amount of **5 000 000 €** per year
- Professional liability with the amount of **2 500 000 €** per year
- Pollution Sudden and Accidental (classified locations excluded) with the amount of **3 000 000 €** per year
- Damages resulting from exports to the USA/Canada, all damages aggregate (Bodily injuries, Property damages and Financial losses): with the amount of **5 000 000 €** per year
- Including: Pure financial losses ("D.I.N.C.") on "Loss of use" basis with the amount of **1 000 000 €** per year

Limits shown above may have been reduced by paid claims.

The present certificate is certificate is valid for the period from 01/01/2026 to 31/12/2026 inclusive, subject to the payment of the premium, and subject to the possibility of suspension or termination of the policy during the policy period for the cases provided for by the French Insurance Code or the policy.

It is addressed to whom it may concern and cannot bind our company beyond the limits of the clauses and conditions of the policy that it refers to and notably with respect to the activities insured by this policy.

This certificate constitutes only an assumption of coverage. The coverage solely applies within the terms and conditions of the General Third-Party liability policy n° **FA0095300**.

Issued in Paris, 23/12/2025
Ayan CILLES - Technical Accountant

Appendix 1
Tests reports

See Annex 1

• *Oenoperl®* :

- Oenoperl S/T : Ianesco report n° E23-24805
Overall migration, specific migration, simulants B, C, E .

- Oenoperl T : Ianesco report n°RE-09-07486
Isophoronediamine migration

- Oenoperl S/T : Ianesco report n° RE-14-02826
- Oenoperl T : Ianesco report n° RE-14-02828
Biphénol A – Specific migration of restricted use substances, in a simulant

- Oenoperl T : Ianesco rapport n° RE-15-04484
Epichlorhydrine - Specific migration of restricted use substances, in a simulant

- Oenoperl S/T : EXCELL rapport n° R2013-07-115-1
Phthalates barrier effect

- Oenoperl T : CTCPA report n° BO09A0153 (white wine)
CTCPA report n° BO09A0154 (red wine)
CTCPA report n° B024A1714MS : Specific migration
CTCPA report n° B024A1714MG : Overall migration

• *AR 100/CLX* :

- AR 100/CLX CTCPA report n° B020A4121
Specific migration Bisphenol A .

- Oenoperl S/AR 100/CLX CTCPA report n° B021A0098MGa
Overall migration

IANESCO
LABORATOIRE

MAX PERLES ET CIE
4 RUE DU PROFESSEUR DUBOS
60119 HENONVILLE

Commande / order : Devis signé
Dossier : D23-06-0982

RAPPORT D´ESSAIS / TESTS REPORT N°E23-24805

1. OBJET

Examen de l'inertie d'un matériau devant entrer en contact avec des aliments.

OBJECT

Inertia's examination of a material intended to come into contact with foodstuffs.

2. DOCUMENTS DE REFERENCE

- Norme NF EN 1186, parties 1 à 3
- Norme NF EN 13130-1
- IT-ME-19
- Règlement (CE) n°1935/2004 du 27 octobre 2004
- Règlement (UE) n°10/2011 du 14 Janvier 2011, modifié
- Fiches DGCCRF relatives aux matériaux destinés au contact alimentaire

REFERENCE DOCUMENTS

- Standard NF EN 1186, parts 1 to 3
- Standard NF EN 13130-1
- IT-ME-19
- Regulation (EC) n°1935/2004 of October 27, 2004
- Modified Regulation (EU) n°10/2011 of January 14, 2011
- DGCCRF notices concerning the materials intended to come into contact with food.

3. DESCRIPTION DE L'ECHANTILLON

Echantillon réceptionné au laboratoire le 15/06/2023

Eprouvettes revêtues

Référence : Système OENOPERL® - Fiche 111-T45

Conditions particulières d'utilisation :
usage répété

SAMPLE DESCRIPTION

Sample received at Laboratory on 15/06/2023

Coated specimen

Reference : OENOPERL® system - n°111-T45

Particular use conditions:
repeated use

4. RESULTATS / RESULTS

Les essais ont été définis à partir des données communiquées par le client / The tests were defined on the basis of the data provided by the customer.

Test - Simulant	Conditions Test conditions	Méthode - Technique Method - Technic	Résultats Results	Limites Limits	Unités Units
Analyses sous-traitées					
1 - Migration globale - Overall migration					
Migration globale/Overall migration - Immersion - Simulant B - 1	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*7, 9*	*10 ± 2*	*mg/dm²*
Migration globale/Overall migration - Immersion - Simulant B - 2	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*10, 8*	*10 ± 2*	*mg/dm²*
Migration globale/Overall migration - Immersion - Simulant B - 3	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*8, 2*	*10 ± 2*	*mg/dm²*
Moyenne migration globale / Mean value overall migration- Simulant B	**3 x 10 jours/days 40°C**	**NF EN 1186-1 et 3 Immersion**	**9, 0**	**10 ± 2**	**mg/dm²**
Migration globale/Overall migration - Immersion - Simulant C - 1	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*1, 3*	*10 ± 2*	*mg/dm²*
Migration globale/Overall migration - Immersion - Simulant C - 2	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*1, 2*	*10 ± 2*	*mg/dm²*
Migration globale/Overall migration - Immersion - Simulant C - 3	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 3 Immersion*	*1, 1*	*10 ± 2*	*mg/dm²*
Moyenne migration globale / Mean value overall migration- Simulant C	**3 x 10 jours/days 40°C**	**NF EN 1186-1 et 3 Immersion**	**1, 2**	**10 ± 2**	**mg/dm²**
Migration globale/Overall migration - simulant E - 1	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 13 Immersion*	*0, 4*	*10 ± 3*	*mg/dm²*
Migration globale/Overall migration - simulant E - 2	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 13 Immersion*	*0, 4*	*10 ± 3*	*mg/dm²*
Migration globale/Overall migration - simulant E - 3	*3 x 10 jours/days 40°C*	*NF EN 1186-1 et 13 Immersion*	*0, 3*	*10 ± 3*	*mg/dm²*
Moyenne migration globale / Mean value overall migration - Simulant E	**3 x 10 jours/days 40°C**	**NF EN 1186-1 et 13 Immersion**	**0, 4**	**10 ± 3**	**mg/dm²**
2 - Migration spécifique - Specific migration					
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant B - 1	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,024*	*0,05*	*mg/kg*
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant B - 2	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,024*	*0,05*	*mg/kg*
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant C - 1	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,030*	*0,05*	*mg/kg*
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant C - 2	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,030*	*0,05*	*mg/kg*
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant E - 1	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,032*	*0,05*	*mg/kg*
MCDA 151_2,2-Bis-(4-Hydroxyphenyl)Propane (Bisphenol A) - Simulant E - 2	*3 x 10 jours/days 40°C*	*Méthode interne selon MA-MPO-524 (LCDAD) Immersion*	*< LQ/LOQ = 0,032*	*0,05*	*mg/kg*
MCDA 219 - Epichlorhydrine - Simulant B -1	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*

Test - Simulant	Conditions Test conditions	Méthode - Technique Method - Technic	Résultats Results	Limites Limits	Unités Units
MCDA 219 - Epichlorhydrine - Simulant B - 2	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*
MCDA 219 - Epichlorhydrine - Simulant C -1	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*
MCDA 219 - Epichlorhydrine - Simulant C -2	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*
MCDA 219 - Epichlorhydrine - Simulant E -1	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*
MCDA 219 - Epichlorhydrine - Simulant E -2	*3 x 10 jours/days 40°C*	*Analyse sous traitée (GCMS) Immersion*	*< LQ/LOQ = 0,006*	*<0,01*	*mg/kg*

LQ / LOQ : Limite de Quantification Analytique / Analytical Limit Of Quantification

Début des essais le / date of tests beginning : 15/06/2023.

5. Commentaire et conclusion / Comment and conclusion :

- Commentaire / Comment :

Rapport S/V utililisé pour le calcul de migration spécifique : rapport conventionnel de 6 dm² / 1 kg de simulant
S/V ratio used for specific migration calculation : conventional ratio of 6 dm2 / 1 kg of simulant

En ce qui concerne la déclaration de conformité ou non à la spécification,
- Pour la migration globale, il a été tenu compte de la tolérance analytique fixée par les textes de référence, mais pas de l'incertitude de mesure.
- Pour les autres paramètres, il n'a pas été tenu compte de l'incertitude associée au dosage.

Concerning the compliance statement or not to the specification,
- For overall migration, consideration was given to the analytical tolerance set by the reference texts. but not the uncertainly measurement.
- For other parameters, it wasn't taken into account the uncertainly measurement.

- Conclusion / Conclusion :

Dans les conditions d'essai indiquées dans le tableau ci-dessus, les valeurs obtenues respectent les limites fixées par le règlement n°10/2011 modifié

In the test conditions indicated in the above table, the obtained values respect the limits set by modified regulation 10/2011.

Par ailleurs, la stabilité du matériau réutilisable a été vérifié (voir annexe jointe) / the stability of the reusable material has been verified (see annex attached)

NB : Le matériau doit être conforme aux exigences de composition définies par les règlementations européennes existantes et les textes nationaux applicables pour la fabrication des matériaux au contact des aliments.

NB: The material must be in accordance with the composition requirements defined by the European regulations and the national texts relevant to food contact materials manufacturing.

à Poitiers, le 11/09/2023

Véronique PEROCHES

Chargée de service

IANESCO
ANALYSES • PRÉLÈVEMENTS
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MAX PERLES et Cie
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V/Réf. : Commande François TAILLIBERT du 11/03/2009 et mail du 09/04/2009

N/Réf.: DA-09/01555-1 du 16/03/2008

RAPPORT D'ESSAIS N° RE-09/07486 du 18 juin 2009

1. OBJET

Détermination de la migration de l'isophorone diamine dans des simulants.

2. DOCUMENTS DE REFERENCE

Norme NF EN 13130-1
Directive européenne CEE n° 85/572 du 19/12/85, modifiée
Directive européenne CE n° 97/48 du 29/07/97
Directive européenne CE n° 2002/72 du 06/08/02, modifiée
Règlement (CE) n° 1935/2004 du 27 octobre 2004

3. DESCRIPTION DE L'ECHANTILLON

Echantillon réceptionné au laboratoire le 16 mars 2009
Revêtement époxydique appliqué sur support en verre
Référence : Oenoperl T

4. CONDITIONS D'ESSAI ET RESULTATS

a) Conditions d'essai .

▪ Le matériau est mis en contact avec les simulants pendant 10 jours à 40°C, par immersion totale.

Simulants : - Acide acétique 3%
- Ethanol 15 %
- Ethanol 25 %

▪ A l'issue du temps de contact, l'isophorone diamine est dosé dans les simulants de la façon suivante :

- Analyse par HPLC/ DAD (468 nm) en mode phase inverse, après dérivation de l'amine par le 7-chlor-4 nitrobenzofurazan en milieu carbonaté, à 55°C pendant une heure, l'acide acétique étant au préalable neutralisé à pH 7.
- Etalonnage à partir des simulants témoins dopés en quantités connues d'isophorone diamine.

b) Résultats exprimés en mg/kg de simulant, pour le rapport de contact de 0,6 dm² pour 1 kg de simulant.

Conditions de contact	Simulant	Migration de l'isophorone diamine en mg/kg * (valeurs individuelles de 2 essais)
10 jours à 40°C	Acide acétique 3% (p/v)	< LQ = 0.03 < LQ = 0.03
10 jours à 40°C	Ethanol 15% (v/v)	< LQ = 0.03 < LQ = 0.03
10 jours à 40°C	Ethanol 25% (v/v)	< LQ = 0.03 < LQ = 0.03

* Valeurs calculées pour le rapport de 0,6 dm²/L stipulé par le demandeur le 15/06/2009 (cuve de 1000 L).

LQ = Limite de quantification analytique

Rappel des limites autorisées par la directive 2002/72/CE modifiée :

- Isophorone diamine : LMS = 6 mg/kg

5. CONCLUSION

Dans les conditions d'essai retenues, la migration de l'isophorone diamine est inférieure à la limite fixée par la réglementation dans l'acide acétique 3%, l'éthanol 15% et l'éthanol 25%.

Maryse FAVARD
Responsable Matériaux et Emballages

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V/Réf. : Bon pour accord signé le 12 décembre 2013
N/Réf. : DA-13/10153-1 du 18 décembre 2013

Your Ref. : Quotation signed of December 12, 2013
Our Ref. : DA-13/10153-1 of December 18, 2013

RAPPORT D'ESSAIS N°RE-14/02826 du 21 février 2014

TESTS REPORT N°RE-14/02826 of February 21, 2014

1. OBJET / *OBJECT*

Migration spécifique de substances soumises à restriction, dans un simulant.

Specific migration of substances submitted to restriction, in simulant.

2. DOCUMENTS DE REFERENCE — *REFERENCE DOCUMENTS*

- **Norme NF EN 13130-1 – Août 2004** — *Standard NF EN 13130-1 – August 2004*
- **Règlement (CE) n°1935/2004 du 27 octobre 2004** — *Regulation (EC) n°1935/2004 of October 27, 2004*
- **Règlement (UE) n°10/2011 du 14 Janvier 2011** — *Regulation (EU) n° 10/2011 of January 14, 2011*

3. DESCRIPTION DE L'ECHANTILLON — *SAMPLE DESCRIPTION*

Echantillon réceptionné au laboratoire le 18 décembre 2013 — *Sample receptionned at Laboratory on December 18, 2013*

Revêtement appliqué sur plaque en verre — *Coating applied on glass sheet*

Référence : système n°1 primaire EDO / enduit AR100 / stratification Oenoperl S avec tissu P45 / finition Oenoperl T — *Reference : system n°1 EDO primary / AR100 enduction / stratification Oenoperl S with P45 tissu / Oenoperl T finition*

Conditions particulières d'utilisation : usage répété

Particular use conditions : repeated use

4. CONDITIONS D'ESSAI ET RESULTATS / *TEST CONDITIONS AND RESULTS*

a) Conditions d'essais / *Test conditions* .

Le matériau est mis en contact avec les simulants par immersion.

The material is exposed to the simulants by immersion.

A l'issue du temps de contact, la substance est dosée dans les simulants de la façon suivante :

At the end of contact time, the substance is determined in the simulants by the following way :

Methode 1 :

Analyse par HPLC/DAD (220 et 277 nm) en mode phase inverse (colonne C18), avec gradient de solvants.
Etalonnage à partir des simulants témoins dopés en quantités connues de la substance.
Analysis by reverse phase HPLC/DAD (220 and 277 nm), with solvent gradient (C18 column).
Quantification is achieved with calibration against food simulants fortified with known amounts of the substance.

b) Résultats exprimés en mg / kg de simulant - pour le rapport conventionnel de 6 dm² / 1 kg de simulant :
Results expressed as mg / kg of simulant – for the conventionnal ratio of 6 dm² / 1 kg of simulant :

Nom de la substance *Name of the substance*	N°CAS *N°CAS*	Méthode N° *N° Method*	Conditions de contact sur l'échantillon *Test conditions*	Simulant *Simulant*	Résultats en mg/kg (valeurs individuelles de 2 essais) *Results in mg/kg (individual values of 2 trials)*	Valeur limite fixée par le règlement n° 10/2011 *Limit value set by regulation n°10/2011*
Bisphénol A *Bisphenol A*	80-05-7	1	10 jours à 40°C *10 days at 40°C*	B : Acide acétique 3% *B : 3% acetic acid*	< 0.04 * < 0.04 *	LMS / *SML* = 0.6
Bisphénol A *Bisphenol A*	80-05-7	1	3 x 10 jours à 40°C, analyse sur le dernier essai *3 x 10 days at 40°C, measurement on the last trial*	B : Acide acétique 3% *B : 3% acetic acid*	< LQ / *QL* = 0.01 < LQ / *QL* = 0.01	LMS / *SML* = 0.6
Bisphénol A *Bisphenol A*	80-05-7	1	10 jours à 40°C *10 days at 40°C*	C : Ethanol 20% *C : 20% ethanol*	< LQ / *QL* = 0.01 < LQ / *QL* = 0.01	LMS / *SML* = 0.6
Bisphénol A *Bisphenol A*	80-05-7	1	3 x 10 jours à 40°C, analyse sur le dernier essai *3 x 10 days at 40°C, measurement on the last trial*	C : Ethanol 20% *C : 20% ethanol*	< LQ / *QL* = 0.01 < LQ / *QL* = 0.01	LMS / *SML* = 0.6

LQ / *QL* : **Limite de Quantification Analytique** / *Analytical Quantification limit*

* **présence d'interférence** / presence of interferences

Date de mise en contact : 27 décembre 2013 / *Date of beginning of contact : December 27, 2013*

5. CONCLUSION / *CONCLUSION*

Dans les conditions d'essais retenues, la migration du bisphénol A est inférieure à la limite fixée par la réglementation.

In test conditions, the migration of bisphenol A is within the limit set by regulation.

Maryse FAVARD
Responsable Matériaux et Emballages
Head of Department Packaging and Materials

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25 FEV. 2014

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V/Réf. : Bon pour accord signé le 12 décembre 2013
N/Réf. : DA-13/10153-2 du 18 décembre 2013

Your Ref. : Quotation signed of December 12, 2013
Our Ref. : DA-13/10153-2 of December 18, 2013

RAPPORT D'ESSAIS N°RE-14/02828 du 21 février 2014

TESTS REPORT N°RE-14/02828 of February 21, 2014

1. OBJET / *OBJECT*

Migration spécifique de substances soumises à restriction, dans un simulant.

Specific migration of substances submitted to restriction, in simulant.

2. DOCUMENTS DE REFERENCE — *REFERENCE DOCUMENTS*

- **Norme NF EN 13130-1 – Août 2004** — *Standard NF EN 13130-1 – August 2004*
- **Règlement (CE) n°1935/2004 du 27 octobre 2004** — *Regulation (EC) n°1935/2004 of October 27, 2004*
- **Règlement (UE) n°10/2011 du 14 Janvier 2011** — *Regulation (EU) n° 10/2011 of January 14, 2011*

3. DESCRIPTION DE L'ECHANTILLON — *SAMPLE DESCRIPTION*

Echantillon réceptionné au laboratoire le 18 décembre 2013	*Sample receptionned at Laboratory on December 18, 2013*
Revêtement appliqué sur plaque en verre	*Coating applied on glass sheet*
Référence : système n°2 finition Oenoperl T	*Reference : system n°2 Oenoperl T finition*

Conditions particulières d'utilisation : usage répété

Particular use conditions : repeated use

4. CONDITIONS D'ESSAI ET RESULTATS / *TEST CONDITIONS AND RESULTS*

a) Conditions d'essais / *Test conditions* .

Le matériau est mis en contact avec les simulants par immersion.

The material is exposed to the simulants by immersion.

A l'issue du temps de contact, la substance est dosée dans les simulants de la façon suivante :

At the end of contact time, the substance is determined in the simulants by the following way :

Methode 1 :

Analyse par HPLC/DAD (220 et 277 nm) en mode phase inverse (colonne C18), avec gradient de solvants.
Etalonnage à partir des simulants témoins dopés en quantités connues de la substance.
Analysis by reverse phase HPLC/DAD (220 and 277 nm), with solvent gradient (C18 column).
Quantification is achieved with calibration against food simulants fortified with known amounts of the substance.

b) Résultats exprimés en mg / kg de simulant - pour le rapport conventionnel de 6 dm² / 1 kg de simulant :
Results expressed as mg / kg of simulant – for the conventionnal ratio of 6 dm² / 1 kg of simulant :

Nom de la substance *Name of the substance*	**N°CAS** *N°CAS*	**Méthode N°** *N° Method*	**Conditions de contact sur l'échantillon** *Test conditions*	**Simulant** *Simulant*	**Résultats en mg/kg (valeurs individuelles de 2 essais)** *Results in mg/kg (individual values of 2 trials)*	**Valeur limite fixée par le règlement n° 10/2011** *Limit value set by regulation n°10/2011*
Bisphénol A *Bisphenol A*	**80-05-7**	**1**	**10 jours à 40°C** *10 days at 40°C*	**B : Acide acétique 3%** *B : 3% acetic acid*	**< 0.04 *** **< 0.04 ***	**LMS / *SML* = 0.6**
Bisphénol A *Bisphenol A*	**80-05-7**	**1**	**3 x 10 jours à 40°C, analyse sur le dernier essai** *3 x 10 days at 40°C, measurement on the last trial*	**B : Acide acétique 3%** *B : 3% acetic acid*	**< LQ / *QL* = 0.01** **< LQ / *QL* = 0.01**	**LMS / *SML* = 0.6**
Bisphénol A *Bisphenol A*	**80-05-7**	**1**	**10 jours à 40°C** *10 days at 40°C*	**C : Ethanol 20%** *C : 20% ethanol*	**< LQ / *QL* = 0.01** **< LQ / *QL* = 0.01**	**LMS / *SML* = 0.6**
Bisphénol A *Bisphenol A*	**80-05-7**	**1**	**3 x 10 jours à 40°C, analyse sur le dernier essai** *3 x 10 days at 40°C, measurement on the last trial*	**C : Ethanol 20%** *C : 20% ethanol*	**< LQ / *QL* = 0.01** **< LQ / *QL* = 0.01**	**LMS / *SML* = 0.6**

LQ / *QL* : Limite de Quantification Analytique / *Analytical Quantification limit*

* **présence d'interférence** / presence of interferences

Date de mise en contact : 27 décembre 2013 / *Date of beginning of contact : December 27, 2013*

5. CONCLUSION / *CONCLUSION*

Dans les conditions d'essais retenues, la migration du bisphénol A est inférieure à la limite fixée par la réglementation.

In test conditions, the migration of bisphenol A is within the limit set by regulation.

Maryse FAVARD

Responsable Matériaux et Emballages

Head of Department Packaging and Materials

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V/Réf. : Devis signé du 01/10/2014
N/Réf. : DA-15/00323 du 16/01/2015

Your Ref. : Quote signed of 01/10/2014
Our Ref. : DA-15/00323 of 16/01/2015

RAPPORT D'ESSAIS N°RE-15/04484 du 27 mars 2015

TESTS REPORT N°RE-15/04484 of March 27, 2015

1.OBJET / *OBJECT*

Migration spécifique de substances soumises à restriction, dans un simulant.

Specific migration of substances submitted to restriction, in a simulant.

2.DOCUMENTS DE REFERENCE / *REFERENCE DOCUMENTS*

- Norme NF EN 13130-1 – Août 2004	- *Standard NF EN 13130-1 – August 2004*
- Directive européenne n°82/711/CEE du 18/10/82, modifiée	- *Modified European directive n°82/711/EEC of 18/10/82*
- Directive européenne n°85/572/CEE du 19/12/85, modifiée	- *Modified European directive n°85/572/EEC of 19/12/85*
- Règlement (CE) n°1935/2004 du 27 octobre 2004	- *Regulation (EC) n°1935/2004 of October 27, 2004*
- Règlement (UE) n°10/2011 du 14 Janvier 2011, modifié	- *Modified Regulation (EU) n°10/2011 of January 14, 2011*
- Note d'information DGCCRF 2004/64	- *DGCCRF information notice 2004/64*

3.DESCRIPTION DE L'ECHANTILLON / *SAMPLE DESCRIPTION*

Echantillon réceptionné au laboratoire le 16/01/15	*Sample receptionned at Laboratory on 16/01/15*
- revêtement appliqué sur support en verre	- *coating applied on glass sheet*
Référence : Oenoperl T	*Reference : Oenoperl T*
Lot : base 4051301 et durcisseur 4051302	*Batch : base 4051301 and hardener 4051302*

4.CONDITIONS D'ESSAI ET RESULTATS / *TEST CONDITIONS AND RESULTS*

a) Conditions d'essais / *Test conditions* .

Le matériau est mis en contact avec le simulant par immersion.

The material is exposed to the simulant by immersion.

A l'issue du temps de contact, la substance est dosé dans le simulant de la façon suivante :

At the end of contact time, the substance is determined in the simulant by the following way :

- Methode 1 / *Method 1* :

Analyse par GC/MS sur colonne capillaire apolaire (mode SIM) selon la technique de l'espace de tête statique automatique.

Analysis by headspace gas chromatography applying automatic injection and mass spectrometry detection (SIM mode), using non apolar capillary column.

Etalonnage à partir du simulant témoin dopé en quantités connues de la substance, en présence d'un étalon interne.

Quantification is achieved using an internal standard with calibration against food simulant fortified with known amounts of the substance.

b) Résultats exprimés en mg / kg de simulant, pour le rapport conventionnel de 6 dm^2 / 1 kg de simulant / *Results expressed in mg / kg of simulant, for the conventionnal ratio of 6 dm^2 / 1 kg of simulant :*

Nom de la substance *Name of the substance*	N°CAS *N°CAS*	Méthode N° *N° Method*	Conditions de contact sur l'échantillon *Test conditions*	Simulant *Simulant*	Résultats en mg/kg (valeurs individuelles de 2 essais) *Results in mg/kg (individual values of 2 trials)*	Valeur limite fixée par le règlement n° 10/2011 *Limit value set by regulation n°10/2011*
Epichlorhydrine *epichlorohydrin*	106-89-8	1	10 jours à 40°C *10 days at 40°C*	Eau distillée *Distilled water*	Traces < LQ / *QL = 0.001* Traces < LQ / *QL = 0.001*	LMS : < LD = 0,01 mg/kg *SML : < DL = 0,01 mg/kg*

LQ / *QL* : Limite de Quantification Analytique / *Analytical Quantification limit*

Date de mise en contact / *Date of beginning of contact :* 27/01/2015

5.CONCLUSION / *CONCLUSION*

Dans les conditions d'essais retenues, la migration de l'épichlorhydrine est inférieure à la limite fixée par la réglementation.

In test conditions, the migration of epichlorohydrin is within the limit set by regulation.

Maryse FAVARD
Responsable Matériaux et Emballages
Head of Department Packaging and Materials

Rapport d'essai
N°2013-07-115-1

0 9 DEC. 2013

Réalisé pour :

Max Perlès et Cie

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60544 Méru Cedex

✓ ***Informations relatives aux échantillons :***

Etude de l'effet barrière d'un revêtement
Date réception : 26/07/2013
Référence client :
Mode de prélèvement : A la responsabilité du demandeur.

Etat : Rien à signaler
Transmis par : F. Tallibert

Echantillons prélevés, identifiés et transmis sous l'entière responsabilité du client.

Etude de l'effet barrière d'un revêtement

✓ ***Méthode(s) d'essai :***

- Des bocaux contenant 800ml de simulant, Ethanol 20% - Acide acétique 3%, et 2 éprouvettes de chaque série, ont été placés dans une enceinte climatique à 40°C pendant 2 mois. Un prélèvement étant effectué tous les 10 jours, il y a eu 6 prélèvements.

Deux séries d'analyses ont été suivies (avec 3 réplicats/série) :

- série 1 : résine époxy contaminée (témoin)
- série 2 : résine époxy contaminée + solution stratifiée OENOPERL P45

- Les échantillons ont été mis dans l'enceinte climatique le 30 août 2013, les dates de prélèvement sont :
09 /09/2013, 19/09/2013, 30/09/2013, 10/10/2013, 21/10/2013, et 31/10/2013.
- Les résultats obtenus ont été comparés avec une « référence », à savoir 800ml de simulant seul et suivant les mêmes conditions de macération.
- La quantification des phthalates sur les migrations a été faite par SBSE/TD-GC/MS.
- Le revêtement initial a été dopé à 10mg/g en DBP et en DiNP.

✓ ***Résultats :***

Seule la réalisation d'essais consécutifs à un plan d'échantillonnage permet d'étendre les propriétés d'un échantillon à un lot.

Plaquettes résine époxy contaminée + solution stratifiée OENOPERL P45

Résultats des différents prélèvements des macérations (en µg/g de revêtement)

		Série 1			Série 2		
		MPS1	MPS2	MPS3	MS1	MS2	MS3
09/09/2013	DBP	407	429	388	Traces	Traces	Traces
19/09/2013	DBP	394	379	348	Traces	Traces	Traces
30/09/2013	DBP	451	417	401	Traces	Traces	Traces
10/10/2013	DBP	386	422	380	Traces	Traces	Traces
21/10/2013	DBP	366	422	380	Traces	Traces	Traces
31/10/2013	DBP	471	459	456	Traces	Traces	Traces

		Série 1			Série 2		
		MPS1	MPS2	MPS3	MS1	MS2	MS3
09/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
19/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
30/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
10/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
21/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
31/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd

Dans le cadre des essais réalisés sur la série 2, les masses de revêtement appliqué par le client ont été sommées aux masses de revêtement époxydique initialement présent sur les éprouvettes

Résultats des différents prélèvements des macérations (en µg/dm² de rêvetement)

		Série 1			Série 2		
		MPS1	MPS2	MPS3	MS1	MS2	MS3
09/09/2013	DBP	1619	1724	1617	Traces	Traces	Traces
19/09/2013	DBP	1570	1523	1449	Traces	Traces	Traces
30/09/2013	DBP	1795	1674	1673	Traces	Traces	Traces
10/10/2013	DBP	1537	1696	1584	Traces	Traces	Traces
21/10/2013	DBP	1456	1696	1584	Traces	Traces	Traces
31/10/2013	DBP	1873	1842	1899	Traces	Traces	Traces

		Série 1			Série 2		
		MPS1	MPS2	MPS3	MS1	MS2	MS3
09/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
19/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
30/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
10/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
21/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd
31/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd

DBP : Dibutyl Phthalate – DiNP : Di-iso-nonylphthalate
nd : non détecté <Limite de Détection – Limite de Détection < Traces < Limite de Quantification
Incertitude de la méthode : 20%

Résultats des différents prélèvements des macérations (en mg/kg de denrée)								LMS indicativo (en mg/kg)
		Série 1			Série 2			
		MPS1	MPS2	MPS3	MS1	MS2	MS3	
09/09/2013	DBP	7,9	8,4	7,9	Traces	Traces	Traces	0,3
19/09/2013	DBP	7,7	7,5	7,1	Traces	Traces	Traces	
30/09/2013	DBP	8,8	8,2	8,2	Traces	Traces	Traces	
10/10/2013	DBP	7,5	8,3	7,8	Traces	Traces	Traces	
21/10/2013	DBP	7,1	8,3	7,8	Traces	Traces	Traces	
31/10/2013	DBP	9,2	9,0	9,3	Traces	Traces	Traces	
		Série 1			Série 2			
		MPS1	MPS2	MPS3	MS1	MS2	MS3	
09/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	9
19/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	
30/09/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	
10/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	
21/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	
31/10/2013	DiNP	Traces	Traces	Traces	nd	nd	nd	

DBP : Dibutyl Phthalate – DiNP : Di-iso-nonylphthalate
Limite de Détection: 0,005mg/kg – Limite de Quantification : 0,010mg/kg
nd : non détecté <Limite de Détection – Limite de Détection < Traces < Limite de Quantification
Incertitude de la méthode : 20%

✓ ***Interprétations et conclusions du laboratoire :***

- Pour la solution « stratifiée », on constate une très faible migration en DBP et ce dans les premiers jours de contact avec le simulant. Les niveaux mesurés restent très faibles et relativement constants au cours du temps.
Le DiNP ne migre que dans de très faibles proportions dans le simulant, car même dans l'essai « témoin », on ne détecte que de faibles traces de DiNP. Dans l'essai « stratifiée » nous n'avons pas détecté de DiNP.

- La solution « stratifiée » propose donc une capacité à bloquer la migration des phthalates.

Fait à Mérignac le 5 décembre 2013

Responsable des essais : A. Plana

ctcpa
centre technique
de la conservation
des produits
agricoles

SYNTHESE BO09A0153 VIN BLANC
Version a

Demandeur : **MAX PERLES &Cie**
Mr Guillaume NOTHEAUX
4, rue du professeur René Dubos
60119 HENONVILLE

Date de réception : 15 avril 2009

Date de début d'analyse : 27 avril 2009

Echantillons : plaques revêtues ***OENOPERL T (lot B9010711/D9010712)***

Analyse demandée : Test d'inertie organoleptique avec du vin blanc

Normes/Documents de référence :
Norme ISO 13302
Norme ISO 4120

Résultats

Les tests ne montrent pas d'impact significatif du revêtement OENOPERL T vis-à-vis des caractéristiques organoleptiques du vin blanc mis en contact.

On peut conclure, avec un degré de certitude de 90%, à une similitude (*) entre le vin blanc témoin et le vin blanc mis en contact avec le revêtement OENOPERL T

(*) en admettant une proportion de différentiateurs réels d'au plus 40%

Bourg en Bresse, le 18 juin 2009

Annie PERRIN
Chef d'Unité Emballage

Rue Henri de Boissieu
F – 01060 Bourg en Bresse Cedex 9
Tél. : 04 74.45.52.35
Fax : 04.74.45.52.36
E-mail : bourg@ctcpa.org

TVA N° FR 42 775 691 744 – SIRET 775 691 744 00053

Siège social : 44, rue d'Alésia – 75682 Paris Cedex 14
Tél. : 01 53 91 44 44
Fax : 01 53 91 44 .00
E-mail : paris@ctcpa.org

Établissement reconnu d'utilité publique
Arrêté ministériel du 11 octobre 1950

ctcpa
centre technique
de la conservation
des produits
agricoles

SYNTHESE BO09A0153 VIN ROUGE
Version a

Demandeur : **MAX PERLES &Cie**
Mr Guillaume NOTHEAUX
4, rue du professeur René Dubos
60119 HENONVILLE

Date de réception : 15 avril 2009

Date de début d'analyse : 27 avril 2009

Echantillons : plaques revêtues ***OENOPERL T (lot B9010711/D9010712)***

Analyse demandée : Test d'inertie organoleptique avec du vin rouge

Normes/Documents de référence :
Norme ISO 13302
Norme ISO 4120

Résultats

Les tests ne montrent pas d'impact significatif du revêtement OENOPERL T vis-à-vis des caractéristiques organoleptiques du vin rouge mis en contact.

On peut conclure, avec un degré de certitude de 90%, à une similitude (*) entre le vin rouge témoin et le vin rouge mis en contact avec le revêtement OENOPERL T

(*) en admettant une proportion de différentiateurs réels d'au plus 40%

Bourg en Bresse, le 18 juin 2009

Annie PERRIN
Chef d'Unité Emballage

Les résultats mentionnés ne sont applicables qu'aux objets soumis à l'essai.

Rue Henri de Boissieu
F – 01060 Bourg en Bresse Cedex 9
Tél. : 04 74.45.52.35
Fax : 04.74.45.52.36
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TVA N° FR 42 775 691 744 – SIRET 775 691 744 00053

Siège social : 44, rue d'Alésia – 75682 Paris Cedex 14
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Établissement reconnu d'utilité publique
Arrêté ministériel du 11 octobre 1950

ACCOMPAGNER
LE MODÈLE AGROALIMENTAIRE
DE DEMAIN

RAPPORT / REPORT

ETUDE DE MIGRATION SPECIFIQUE
SPECIFIC MIGRATION STUDY

Client/ *Customer*

MAX PERLES & CIE
4 rue René Dubos – BP 80439
60119 Hénonville Cedex

A l'attention de / *To*
Devis / *Quotation*
Commande / *Purchase order*

Madame Valérie POTELLE
07D20240257b

Référence de rapport / *Report reference*

B024A1714MSa

CTCPA – Technopole Alimentec – 155, rue Henri de Boissieu
01000 Bourg-en-Bresse
Tél. : 03-74-45-52-35
Email : bourg@ctcpa.org

ACCOMPAGNER
LE MODÈLE AGROALIMENTAIRE
DE DEMAIN

1. Identification des échantillons / *Samples*

Date de réception *Date of receipt*	**Référence client** *Customer Reference*	**Référence Laboratoire** *CTCPA Reference*	**Date de mise en contact** *Start of analysis*
30/04/2024	**Revêtement OENOPERLT**	BO24A1714	17/05/2024

Les échantillons seront conservés 3 mois après la date du présent rapport avant destruction, sauf demande expresse écrite formulée par le demandeur de l'étude et ce, conformément à notre procédure qualité.

According to our quality procedure, samples will be kept in our lab for 3 months from the date of this report before destruction, except express written request from the customer.

2. Conditions prévisibles d'emplois telles que définies par le demandeur / *foreseeable conditions of uses as provided by the custumer*

Nature d'aliment en contact / *expected food in contact :*

Vin et autre liquide alimentaire titrant jusqu'à 20% vol / *Wine and other liquid food titrating up to 20% vol*

Conditions de contact (temps/temperature) / *expected contact conditions (time/ temperature) :*

Conservation à température réfrigérée ou à une température inférieure (contact répété)/ *Storage at refrigerated temperature or below (repeated contact)*

Documents de référence / *references*

-Règlement cadre européen / *Framework European regulation* : 1935/2004/EC

-Règlement / *European Regulation* 1895/2005/EC

-Règlement européen et ses amendements / *European Regulation and its amendments*: 10/2011/EU

-Norme / *Standard procedure* NF EN 13130-1, NF EN 15136; NF EN 15137

Liste des simulants de denrées alimentaires (cf règlement 10/2011/EC) / *List of food simulants (cf regulation 10/2011/EC)*

-Simulant A : éthanol 10% (v/v) / *10% ethanol (v/v)*

-Simulant B : acide acétique 3% (m/v) / *3% acetic acid (w/v)*

-Simulant C : éthanol 20% (v/v) / *20% ethanol (v/v)*

-Simulant D1 : éthanol 50% (v/v) / *50% ethanol (v/v)*

-Simulant D2 : Huile végétale / *Vegetable Oil*

-Simulant E : Oxyde de poly(2,6-diphényl-p-phénylène) / *poly (2,6-diphenyl-p-phenylene oxide)*

-Simulant de substitution à l'huile végétale / *Substitute for vegetable oil* :

Isooctane et éthanol 95% (v/v) / *Isooctan and 95% ethanol (v/v)*

3. Résultats / *overview of obtained results*

3.1. Etude de la conformité / *Foreword and used data to assess the compliance with corresponding regulatory limits*

Notes / ***Notes*** **:**

[1)] le respect des limites, présenté dans les tableaux ci-dessous, a été établi par Analyse (A)

[1)] Compliances with corresponding limits in tables presented hereafter limits were established by Analysis (A),

- Conditions de contact lors des tests de migration

Méthode par immersion / immersion method : 1.20dm^2 en contact avec / *in contact with* 100ml

[(2)] Les résultats sont exprimés en mg/kg considérant un ratio surface volume de 6 dm^2/ kg, conformément aux exigences de l'article 17 du règlement 10/2011/EC

[(2)] Migration results were calculated as mg/kg taking into account a surface ratio of 6 dm^2/ kg, in accordance with requirements of regulation 10/2011/EC, article 17

Le tableau suivant liste les conditions d'essais pour chaque composé soumis à LMS évalué via approche analytique

The following table sum up applied testing conditions for each tested chemical.

3.2. Résultats / *Results*

Liste des substances soumises à restrictions et évaluation du respect des limites de migrations spécifiques associées.

Specify below the substance(s) subject to restriction and related compliance with migration limits.

Nom / *Names*	**Identification /** *Identification* **(CAS Number / Ref.FCM)**	**Limites (LMS) /** *Limits (SML)* **(mg/kg)**	**Conditions de test /** *testing conditions*	**Méthode analytique /***Analytical method*	**A**[1)2)3)] (mg/kg)
2,2-bis(4-hydroxyphényl) propane (Bisphénol A)	**CAS 80-05-7 / FCM 151**	**0.05**	Simulant B, (contact répété) 3x10 jours 40°C / *10 days 40°C*	**LC/FLD**	(i) **0.008** (ii) **0.006** (iii) **0.006**
			Simulant C, (contact répété) 3x 10 jours 40°C / *10 days 40°C*		(i) **<0.003*** (ii) **<0.003*** (iii) **<0.003***
BADGE,$2H_2O$ $_{(total)}$= somme (BADGE + BADGE.H2O + BADGE.2H2O) après hydrolyse totale / *after total hydrolysis*	**/**	**9**	Simulant B, (contact répété) 3x 10 jours 40°C / *10 days 40°C*	**LC/FLD**	(i) **2.63** (ii) **1.66** (iii) **1.35**
			Simulant C, (contact répété) 3x 10 jours 40°C / *10 days 40°C*		(i) **1.12** (ii) **0.27** (iii) **0.15**
Chlorohydrines de BADGE = somme (BADGE.HCl + BADGE.2HCl + BADGE.H2O.HCl)	**/**	**1**	Simulant B, (contact répété) 3x 10 jours 40°C / *10 days 40°C*	**LC/FLD**	(i) **<0.01*** (ii) **<0.01*** (iii) **<0.01***
			Simulant C, (contact répété) 3x, 10 jours 40°C / *10 days 40°C*		(i) **<0.01*** (ii) **<0.01*** (iii) **<0.01***
Epichlorydrine	**CAS 106-89-8 / FCM 219**	**<0.01**	Simulant C, (contact répété) 3x, 10 jours 40°C / *10 days 40°C*	**GC/MS**	(i) **<0.005*** (ii) **<0.005*** (iii) **<0.005***

Nom / *Names*	**Identification /** *Identification* **(CAS Number / Ref.FCM)**	**Restriction maximale dans le matériau /** *Restriction in the material (SML)*	**Conditions de test /** *testing conditions*	**Méthode analytique /***Analytical method*	**A**[1)2)] (mg/kg)
NOGE dans les extraits acétonitrile	**/**	**Absence**	Acétonitrile 24h23°C extraction du matériau / *extraction of the material*	**LC/FLD**	**<0.01*** **<0.01***
BFDGE,$2H_2O$ $_{(Total)}$= somme (BFDGE + BFDGE.H2O + BFDGE, 2H2O + BFDGE.HCl + BFDGE.2HCl + BFDGE.H2O.HCl) après hydrolyse totale / *after total hydrolysis*	**/**	**Absence**		**LC/FLD**	**<0.01*** **<0.01***

*Limite de quantification (LQ) / *Limit of quantification (LOQ)*

[3)] Dans le cadre d'un contact répété les valeurs renseignées dans le tableau correspondent aux valeurs moyennes de trois essais de migration pour respectivement (i) le premier contact, (ii) le deuxième contact, (iii) le troisième contact. *In the case of repeated contact, values presented in the table correspond to average values of three migration tests for respectively (i) the first contact, (ii) the second contact, (iii) the third contact.*

Conformément au point 2.1.6, chapitre 2, règlement 10/2011/EU, Lorsqu'un matériau ou objet est destiné à entrer en contact répété avec des denrées alimentaires, l'essai (les essais) de migration doit (doivent) être effectué(s) trois fois sur un échantillon unique, en utilisant chaque fois une autre portion de simulant. La conformité est contrôlée sur la base du niveau de migration constaté lors du troisième essai.

Referring to point 2.1.6, chapter 2, regulation 10/2011/EU, if the material or article is intended to come into repeated contact with foods, the migration test(s) shall be carried out three times on a single sample using another portion of food simulant on each occasion. Its compliance shall be checked on the basis of the level of the migration found in the third test.

4. Conclusion / *Conclusion*

Dans nos conditions d'essais, définies par les normes citées dans le présent rapport :

- la migration spécifique du Bisphénol A est inférieure à la limite de migration spécifique associée.
- la migration spécifique du BADGE, 2H2O est inférieure à la limite de migration spécifique associée.
- la migration spécifique de l'épichlorydrine est inférieure à la limite de migration spécifique associée.
- la teneur en NOGE est inférieure à la limite réglementaire.

In our test conditions, defined by regulations listed in this report:

-Specific migration of Bisphenol A is less than the specific migration limit
-Specific migration of BADGE, 2H2O is less than the specific migration limit
-Specific migration of epichlorydrin is less than the specific migration limit
-Specific migration of NOGE is less than the specific migration limit

Nous restons à votre disposition pour tout complément d'information.
Do not hesitate to contact us for further information.

Bourg-en-Bresse, le 23/07/2024
Bourg-en-Bresse, July 23, 2024

Frederic JOLY
Project Manager Assistant Analytical Development

Florian Catinot
Chemistry's Laboratory Production Manager

Les résultats mentionnés ne sont applicables qu'aux échantillons, aux produits ou aux matériels soumis au laboratoire du CTCPA et tels qu'ils sont définis dans le présent document

The mentioned results are applicable only to samples, products or materials submitted to our laboratory as such as they are described within this document

ACCOMPAGNER
LE MODÈLE AGROALIMENTAIRE
DE DEMAIN

RAPPORT / *REPORT*
B024A1714MG version a

Migration Globale / *Overall Migration* (◙)

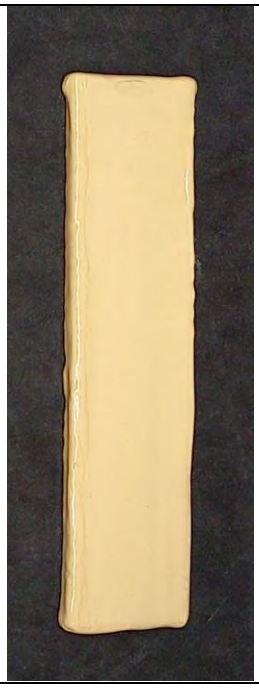
OENOPERLT

Devis / *Quotation* **CTCPA** 07D20240257b

Client / *Company* **:** MAX PERLES & CIE
4 rue René Dubos – BP 80439
60119 Hénonville Cedex

A l'attention de / *To* Valérie POTELLE
Tel : 03.44.48.41.01
E-mail : valeriepotelle@maxperles.com ; FM@maxperles.com

1. IDENTIFICATION DES ECHANTILLON / *SAMPLES*

Référence Laboratoire *Laboratory reference*	**Référence client** *Customer Reference*		**Date de réception** *Date of samples reception*
BO24A1714	**OENOPERLT**		30/04/2024

Date de début d'analyse / *Start of the analysis*: 14/05/2024

Le laboratoire décline toute responsabilité quant à la véracité de toute information fournie par le client (référence de l'objet soumis à analyse, conditions prévisibles d'emplois, etc..), et en aucun cas il ne pourra être tenu responsable en cas de litige en lien avec lesdites informations fournies.

The laboratory disclaims any liability on veracity of any information provided by the customer (reference of article submitted to analysis, foreseeable conditions of uses, and so on ...). In any circumstances, the laboratory can not be hold liable in case of any dispute related to those provided information.

2. DOCUMENTS DE REFERENCE / *REFERENCES*

- Norme / *Standard procedure* NF EN 1186, parties / *parts :* 1, 3
- Règlement cadre européen / *Framework European regulation* : 1935/2004/EC
- Règlement européen et ses amendements / *European Regulation and its amendments*: 10/2011/EU

3. MÉTHODOLOGIE / *METHODOLOGY*

Migration dans les simulants évaporables / *Migration in evaporables simulants*

Des éprouvettes sont mises en contact avec le simulant évaporable. A la fin de cette période de contact, le simulant est recueilli. La migration globale des substances non volatiles de l'échantillon est déterminée par la mesure de la masse de résidu non volatil après évaporation du simulant.

Pour un contact répété, les essais de migration sont effectués trois fois sur le même échantillon.

Samples are brought into contact with the evaporable simulant. At the end of this contact period, the simulant is collected. The overall migration of the nonvolatile substances in the sample is determined by the determination of the mass of nonvolatile residue after evaporation of the simulant.

For repeated contact, the migration tests are carried out three times on the same sample.

4. CONDITIONS D'ESSAI / *TEST CONDITIONS*

Produits avec lequel l'emballage est en contact *Expected Food product in contact*	**Type de simulant** *Type of simulant*			**Type de contact** *Method*	**Temps de contact et température des essais** *Temperature and contact time*
	Ethanol *Alcohol*	Acide *Acid*	Gras *Fat*		
Vin et autre liquide alimentaire titrant jusqu'à 20% vol. *(Conservation à température ambiante ou à une température inférieure)* *(contact répété)* *Wine and other liquid food titrating up to 20% vol (Storage at room temperature or below)* *(repeated contact)*	X Ethanol 20%	X	/	Immersion/ *Immersion*	3 x 10 jours à 40°C / *3 x 10 days at 40°C*

Alcool : alcool éthylique en solution aqueuse (v/v) / *Alcohol: Aqueous solution of ethanol*
Acide : acide acétique 3% en solution aqueuse (p/v) / *Acid : Aqueous solution of acetic acid 3%*
Gras : huile végétale / *Fat : vegetable oil*

5. RESULTATS / *RESULTS*

Référence *Reference*	**Simulant** *Media in contact*	**Observations des éprouvettes** *General aspect of the tested material*	**Observations du liquide simulateur** *General aspect of the simulant in contact*	**Valeurs Individuelles** *Individual value* **(mg/dm²) (1)**	**Valeur moyenne** *Average value* **(mg/dm²)**
OENOPERLT	Ethanol / *Ethanol 20%*	Aucune modification apparente *No visible modification*	Limpide *No colour modification*	1er contact : *3.7* *4.0* *3.8* 2ème contact : *1.4* *1.5* *1.9* 3ème contact : *1.3* *1.1* *1.4*	**1er contact : 3.8** **2ème contact : 1.6** **3ème contact : 1.3**
	Acide acétique 3% *Acid 3%*	Aucune modification apparente *No visible modification*	Limpide *No colour modification*	1er contact : *11.5* *10.6* *12.4* 2ème contact : *5.5* *4.6* *4.3* 3ème contact : *3.8* *4.1* *4.3*	**1er contact : 11.5** **2ème contact : 4.8** **3ème contact : 4.1**

(1) *Volume de simulant / Volume of simulant in contact = 100 ml, surface de contact estimée / surface of tested material = 1.2 dm²*

Rappel des limites maximales autorisées (règlement UE 10/2011 et norme NF1186-1#):*
Reminder of the maximum permissible limits (european regulation 10/2011 and standard NF1186-1#):*

Pour les simulants évaporables:	*For evaporable simulant:*
10 mg/dm² avec un écart analytique de 2 mg/dm²	*10 mg/dm² with an analytical tolerance of 2 mg/dm²*
60 mg/kg avec un écart analytique de 12 mg/kg	*60 mg/kg with an analytical tolerance of 12 mg/kg*
Pour les simulants gras :	*For fatty simulant:*
10 mg/dm² avec un écart analytique de 3 mg/dm²	*10 mg/dm² with an analytical tolerance of 3 mg/dm²*
60 mg/kg avec un écart analytique de 20 mg/kg	*60 mg/kg with an analytical tolerance of 20 mg/kg*

(*) Le Laboratoire s'appuie sur les limites maximales autorisées indiquées dans la législation en vigueur pour donner un avis sur les résultats obtenus sur les échantillons soumis à analyse. Les incertitudes de mesure du Laboratoire (associées au résultat) ne sont pas prises en compte pour conclure sur le respect des limites règlementaires.
(*) The Laboratory relies on the maximum permissible limits indicated in the legislation in force to give an opinion on the results obtained on the samples submitted for analysis. The Laboratory's measurement uncertainties (associated with the result) are not taken into account to conclude on compliance with regulatory limits.
(#) Le Laboratoire s'appuie sur le chapitre 3.3.2 de l'annexe V du règlement européen 10/20211/EU et ses amendements pour contrôler la conformité à la limite de migration globale.
(#) The Laboratory relies on chapter 3.3.2 of appendix V of European regulation 10/20211 / EU and its amendments to verified compliance with the overall migration limit.

6. AVIS SUR LE RESPECT DES LIMITES REGLEMENTAIRES / *NOTICE OF COMPLIANCE WITH REGULATORY LIMITS*

Dans les conditions d'essai, pour les échantillons soumis à analyse, les valeurs de migration globale dans le simulant aqueux acide◙, alcoolisé◙ (jusqu'à 20%), (simulants B et C du règlement UE 10/2011), sont inférieures à la limite fixée par la législation en vigueur, compte tenu de l'écart analytique toléré.
Considering above presented results, for the tested material, overall migration values measured into acid simulant◙, into aqueous alcohol simulant◙ (up to 20%), (B and C simulants of Regulation UE 10/2011) are lower than the limit specified by regulation in force considering the analytical tolerance.

Remarque : le matériau doit être conforme aux exigences de composition définies dans le règlement UE 10/2011 et ses amendements.
NB: The material must be in accordance with the composition requirements defined by the European regulations UE 10/2011 and its amendments in force at the date of this report

Bourg en Bresse, le 24 juin 2024.

Florian CATINOT
Responsable Production Laboratoire Chimie / Chemistry's Laboratory Production Manager

Les résultats mentionnés ne sont applicables qu'aux échantillons soumis au CTCPA et tels qu'ils sont définis dans ce document
The results mentioned are applicable only to the samples submitted to the CTCPA and such as they are defined in this document

"Seules certaines prestations rapportées dans ce document sont couvertes par l'accréditation. Elles sont identifiées par le symbole ◙"
"Only certain benefits reported in this document are covered by the certification. They are identified by the symbol ◙"

FIN DU RAPPORT / *END OF REPORT*

RAPPORT D'ESSAIS / *REPORT*
BO21A0098MGa

Système stratifié Oenoperl S avec tissu de verre P45 et finition AR100/CLX/ ***Laminate system Oenoperl S with P45 glass fabric and AR100/CLX finish***

Migration Globale / *Overall Migration* (◙)

CLIENT / *COMPANY* **:**

Société MAX PERLES
4 rue du professeur dubos
60119 Hénonville

A l'attention de / *To*
Valérie LÉCRIVAIN-POTELLE

1. Identification des échantillons / *Samples*

Référence Laboratoire *CTCPA Reference*	**Référence client** *Customer Reference*	**Date de réception** *Date of samples reception*
BO21A0098	**Système stratifié Oenoperl S avec tissu de verre P45 et finition AR100/CLX/** ***Laminate system Oenoperl S with P45 glass fabric and AR100 / CLX finish*** 	06/01/2021

Date de début d'analyse / *Beginning of analysis*: 07/01/2021

2. Documents de référence / *References*

- Norme / *Standard procedure* NF EN 1186, parties / *parts :* 1, 3
- Règlement cadre européen / *Framework European regulation* : 1935/2004/EC
- Règlement européen et ses amendements / *European Regulation and its amendments*: 10/2011/EU

3. Méthodologie / *Methodology*

Migration dans les simulants évaporables / *Migration in evaporable simulants*

Des éprouvettes sont mises en contact avec le simulant évaporable. A la fin de cette période de contact, le simulant est recueilli. La migration globale des substances non volatiles de l'échantillon est déterminée par la mesure de la masse de résidu non volatil après évaporation du simulant.

Samples are brought into contact with the evaporable simulant. At the end of this contact period, the simulant is collected. The overall migration of the nonvolatile substances in the sample is determined by the determination of the mass of nonvolatile residue after evaporation of the simulant.

4. Conditions d'essai / *Test conditions*

Produits avec lequel l'emballage est en contact *Expected Food product in contact*	**Type de simulant** *Type of simulant*			**Type de contact** *Method*	**Temps de contact et température des essais** *Temperature and contact time*
	Ethanol *Alcohol*	Acide *Acid*	Gras *Fat*		
Produit alcoolisé *(Conservation à température ambiante)* *Alcoholic products (Storage at room temperature)*	X Ethanol 50%	/	/	Méthode par Immersion *Method used : by immersion*	10 jours à 40°C / *10 days at 40°C*

Alcool : alcool éthylique en solution aqueuse (v/v) / *Alcohol: Aqueous solution of ethanol*
Acide : acide acétique 3% en solution aqueuse (p/v) / *Acid : Aqueous solution of acetic acid 3%*
Gras : huile d'olive / *Fat : oil*

5. Résultats / *Results*

Référence *Reference*	**Simulant** *Media in contact*	**Observations des éprouvettes** *General aspect of the tested material*	**Observations du liquide simulateur** *General aspect of the simulant in contact*	**Valeurs Individuelles** *Individual value* **(mg/dm²)** (1)	**Valeur moyenne** *Average value* **(mg/dm²)**
Système stratifié Oenoperl S avec tissu de verre P45 et finition AR100/CLX/ ***Laminate system Oenoperl S with P45 glass fabric and AR100 / CLX finish***	Ethanol *Ethanol* 50%	Aucune modification apparente *No visible modification*	Limpide *No colour modification*	*1.0* *1.2* *1.2*	**1.1** ◙

(1) Volume de simulant / Volume of simulant in contact = 100 ml, surface de contact estimée / surface of tested material = 1.14 dm²

Rappel des limites maximales autorisées (règlement UE 10/2011 et norme NF1186-1):*
Reminder of the maximum permissible limits (european regulation 10/2011 and standard NF1186-1):*

Pour les simulants évaporables:	*For evaporable simulant:*
10 mg/dm² avec un écart analytique de 2 mg/dm²	*10 mg/dm² with an analytical tolerance of 2 mg/dm²*
60 mg/kg avec un écart analytique de 12 mg/kg	*60 mg/kg with an analytical tolerance of 12 mg/kg*
Pour les simulants gras :	*For fat simulant:*
10 mg/dm² avec un écart analytique de 3 mg/dm²	*10 mg/dm² with an analytical tolerance of 3 mg/dm²*
60 mg/kg avec un écart analytique de 20 mg/kg	*60 mg/kg with an analytical tolerance of 20 mg/kg*

(*) Le Laboratoire s'appuie sur les limites maximales autorisées indiquées dans la législation en vigueur pour donner un avis sur les résultats obtenus sur les échantillons soumis à analyse. Les incertitudes de mesure du Laboratoire (associées au résultat) ne sont pas prises en compte pour conclure sur le respect des limites règlementaires.
(*) The Laboratory relies on the maximum permissible limits indicated in the legislation in force to give an opinion on the results obtained on the samples submitted for analysis. The Laboratory's measurement uncertainties (associated with the result) are not taken into account to conclude on compliance with regulatory limits.

6. Avis sur le respect des limites règlementaires / *Notice of compliance with regulatory limits*

Dans les conditions d'essai, pour les échantillons soumis à analyse, les valeurs de migration globale dans le simulant aqueux alcoolisé◙ (jusqu'à 50%) sont inférieures à la limite fixée par la législation en vigueur.
Considering results presented above, for the tested material, the values of overall migration in the aqueous alcohol simulant◙ (up to 50%) are lower than the limit specified by the current regulation.

Remarque : le matériau doit être conforme aux exigences de composition définies dans le règlement UE 10/2011 et ses amendements.
NB: The material must be in accordance with the composition requirements defined by the European regulations UE 10/2011 and its amendments.

Bourg en Bresse, le 15 Février 2021

A.PERRIN
Responsable Unité Physico-Chimie Emballages / *Head of the packaging Unit*

Les résultats mentionnés ne sont applicables qu'aux échantillons soumis au CTCPA et tels qu'ils sont définis dans ce document
The results mentioned are applicable only to the samples submitted to the CTCPA and such as they are defined in this document

"Seules certaines prestations rapportées dans ce document sont couvertes par l'accréditation. Elles sont identifiées par le symbole ◙"
"Only certain benefits reported in this document are covered by the certification. They are identified by the symbol ◙"

FIN DU RAPPORT / *END OF REPORT*

REPORT BO20A4121 VERSION A

QUOTATION N° 07D20200218 VERSION A

SPECIFIC MIGRATION STUDY

BISPHENOL A

ON COATING AR100.CLX

COMPANY : **Société MAX PERLES**

4 rue du Professeur DUBOS

60 119 Henonville

Tél : 03.44.49.40.79

To François Taillibert

CTCPA **–Technopole Alimentec – rue Henri de Boissieu – 01000 BOURG EN BRESSE**
Tél +33 (0)4.74.45.52.35 – Fax+33 (0)4.74.45.52.36
N° Siret 775 691 744 00111 – TVA n° FR 42 775 691 744
Siège social : CTCPA – 44 rue d'Alésia – 75682 PARIS CEDEX 14

www.ctcpa.org

1. SAMPLE

Date of sample reception : 06/11/2020

Company reference	CTCPA Reference	Simulant	Analysis
CoatingAR100 .CLX	BO20A4121 – EtOH1	Ethanol 95% (v/v)	Bisphénol A
	BO20A4121 – EtOH2		

Table 1

Start of analysis: 10/11/2020

According to our quality procedure, samples will be kept in our lab for 3 months from the date of this report before destruction, except express written request from the customer.

2. REFERENCES

- European Regulation No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food and its amendments

- Standard procedure NF EN 13130-1

3. METHODOLOGY

Migration in Aqueous or Substitute Simulants

Specimens are brought into contact with the simulant. At the end of this contact period, the simulant is collected. The specific migration of the substances subjected to LMS of the sample is determined by chemical analysis.

4. TEST CONDITION

	Expected Food product in contact	Simulant	Method	Surface in contact / Volume of simulant	Temperature and contact time
Coating AR100.CLX	Mouth alcohol up to 96%	Ethanol 95%	By immersion	1.17 dm² / 100 ml	10 days at 60°C

Table 2

5. RESULTS

5.1. Specific migration of BISPHENOL A (BPA)

REFERENCE	Simulant	Method	Concentration of BPA* (CAS Number : 80-05-7) (mg/kg)	LOD (mg/L)	LOQ (mg/kg)	SML (mg/kg)	Compliance with regulatory limits
BO20A4121– EtOH1	Ethanol 95% (v/v)	LC/MS²	**0.037**	*0.005*	0.003	**0.05**	**YES**
BO20A4121– EtOH2			**0.033**				**YES**

Table 3

*) *Values calculated as mg/kg taking into account a surface ratio of 6 dm²/ kg, in accordance with requirements of regulation 10/2011/EC, article 17*

6. OPINION AND INTERPRETATION

The analyses were conducted in accordance with your request, and carried out in connection with the test conditions (simulant/time/temperature) defined by both Regulation 10/2011/EC and the contact requirement standard (13130)

For the expression of the results, in accordance with Regulation 10/2011/EC, art 17, not being able to anticipate the ratio of material surface to food volume on contact, we expressed the results for a ratio of 6 dm²/l (or kg).

For the dosage of BPA it should be noted that the French law on the prohibition of the manufacture of BPA-based materials does not apply to industrial equipment and equipment (see DGCCRF site).

Accordingly, we are referred to the last amendment of Regulation 10/2011/EC relating to the defiance of an SML for BPA in plastics, varnishes and coatings, and the obligation to express the results for a volume surface ratio of 6 dm² / kg of food (see art 17 Regulation 10/2011/EC).

Note:

During the 95% ethanol migration tests, we found at the end of the tests a section of the coating of the glass support part. As a result, it cannot be ruled out that the surface in contact during the tests may have been larger than that taken into account in the calculation theory (the exact surface of a coated spell).

As a result the values obtained above can be considered potentially excess values. As the latter are below the limit value of Regulation 10/2011/EU, we have not questioned the trials.

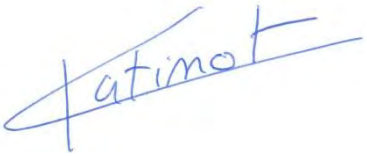
Also, considering all of the above elements, **the specific migration of Bisphenol A is below the regulatory specific migration limit (0.05 mg/kg of food)**.

We remain available for any further information you may need.

Bourg en Bresse, the 30th November 2020

Florian Catinot

Laboratory Project Manager Assistant



Philippe Saillard

Packaging safety and quality manager

The mentioned results are applicable only to samples, products or materials submitted to our laboratory as such as they are described within this document.

Appendix 2
Product data sheets

PRIMER EDO
AQUAPRIM

RENDER AR100

OENOPERL
AR100/CLX

FIBERGLASS FABRIC T45

Max Perlès
advanced industrial coatings

data sheet
January 2026

Primer
EDO
waterborne epoxy

scope:
concrete preparation

CHARACTERISTICS

Description / purpose

Where: On concrete or under our epoxy systems.

What: Improving adhesion and wetting ability for our epoxy systems.

Reducing or even stopping of water infiltrations before coating.

Primer EDO is a component of two systems that carry a **CE Marking** and are adapted for the following protection situations : principle 1 , method 1.3 ; principle 2 , method 2.2 and principle 8 , method 8.2 of Norm NF EN 1504-2.

Colour / finish

Clear / satin.

Packaging

In 2 separate cans, pre-adjusted for 8 kg.

Proportions, *by weight*: base 385 / hardener 615.

Storage conditions

- 18 months max, in the original cans, never opened,
- Under shelter,
- At temperatures of between 1°C/34°F and 35°C/95°F [1].

V.O.C. content

0 g/l according to ISO 11890-1 (statistic average).

Composition

Resin:	epoxide	Pigments:	none
Hardener:	polyamide	Vehicle:	water

Specific gravity (mix) at 20°C/68°F

1.20 ± 0.05 g/ml as per ISO 2811

Solids content (mix)

By weight : 47 % ± 2 as per ISO 3251

By volumer : 36 % per calculation

Viscosity (mix) at 20°C/68°F

Fluid.

[1] *which might increase or decrease by 10°C/50°F, once only, during a 5 days max transport time to destination.*

IMPLEMENTATION

For all use:
refer to relevant material safety data sheets indicating risk sentences and safety recommendations

Surface preparation

Concrete free from oil, laitance and dust.

Possible application on damp but non sweating surface.

Instructions for use

- *Air temperature for application:*
  Substrate: 3°C/37°F above dewpoint, *with* 5°C/41°F at least ♦ 45°C/113°F at most.
  Product: 5°C/41°F mini ♦ 35°C/95°F maxi.
- *Reducing viscosity when temp.°<15°C/60°F:* add 10% water to the hardener *prior to mixing with the base.*
- *Mix:* Pour *the base into hardener* while carefully stirring mechanically until a perfectly homogeneous mixture is obtained.
- *Maturing*: none.
- *Potlife mixture* at 20°C/68°F: 2 hours [2]
- *Application*: roller or brush, exclusively.

[2] *The limit shows when a separation of phases becomes visible on the surface, producing a "turned" mix effect.*

Consumption / thickness

- 250 g/sqm in a single coat. EDO being an impregnation material, no specific thickness is required.
- 2, even 3 coats should be applied when lasting dampness on the substrate or in case of infiltration risks.

Curing at 10°C/50°F – 30°C/86°F

- Dust free: ..... 6 and 3 hours
- Recoatable: ..... mini: 6 and 3 hours ♦ maxi : none

Make sure of absence of humidity before recoating.

Precautions and safety

Waterborne product. Flash point (cc) : >100°C/212°F

Cleaning of application equipment

- Immediately after use : water
- Afterwards and up to 3 hours standby :

Flammable ED Thinner – Flash point (cc) : 25°C/77°F.

ISO 9001 and ISO 19443 certified
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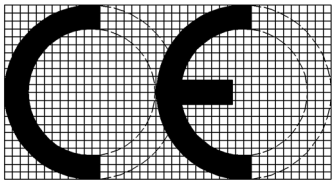
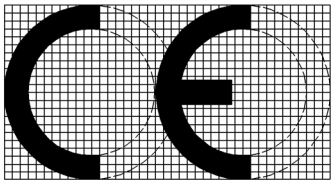

Primaire EDO – Aquaperl T Max Perlès – 4 rue du professeur Dubos – BP 80439 – 60119 Hénonville
16
1164-CPR-PPR008 EN 1504-2 : 2005 DOP : 16.08.001
Produits de protection de surface Revêtement
Perméabilité au CO_2 : NF EN 1062-6 : S_D > 50 m
Perméabilité à la vapeur d'eau : NF EN ISO 7783-2 : Classe II
Absorption capillaire et perméabilité à l'eau : NF EN 1062-3 : W < 0,1 kg/ (m^2 x $h^{0,5}$)
Adhérence NF EN 1542 Pour système rigide avec trafic ≥ 2,0 MPa


Primaire EDO – Bioperl T Max Perlès – 4 rue du professeur Dubos – BP 80439 – 60119 Hénonville
17
1164-CPR-PPR008 EN 1504-2 : 2005 DOP : 17.12.001
Produits de protection de surface Revêtement
Perméabilité au CO_2 : NF EN 1062-6 : S_D > 50 m
Perméabilité à la vapeur d'eau : NF EN ISO 7783-2 : Classe II
Absorption capillaire et perméabilité à l'eau : NF EN 1062-3 : W < 0,1 kg / (m^2 x $h^{0,5}$)
Adhérence NF EN 1542 Pour système rigide avec trafic ≥ 2,0 MPa

Max Perlès
advanced industrial coatings

data sheet
January 2026

Primer

AQUAPRIM

Epoxy

scope:
reinforced surface preparation

PRESENTATION AND CHARACTERISTICS

Description / purpose

Where: on concrete or metal substrates, under our epoxy systems for potable water, inside reservoirs, tanks, water towers and piping.

For: proper adhesion of our epoxy systems, blocking of water infiltrations through concrete substrates, temporary protection of metal substrates.

Performances and advantages

Covered by a Sanitary Compliance Certificate ("A.C.S.").
Provides adherence on a humid surface (CSTB test certificate-DSR-SIST-21-06081),resists blistering when under capillary and osmotic pressure (CSTB test certificate-DSR-SIST-21-06081) and is impermeable to water vapor (CEBTP test certificate BEB6.M.3029).
Contains no aromatic amine or phthalate .

Colour : colourless

Packaging

In 2 separate cans, pre-adjusted for 8 kg.
Proportions, *by weight*: base 69 / hardener 31.

Storage conditions

- 12 months max, in the original cans, never opened,
- Under shelter,
- At temperatures of between 5°C and 35°C.

which might increase or decrease by 10°C, once only, during a 5 days max transport time to destination.

V.O.C. content

3 g/l at most, as per ISO 11890-1 (P1-M2).

Composition

Resin:epoxide
Pigments:none
Hardener:non-aromatic polyamine

Specific gravity (mix) at 20°C

1.15 ± 0.05 g/ml as per ISO 2811

Solids content (mix)

By weight : 96 to 100 % as per ISO 3251, 6h after mixing
By volume : 100 % per calculation

Initial viscosity (mix) at 20°C

2,000 mPa.s + or – 500
20 poises + or – 50

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IMPLEMENTATION

For all use:
refer to relevant material safety data sheets indicating risk sentences and safety recommendations

Surface preparation

Concrete must be free from oil, laitance and dust.
Steel must be sand or grit-blasted to Sa 2.5 minimum or equivalent , Medium G or Rt 50-75µ roughness, after rounding of sharp edges.

Product preparation

24 hours minimum before use, place the cans in a storage area at 10°C minimum, 30°C maximum.

Instructions for use

Ambiant temperature: 5°C to 35°C
Relative humidity: below 85%
Substrate temperature: 5°C to 35°C and 3°C above dewpoint,
Product temperature: 10°C to 30°C.

Mixing: first re-homogenize the base using a mechanical mixer, then pour ***the hardener into the base*** while carefully stirring mechanically until a perfectly homogeneous mixture is obtained.
Never use partial mixtures.
No maturing before use.
Never dilute, whether before or after mixing.

Potlife of mixture: 2 hours at 10°C, 40 minutes at 20°C, 30 minutes at 30°C.

Application: roller or brush

Consumption / thickness

300 g/sqm on concrete.
In case of excessive porosity of the concrete substrate, a second coat may be applied 15 hours after the first with sprinkling of SBO Silica sand on this second coat.

80 g/sqm + or – 15 g/sqm on steel.

Curing at 20°C/30°C:

- Dust free: 6 hours/
- Over-coatable: 6 hours/ 2 hours minimum, 5 days/ 2 days maximum.

Precautions and safety

Flash point: >100°C

Cleaning of application equipment

ED Thinner: flash point: 25°C

Replaces and cancels any former issue.
The above mentioned information is given with objectiveness but cannot involve our company beyond our manufacturer's responsibility.

Max Perlès
advanced industrial coatings

data sheet
January 2026

Render
AR100
epoxy

scope:
concrete and steel surface preparation

OVERVIEW

Purpose

Where: Under our epoxy coating systems or under other chemically-compatible coatings.

What: Surfacing, rendering, filling cavities and joints, creating chamfers.

Which: Steel or concrete structures.

Description

Product : epoxy.

Use : Light or heavy local or complete rendering and filling, creation of chamfers in angles. Thicknesses up to 30mm. Vertical or horizontal.

Properties and benefits

Mechanical properties :

Exceptional adhesion and sticking properties, with very high mechanical cohesion.

Usage properties :

RENDER AR100 is easy to use and multi-purpose.
It requires neither sanding nor grinding.

Compliance with safety and regulatory requirements:

RENDER AR100 is ***very low COV content*** *as per European Parliament and Council Directive 2004/42/CE* - Flash point (cc): > 100°C/212°F for optimal safety and minimized application constraints.
It is ***aromatic amines and phtalates free*** for compliance with current regulations.

CHARACTERISTICS

Packaging

- In 2 separate cans, pre-adjusted for 4 or 12 kg.
- Proportion *by weight:* base 85 / hardener 15

Storage conditions

- 18 months max, in the original cans, never opened,
- Under shelter,
- At temperatures of between 5°C/32°F and 35°C/95°F[(1)],

[(1)] *which might increase or decrease by 10°C/50°F, once only during a 5 days max transport time to destination.*

Colours

Yellow ochre, approaching RAL 8001.

Finish

Semi-mat.

V.O.C. content

17.7 g/l, according to ISO 11890-1 (statistic average).

Composition

Resin	:	epoxide
Hardener	:	non aromatic polyamine
Pigments	:	synthetic oxides
Filler	:	silicates/silica

Specific gravity (mix) at 20°C/68°F

1.90 ± 0,05 g/ml as per ISO 2811

Solids content (mix)

By weight	:	96–100% after 6 hrs maturation - ISO 3251
By volume	:	100% per calculation

Viscosity (mix) at 20°C/68°F

Pasty.

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APPLICATION

Conforming and controlled conditions during application and hardening periods are necessary to obtain required quality

For all uses :
Refer to relevant material safety data sheets as to risk sentences and safety recommendations

♦ Before:

Surface preparation

Concrete impregnated with PRIMER EDO, AQUAPRIM or SCREENPERL® :
Refer to relevant data sheets and *Technical Advice nr 1* : « Specification for preparation of concrete ».

Steel : after smoothing of sharp edges, abrasive blasted surfaces to Sa 2,5 minimum. Average profile :

- In case of application of ED1 VARNISH, AQUAPRIM or SCREENPERL® primers (see data sheets) :

Medium G or Rt 50-75µ.

- In case of direct application : Rough G or Rt 100µ.

Always apply on clean and dry substrates

Products preparation

24 hours minimum before application, place the cans in a temperate area at 10°C/50°F min and 30°C/86°F max.

Application temperatures

Ambient temperature: 5°C to 35°C
Relative humidity: below 85%
Substrate temperature: 5°C to 35°C and 3°C minimum above dewpoint,
Product:
While mixing: 10°C /50°F mini ♦ 30°C/86°C maxi
Use : at mixing temperature

Mixing

- *Never make up partial mixtures*, in order to avoid the risks of incorrect proportions.
- Stir the base with a power mixer to an even consistency. Then add hardener and continue stirring until a perfectly homogeneous mixture is obtained.

Conditions for use

- No maturing before use.
- Start the application immediately after mixing.
- RENDER AR100 *should never be diluted.*

Application conditions

- Manual : Palette knife, spatula or trowel.
- Mechanically : Pump for paste-like product, or pneumatic double cartridge caulking gun with a static mixer

♦ During:

Potlife of mixture

10°C/50°F	20°C/68°F	30°C/86°F
4 h 00	2 h 00	1 h 00

Consumption / thickness per mm

1,9 kg/sqm.
This theoretical value should be increared by *10±5%* for practical consumption,, according to the nature of the substrate and the application.

Note:
Consumption will increase when surface temperature is < 20°C, making the product viscous.

Overcoating

No minimum or maximum delay after application and no particular prior conditions, except in the following case: if thickness is > 5 mm, or in the care of smoothing, there may be a rise of epoxy resin to the surface.
In this case it is necessary :
- either to sprinkle SILICA SB0 or F15 on the surface, while progressing,
- or to sand paper the surface, after at least 12/24 hours' drying according to temperature, in order to obtain a Rough G surface roughness.

♦ After:

Curing

t°	*Dust free*	*Tack free*
10°C	8 to 9 h 00	24 h 00
20°C	5 to 6 h 00	15 to 18 h 00
30°C	2 to 2 h 30	5 to to 6 h 00

Cleaning of application equipment

Flammable ED Thinner. Flash point (cc): 25°C/77°F.

Max Perlès
advanced industrial coatings

data sheet
January 2026

OENOPERL®

epoxy coating

scope:
wine, beer, solid and liquid foodstuffs

OVERVIEW

Purpose

Where : Interior of tanks, vats, containers.

What : Storage of wine, beer, alcohol up to 20°, solid and liquid foodstuffs.

Which : Steel or concrete storage capacities.

Description

Product: epoxy.

Designed to supply a long-lasting solution for the internal waterproofing of concrete and steel storage capacities either as a multi-layer, glass-fiber-reinforced coating capable of resisting a certain degree of future cracking in a concrete substrate, or as a single-layer coating on concrete or steel, that will not impact the quality and taste of the content.

Use:

Oenoperl® S: Impregnation/saturation of reinforcements

Oenoperl® T: Top or single coat, from 600 to 1000µ thickness

Properties and benefits

"Foodgrade" performance:

S, T: global and specific migrations conform to currently-applicable CE regulation nr. 1935/2004 and UE regulation nr. 10/2011 (refer to IANESCO laboratory test nr. E23-24805).

Mechanical performances:

High, in terms of resistance to cracking, shearing, counterpressure and abrasion.

Surface properties:

Aspect : uniform and seamless glossy surface.
Result : very easy to clean, no weak areas.

Compliance with safety and regulatory requirements:

OENOPERL® is ***very low COV content*** *as per European Parliament and Council Directive 2004/42/CE* - Flash point (cc): > 100°C/212°F for optimal safety and minimized application constraints.

It is ***aromatic amines and phtalates free*** for compliance with current regulations and conforms to currently-applicable regulations regarding ***bisphénol A***.

CHARACTERISTICS

Packaging

- In 2 separate cans, pre-adjusted for:

S : 12 kg T : 12 kg

- Proportion, *by weight* : S and T : base 2 / hardener 1

Storage conditions

- 18 months max, in the original cans, never opened,
- Under shelter,
- At temperatures between 0°C/32°F and 35°C/95°F[(1)],

(1) *which might increase or decrease by 10°C/50°F, once only during a 5 days max transport time to destination.*

Colours

S : medium apricot
T : light or dark apricot

Finish

Glossy with limited chalking and yellowing in operation

Reinforcements

Please consult us

V.O.C. content

S/T: 2.8 g/l, according to ISO 11890-1 (statistical average)

Composition

Resin	:	epoxy
Hardener	:	non-aromatic polyamine
Pigments	:	synthetic oxides

Specific gravity (mix) at 20°C/68°F

S/T : 1.35 ± 0.05 g/ml as per ISO 2811

Solids content (mix)

By weight	:	96–100% after 6 hrs maturation - ISO 3251
By volume	:	100% per calculation

Viscosity (mix) at 20°C/68°F

S	:	4 500 mPa.s ± 1000	♦	45 poises ± 10
T	:	7 500 mPa.s ± 1000	♦	75 poises ± 10

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Max Perlès

APPLICATION

Conforming and controlled conditions during application and hardening periods are necessary to obtain desired quality

For all uses: Refer to relevant material safety data sheets as to risk sentences and safety recommendations

♦ Before:

Surface preparation

Concrete impregnated with Primer EDO or AQUAPRIM
Refer to relevant data sheet and *Technical Advice nr1*: « Specification for preparation of concrete ».

Steel after smoothing sharp edges, abrasive blasted surfaces to Sa 3 degree. Average profile:

- In case of prior application of AQUAPRIM (see data sheet): Medium G or Rt 50-75µ.
- In case of direct application: Rough G or Rt 100µ.

Always apply on clean and dry substrates

Products preparation

24 hours minimum before application, place the cans in a temperate area at 10°C/50°F min and 30°C/86°F max.

Application temperatures

Ambiant temperature: 5°C to 35°C
Relative humidity: below 85%
Substrate temperature: 5°C to 35°C and 3°C minimum above dewpoint
Product:

While mixing:		10°C /50°F mini ♦ 30°C/86°C maxi
Spraying	S:	at 20°C / 86°F at hose exit
	T:	at 30°C / 95°F at hose exit
Manual use S/T:		at mixing temperature

Mixing

- *Never make up partial mixtures*, in order to avoid the risks of incorrect proportions.
- Stir the base with a power mixer to an even consistency. Then, add hardener and continue stirring until a perfectly homogeneous mixture is obtained.

Conditions for use

- No maturing before use.
- Start the application immediately after mixing.
- OENOPERL *should never be diluted*.

Application

OENOPERL® S:

- Medium bristle roller or 45:1 airless pump,
- Debubblizer roller for the glass fiber,
- Mechanical sprinkling of Silica SB 0 before drying.

Detailed procedure is described in our *Technical Advice nr 14* available on request.

OENOPERL® T:

- Airless spraying unit, with a 45:1 min pump ratio, fitted with heating hose.
- Or medium bristle roller, for small or difficult to access areas, as long as particular attention is paid to the thickness and regularity of applied coat. This shall be followed by smoothing the surface with a flat brush.

♦ During:

Pot life of mixture

Grades	15°C/59°F	30°C/86°F
S	3 h 00	1 h 00
T	1 h 30	0 h 30

In case of long lasting spraying application, the hose should be cleaned once per hour with ED Thinner.

Number of passes

2 per coat, except in the case of multi-layer continuous application, and 1 for topcoat and singlecoat.

Thicknesses

OENOPERL® S:

They depend on the system specified and the thickness of the glass-fiber reinforcement specified but are generally comprised between 2.0 and 3.0 mm, including a 600µ to 1000µ topcoat.

OENOPERL® T:

Min 600 microns – max 1000 microns, according to system specified.

Consumption

OENOPERL® S:

- 1.4 kg/sqm for a P45 fabric-450 g/sqm: 1.5 mm
- 1.8 kg/sqm for a P80 fabric-800 g/sqm: 2.0 mm

OENOPERL® T:

135 g/sqm per 100 microns thickness.
This theoretical value should be increased by *15±5%* for practical consumption, according to the nature of the substrate and the application.

Note:

Consumption will increase by 100 to 300 g/sqm when surface temperature is < 20°C, making the product viscous.

Cleaning of application equipment

ED Thinner. Flash point (cc): 25°C/77°F.

♦ After:

Curing

t°	*Dust free*	*Tack free*
20°C	S : 20 h 00 – T : 8 h 00	S : 44 h 00 – T : 26 h 00

Delay before use: 7 days at 20°C

Use must be preceded by washing off with warm sodium water followed by a clear water rinse, in order to eliminate any possible trace of exudation on the surface of the coating.

Repairs

Refer to our *Technical Advice nr 5*.

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advanced industrial coatings

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January 2026

Coating

AR100/CLX

« hot applied » epoxy

scope:
food and drink products for human consumption

OVERVIEW

Intended use

Where: Interior of tanks and pipes.

What: Contact with potable water, foodstuffs and alcohols up to 96% vol.

May also be used in the nuclear industry, as well as in some aggressive chemical environments.

Which: Steel or concrete structures.

Description

Product: epoxy with very low VOC content.

Use: in a single layer with a 2-component hot spraying machine:

- either in a single coat
- or as the topcoat of a glassfibre-epoxy compound of the « perl » range, such as the foodgrade laminate Oenoperl when the content reaches 40% vol.

Typical thickness: 800 to 1000 microns.

Properties and benefits

Qualifications:

Foodgrade quality: RE-05/07240 report by IANESCO Lab.
Overall Migration : BO21A0098Mga report by CTCPA.
Decontamination test: 831.101 report by CEA Saclay
Liquid water diffusion: 8985 report by CENG Grenoble.
Irradiation tests: QN 520/526/532 reports by IRE Fleurus.

Surface properties:

Aspect : uniform and seamless glossy surface.
Result : very easy to clean, no weak areas.

Compliance with safety and regulatory requirements:

AR100/CLX has ***very low VOC content*** *as per European Parliament and Council Directive 2004/42/CE* - Flash point (cc): > 100°C/212°F for optimal safety and minimized application constraints.
It is *aromatic amines or phtalates free*.

CHARACTERISTICS

Packaging

In 2 separate cans, pre-adjusted for a 40 kg quantity.
Proportion, *by weight and by volume* base 1 / hardener 1

Storage conditions

- 18 months max, in the original cans, never opened,
- Under shelter,
- At temperatures of between 0°C/32°F and 35°C/95°F[(1)],

[(1)] *which might increase or decrease by 10°C/50°F, once only during a 5 days max transport time to destination.*

Colours

Brown.
Other color : consult us (with minimum of quantity)

Finish

Glossy

V.O.C. content

8.4 g/l, according to ISO 11890-1 (statistical average)

Composition

Resin	:	epoxy
Hardener	:	non-aromatic polyamine
Pigments	:	stable, synthetic oxides

Specific gravity (mix) at 20°C/68°F

1.52 ± 0.05 g/ml as per ISO 2811

Solids content (mix)

By weight	:	96–100% after 6 hrs maturation - ISO 3251
By volume	:	100% per calculation

Viscosity (mix) at 20°C/68°F

65 000 mPa.s ± 5 000 ♦ 650 poises ± 50.

ISO 9001 and ISO 19443 certified
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IMPLEMENTATION

Conform and controlled conditions during application and hardening periods are necessary to obtain required quality

For all use: Refer to relevant material safety data sheets as to risk sentences and safety recommendations

♦ Before:

Surface preparation

Steel : Refer to our *Technical Advice nr 2.* After smoothing sharp edges, on abrasive blasted surfaces to Sa 3 degree, or equivalent.
Average profile:
• With prior application of Primer Aquaprim
Medium G or Rt 50-75µ.
• Without Primer :Rough G or Rt 100µ.

Concrete : Refer to our *Technical Advice nr 1*
Prior impregnation with Primer EDO or Aquaprim.

Products preparation

At least 12 hours before use, pre-heat the cans to a temperature of 40/50°C // 104/122°F.

Application temperatures

Substrate:
3°C/37°F minimum above dew point,
with 5°C/41°F at least ♦ 45°C/113°F at most.

Product :
See below

Conditions for use

• Since the base and hardener components are very viscous at ambient temperature but also very reactive at high temperature, it is absolutely necessary to respect the following implementation instructions :

• ***Never make up partial mixtures***, in order to avoid the risks of incorrect proportions.
• ***Never try to mix "manually"*** the base with the hardener, except for pre-touchups or touchups with quantities not exceeding 1 kg.
• Potlife of a 1 kg mixture at 20°C/68°F : 10 min
• ***Components should never be diluted***

Application

• 2-component dosing and mixing equipment designed for hot spraying.
• Product spraying temperature:
65°C ±5°C /150°F ±40°F at hose exit.

During:

Number of coats

One.

Recommended thickness

800 to 1000 microns.

Note:
Thicknesses are proposed in agreement with the method of the International standard ISO 19840 :
Do not exceed 30% above the maximum value, except for pre-touchups and local overcoatings

Theoretical consumptions

152 g/sqm per 100 microns thickness.
This theoretical value should be increased by15 to 20% to estimate practical consumption depending on the state of the substrate and the implementation method

Note:
Consumption will increase by 100 to 300 g/m² when surface temperature is < 20°C, making the product viscous with its contact.

Cleaning of application equipment

ED THINNER or equivalent. Flash point (cc): 25°C/77°F.

♦ After:

Curing

t°	*Dustfree*	*Dry to touch*
10°C	6 h 00 min	12 h 00 min
20°C	3 h 00 min	6 h 00 min
30°C	1 h 30 min	4 h 00 min

Delay before use : 10, 7 or 4 days, depending on ambient temperature.

Repairs

Refer to our *Technical Advice nr 5*.

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fiberglass tissue

T45

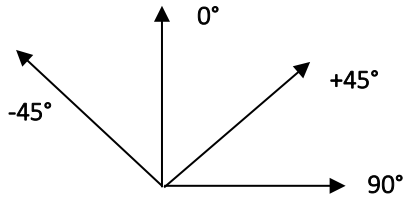
Biaxial glass fabric – 450 g/sqm

scope:
reinforcement of our epoxy coatings

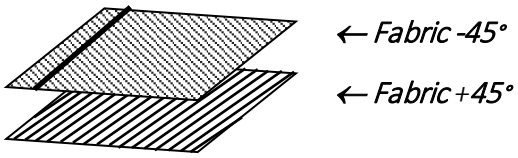
OVERVIEW

Description
Glass tissue, made of two cloths of woven glass fibers oriented at + and – 45°, with a ***black*** longitudinal thread to indicate the width of recommended overlapping.

Purpose
Reinforcement of epoxy coatings, particularly to obtain resistance to future cracking in a concrete substrate.



Properties and benefits
- Qualified for use within a coating system in permanent contact with potable water (Sanitary Compliance Certificate)
- High mechanical performance
- Excellent drapability.
- No longitudinal deformation
- Easy to roll-out,impregnate and saturate.



CHARACTERISTICS

Specifications

Axis angle	*Weight (g/sqm)*	*Tolerance*	*Fiber*	*Filament diameter*	*Finish*
Fabric +45°	225	± 5%	E-glass	12 - 14 µ	Silane
Fabric –45°	225	± 5%	E-glass	12 - 14 µ	Silane
Weaving	<15	± 5%	PE	-	-

Dimensions of the rolls
Length: about 43 lm
Width: 127 cm
Weight: about 25 kg
Surface: about 55 sqm

Thickness
500µ

Packaging
On a cardboard mandrel, in a polyethylene bag.

Storage conditions
Must not be exposed to moisture.
Store in a dry atmosphere (humidity below 90%), under shelter, in the original packing, at a temperature of between 5°C/32°F and 35°C/95°F.

Use conditions
Use in a non-condensing environment and on a non-condensing substrate, as per our *Technical Advice nr14.*

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Appendix 3
Techical Advices

Technical Advice No.1
« Specification for preparation of concrete »

Technical Advice No.2
« Specification for preparation of steel substrates »

Technical Advice No.3
« Performance testing »

Technical Advice No.4
« Dielectric testing »

Technical Advice No.5
« Retouching »

Technical Advice No.7
« Engraving of a laminate »

Technical Advice No.14
“Application of fiberglass/epoxy laminates”

Technical Advice No.17
“Maintenance”

Appendix 4

Reference list