EN 1504

REPAIR AND PROTECTION IN CONSTRUCTION

RPM BELGIUM
VANDEX
GROUP

Repair and protection of concrete in compliance with RPM BELGIUM and VANDEX GROUPS

The European Standard EN 1504 "Products and systems for the repair and protection of concrete structures – definitions, requirements, quality control and evaluation of conformity" defines the procedures and characteristics of products used to repair, maintain and protect concrete structures.

EN 1504-1:2005: Definitions
EN 1504-2:2005: Surface protection systems for concrete
EN 1504-3:2006: Structural and non-structural repair
EN 1504-4:2005: Structural bonding
EN 1504-5:2005: Concrete injection
EN 1504-6:2007: Anchoring of reinforcing steel bar
EN 1504-7:2007: Reinforcement corrosion protection
EN 1504-8:2005: Quality control and certification of conformity
EN 1504-9:2008: General principles for the use of products and systems
EN 1504-10:2005: Site application of products and quality control of the works

GROUP VISION STATEMENT

"THROUGH THE DEVELOPMENT, PRODUCTION, MARKETING AND SALES OF HIGH PERFORMANCE POLYMERIC AND CEMENTITIOUS BASED MATERIALS, FORM A GROUP THAT IS RECOGNIZED AS A LEADER AND SOURCE OF MATERIALS THAT ENHANCES THE DURABILITY PERFORMANCE AND SERVICE LIFE OF ENGINEERED CONCRETE AND MASONRY STRUCTURES"

Definitions and terms in the EN 1504 which are used in this document.

Coating: treatment applied to form a continuous protective layer on the surface of concrete.
Note 1: its thickness is generally between 0.1 mm and 5.0 mm. Special applications may require a thickness of more than 5 mm.
Note 2: examples of binders include organic polymers, organic polymers with cement filler or hydraulic cement modified with polymeric latex.

Hydraulic binders (H): inorganic material which reacts with water and undergoes a hydration process to produce a solid material.
Note: this generally includes cement which conforms to EN 197-1 or EN 413-1 Standards or construction lime which conforms to EN 459-1 Standards or combined with other cements.

Hydraulic mortar and hydraulic concrete (CC): mortar or concrete with a hydraulic binder base mixed with a suitable blend of aggregates which may also contain admixes and additives which, when mixed with mortar, set through a hydration reaction.

Hydrophobic impregnation: treatment for concrete to obtain a water-repellent surface. It forms a hydrophobic coat on the internal walls of pores and capillaries without filling them. It does not form a film on the surface of the concrete so its appearance is unaltered or only slightly modified.
Note: active composites include silanes and siloxanes, for example.

Impregnation: treatment of concrete to reduce surface porosity and strengthen the surface. The pores and capillaries are partially or completely filled.
Note 1: this treatment generally forms a thin, discontinuous film on the surface of concrete.
Note 2: binders include organic polymers, for example.

Cementitious mortar and hydraulic polymer concrete (PCC): hydraulic mortar and concrete modified by adding sufficient quantities of polymeric admixes to obtain specific properties.

Note: Polymers generally used include:

- acrylics, metacrylates or modified acrylic resin in dispersible powder form or in water dispersion;
- vinylic monopolymers, copolymers and terpolymers in dispersible powder form or in water dispersion;
- styrene-butadiene copolymers, generally used in water dispersion;
- natural latex rubber;
- epoxy resin.

Polymeric mortar and polymeric concrete (PC): mixtures of polymeric binders and calibrated aggregates which set through polymerisation.

Reactive polymeric binders (P): binders generally formed from two components, a reactive base polymer and a catalyser, which polymerise at ambient temperature. Admixes may also be added.

Note 1: in certain systems, water vapour at ambient temperature may act as a catalyser.

Note 2: typical binders include:

- epoxy resin;
- unsaturated polyester;
- reticulating acrylic;
- mono or bi-component polyurethane;
- PUMA;
- polyurethane concrete.

General principles for the use of products and systems

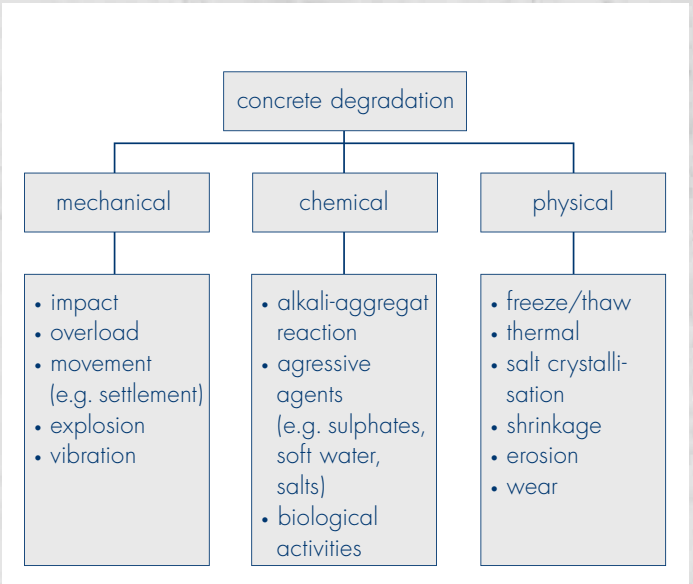
Part 9 of EN 1504 defines the principles and methods for protecting and repairing concrete structures which have suffered damage or which may suffer damage or deterioration, and offers a guide on choosing products and systems suitable for their intended use. This is why this part of the Standard must be taken into consideration before the other parts.

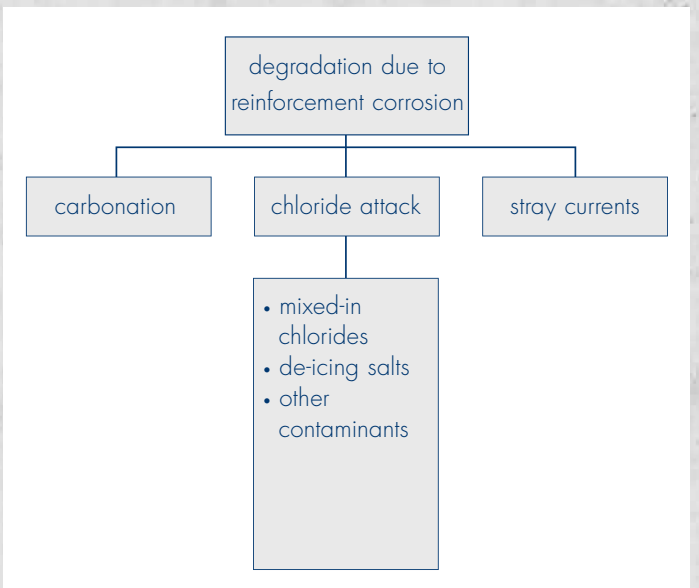
The fundamental points in EN 1504-9 are the following:

- Minimum requirements for protection and repairs;
- Aims of protection and repairs;
- Base concepts when selecting products and systems.

Common causes of defects

The nature and causes of defects, including combinations of causes, shall be identified and recorded. Many defects result from inadequate design, specification, execution and materials. Common causes of defects are represented below:





Principles and Methods of Repair and Protection from EN 1504-9

TABLE 1: PRINCIPLES RELATED TO DEFECTS IN CONCRETE

PRINCIPLE	DEFINITION	METHOD	PROFESSIONAL SOLUTION
Principle 1 (PI)	**Protection against ingress.** Reducing or preventing the ingress of adverse agents, e.g. water, other liquids, vapour, gas, chemicals and biological agents.	**1.1 Hydrophobic Impregnation**	• VANDEX ECO SEALTOP 111
		1.2 Impregnation	
		1.3 Coating	• VANDEX CEMELAST range, VANDEX BB 75 E, VANDEX BB 75 E Z, • MATACRYL PDS COATING H • DURACON: SL BC/TR, MONACRYL SL BC/TR • MONOPUR INDUSTRY: MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC • MONILE • MONEPOX: 110, SL, SL CONDUCTIVE, CORACOAT 2 mm • MONEPOX PDS • HERMAPUR: 1100, 2200, 2300
		1.4 Surface bandaging of cracks[1]	• VANDEX FLEXTAPE E, VANDEX CONSTRUCTION JOINT TAPE
		1.5 Filling of cracks	
		1.6 Transferring cracks into joints[1]	• VANDEX FLEXTAPE E, VANDEX CONSTRUCTION JOINT TAPE
		1.7 Erecting external panels	
		1.8 Applying membranes[1]	• MATACRYL, MATACRYL PDS, VULKEM QUICK, REPOMA
Principle 2 (MC)	**Moisture control.** Adjusting and maintaining the moisture content in the concrete within a specified range of values.	2.1 Hydrophobic impregnation	
		2.2 Impregnation	
		2.3 Coating	• VANDEX CEMELAST range • VANDEX BB 75 E, VANDEX BB 75 E Z, VANDEX POLYCEM Z
		2.4 Erecting external panels	
		2.5 Electrochemical treatment	
Principle 3 (CR)	**Concrete restoration.** Restoring the original concrete to the originally specified profile and function. Restoring the concrete structure by replacing part of it.	**3.1 Hand applied mortar**	• VANDEX waterproofing • VANDEX UNI MORTAR range • VANDEX CEMLINE system • VANDEX CRS system • VANDEX RAPID system • VANDEX Z-range sewage system
		3.2 Recasting with concrete or mortar	
		3.3 Spraying concrete or mortar	*As for Method 3.1*
		3.4 Replacing elements	
Principle 4 (SS)	**Structural strengthening.** Increasing or restoring the structural load bearing capacity of an element of the concrete structure.	**4.1 Adding or replacing embedded or external reinforcing bars**	• VANDEX GROUT range • VANDEX FLEXTAPE ADHESIVE
		4.2 Adding reinforcement anchored in pre-formed or drilled holes	
		4.3 Bonding plate reinforcement	
		4.4 Adding mortar or concrete	• VANDEX UNI MORTAR 1, VANDEX UNI MORTAR 1 Z, • VANDEX CEMLINE MORTARS, VANDEX RAPID XL / M, CRS HB, CEMREP 202
		4.5 Injecting cracks, voids or interstices	
		4.6 Filling cracks, voids or interstices	
		4.7 Prestressing (post-tensioning)	
Principle 5 (PR)	**Physical resistance.** Increasing resistance to physical or mechanical attack.	**5.1 Coating**	• MATACRYL PDS COATING H, DURACON: SL BC/TR, MONACRYL SL BC/TR • MONOPUR INDUSTRY: MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC • MONILE, MONEPOX: 110, SL, SL CONDUCTIVE, CORACOAT 2 mm, MONEPOX PDS • HERMAPUR: 1100, 2200, 2300
		5.2 Impregnation	
		5.3 Adding mortar or concrete	
Principle 6 (RC)	**Resistance to chemicals.** Increasing resistance of the concrete surface to deteriorations from chemical attack.	**6.1 Coating**	• MATACRYL PDS COATING H, DURACON: SL BC/TR, MONACRYL SL BC/TR • MONOPUR INDUSTRY: MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC • MONILE, MONEPOX: 110, SL, SL CONDUCTIVE, CORACOAT 2 mm, MONEPOX PDS • HERMAPUR: 1100, 2200, 2300
		6.2 Impregnation	
		6.3 Adding mortar or concrete	

TABLE 2: PRINCIPLES RELATED TO REINFORCEMENT CORROSION

PRINCIPLE	DEFINITION	METHOD	PROFESSIONAL SOLUTION
Principle 7 (RP)	**Preserving or restoring passivity.** Creating chemical conditions in which the surface of the reinforcement is maintained in or is returned to a passive condition.	**7.1 Increasing cover with additional mortar or concrete**	• VANDEX UNI MORTAR range • VANDEX CEMLINE MORTARS • VANDEX RAPID XL / M, CRS HB, CEMREP 202
		7.2 Replacing contaminated or carbonated concrete	*As for Method 7.1*
		7.3 Electrochemical realkalisation of carbonated concrete 7.4 Realkalisation of carbonated concrete by diffusion 7.5 Electrochemical chloride extraction	
Principle 8 (IR)	**Increasing resistivity.** Increasing the electrical resistivity of the concrete.	8.1 Hydrophobic impregnation 8.2 Impregnation	
		8.3 Coating	• VANDEX CEMELAST range • VANDEX BB 75 E, VANDEX BB 75 E Z, VANDEX POLYCEM Z • MONEPOX SL CONDUCTIVE, MONOPUR INDUSTRY SL 2 mm CONDUCTIVE
Principle 9* (CC)	**Cathodic control.** Creating conditions in which potentially cathodic areas of reinforcement are unable to drive an anodic reaction.	9.1 Limiting oxygen content (at the cathode) by saturation or surface coating	
Principle 10* (CP)	**Cathodic protection.**	10.1 Applying an electrical potential	
Principle 11 (CA)	**Control of anodic areas.** Creating conditions in which potentially anodic areas of reinforcement are unable to take part in the corrosion reaction.	**11.1 Active coating of the reinforcement**	• VANDEX CRS CORROSION PROTECTION M Corrosion protection of reinforcement steel
		11.2 Barrier coating of the reinforcement 11.3 Applying corrosion inhibitors in or to the concrete	

* Principle 9 and 10 no available solution.

[1] May incorporate professional solutions not covered in EN 1504.

EN 1504-9 Principle 1: Protection against Ingress (PI)

Protecting the Concrete Surface against Liquid and Gas Ingress

METHODS	PRACTICE
METHOD 1.1 HYDROPHOBIC IMPREGNATION	
METHOD 1.2 IMPREGNATION	
METHOD 1.3 COATING	

* This table is continued on the following page

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
Hydrophobic impregnation is a treatment of the concrete to create a water-repellent surface. The pores and capillaries are coated internally without filling them. The surface of the concrete remains with little or no change to its appearance.	Penetration: Class I: <10 mm Class II: ≥10 mm Capillary absorption: w <0.1 kg/m²×√h Drying rate coeffi-cient	Class I: **VANDEX ECO SEALTOP 111** • based on siliceous impregnation
		not available
Coating of a surface is a treatment applied to form a continuous protective layer on the concrete. This to protect or improve concrete against influences. Repair and sealing of fine movement cracks (0.3 mm).	Permeability to CO_2: S_d >50 m Capillary absorption: w <0.1 kg/m²×√h Water vapour ability: Class I to III Adhesion strength: Elastic: ≥0.8 N/mm² or ≥1.5 N/mm² (trafficking) Rigid: ≥1.0 N/mm² or ≥2.0 N/mm² (trafficking)	**VANDEX CEMELAST** range • elasticized waterproofing slurries **VANDEX BB 75 E, VANDEX BB 75 E Z** • elasticized waterproofing slurries for sewage treatment plants **MATACRYL PDS COATING H** (OS 8) • MMA system **DURACON SL BC/TR** **MONACRYL SL BC/TR** • MMA system **MONOPUR INDUSTRY:** **MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC** • hybrid polyurethane concrete **MONILE** • acrylate cement **MONEPOX: 110, SL, SL CONDUCTIVE, CORACOAT 2 mm** **MONEPOX PDS** • epoxy system **HERMAPUR: 1100, 2200, 2300** • polyurethane coating system

EN 1504-9 Principle 1: Protection against Ingress (PI)

Protecting the Concrete Surface against Liquid and Gas Ingress (conti

METHODS	PRACTICE
METHOD 1.4 SURFACE BANDING OF CRACKS	
METHOD 1.5 FILLING OF CRACKS	
METHOD 1.6 TRANSFERRING CRACKS INTO JOINTS	
METHOD 1.7 ERECTION OF EXTERNAL PANELS	
METHOD 1.8 APPLYING MEMBRANES	

nuation)

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
Applying flexible tapes to prevent ingress of liquids and gasses into the concrete.	No specific criteria	**VANDEX FLEXTAPE E** • High performance sealing tape for expansion and construction joints as well as cracks **VANDEX CONSTRUCTION JOINT TAPE** • waterproofing tape for construction joints and cracks
		not available
To accommodate movement the cracks should be repaired so that a joint is formed through the depth of the repair. The cracks (joints) must then be filled, sealed or covered with a suitably elastic or flexible material.	No specific criteria	**VANDEX FLEXTAPE E** • High performance sealing tape for expansion and construction joints as well as cracks **VANDEX CONSTRUCTION JOINT TAPE** • waterproofing tape for construction joints and cracks
		not available
Liquid applied membrane system over the concrete surface will protect the surface against the attack or ingress of deleterious materials.	No specific criteria	**MATACRYL** • waterproofing and wearing system for bridges and roads **MATACRYL PDS** • waterproofing park deck systems **VULKEM QUICK** • pedestrian deck waterproofing **REPOMA** • liquid waterproofing for roofs

EN 1504-9 Principle 2: Moisture Control (MC)

Adjusting and Maintaining the Moisture Content in the Concrete

METHODS	PRACTICE
METHOD 2.1 HYDROPHOBIC IMPREGNATION	
METHOD 2.2 IMPREGNATION	
METHOD 2.3 COATING	
METHOD 2.4 ERECTING EXTERNAL PANELS	
METHOD 2.5 ERECTING EXTERNAL PANELS	

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
		not available
		not available
Coating of a surface is a treatment applied to form a continuous protective layer on the concrete. This to protect or improve concrete against influences. Repair and sealing of fine movement cracks (0.3 mm) by elastizised waterproof coatings. Use of movement accommodating crack bridging coatings at larger cracks will allow thermal/ dynamic movement in structures.	Capillary absorption: w <0.1 kg/m² × √h Water vapour ability: Class I: S_d <5 m Adhesion strength: Elastic: ≥0.8 N/mm² or ≥1.5 N/mm² (trafficking) Rigid: ≥1.0 N/mm² or ≥2.0 N/mm² (trafficking)	**VANDEX CEMELAST** range (class A2) • elasticized waterproofing slurries **VANDEX BB 75 E** (class A3) • cementitious, two-component, polymer-modified and efflorescence-free surface waterproofer with hydrophobic properties. **VANDEX BB 75 E Z** • elasticized waterproofing slurry for sewage treatment plants **VANDEX POLYCEM Z** • rigid polymer modified cementitious protective coating
		not available
		This is a process

EN 1504-9 Principle 3: Concrete Restoration (CR)

Replacing and Restoring Damaged Concrete

METHODS	PRACTICE
METHOD 3.1 HAND-APPLIED MORTAR	
METHOD 3.2 RECASTING WITH CONCRETE OR MORTAR	
METHOD 3.3 SPRAYING CONCRETE OR MORTAR	
METHOD 3.4 REPLACING CONCRETE ELEMENTS	

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
Vandex repair mortars are traditionally hand applied, most are how ever able to be spray applied as well. A wide range of ready to use products are available for general repair, waterproofing, increase chemical resistance or fulfilling the requirment for potable water contact.	Structural repair: Class R4 Class R3 Non structural repair: Class R2 Class R1	Structural: **VANDEX BB 75, VANDEX BB WHITE,** **VANDEX UNIMORTAR 1, VANDEX BB 75 Z,** **VANDEX UNIMORTAR 1 Z,** **VANDEX CEMLINE MORTAR,** **VANDEX CEMLINE MG 4,** **VANDEX CEMLINE MG 4 FF,** **VANDEX RAPID XL / M,** **VANDEX CEMREP 202, VANDEX CRS HB** Non-structural: **VANDEX SUPER/SUPER WHITE,** **VANDEX CONCRETE GREY, VANDEX PREMIX,** **VANDEX UNIMORTAR 2,** **VANDEX POLYCEM Z MORTAR,** **VANDEX CEMLINE TOP GREY/WHITE,** **VANDEX CEMLINE MG 4 FF/H** **VANDEX CRS** concrete repair system **VANDEX RAPID S**
		not available
Applying by a spray equipment will increase output which is very relevant for larger projects. Pumping our Vandex mortars for up to 40 or more meters is possible using the right pump and hoses for the spray equipment. Trainings are offered to contractors.	Structural repair: Class R4 Class R3 Non structural repair: Class R2 Class R1	Structural: **VANDEX BB 75, VANDEX BB WHITE,** **VANDEX UNIMORTAR 1, VANDEX BB 75 Z,** **VANDEX UNIMORTAR 1 Z,** **VANDEX CEMLINE MORTAR,** **VANDEX CEMLINE MG 4,** **VANDEX CEMLINE MG 4 FF,** **VANDEX RAPID XL, VANDEX CRS HB** Non-structural: **VANDEX SUPER/SUPER WHITE,** **VANDEX CONCRETE GREY, VANDEX PREMIX** **VANDEX UNIMORTAR 2,** **VANDEX POLYCEM Z MORTAR,** **VANDEX CEMLINE TOP GREY/WHITE,** **VANDEX CEMLINE MG 4 FF/H** **VANDEX CRS** concrete repair system **VANDEX RAPID S**
		not available

EN 1504-9 Principle 4: Structural Strengthening (SS)

Increasing or Restoring the Structural Load Capacity

METHODS	PRACTICE
METHOD 4.1 ADDING OR REPLACING EMBEDDED OR EXTERNAL REINFORCING BARS	
METHOD 4.2 ADDING REINFORCEMENT ANCHORED IN PRE-FORMED OR DRILLED HOLES	
METHOD 4.3 BONDING PLATE REINFORCEMENT	
METHOD 4.4 ADDING MORTAR OR CONCRETE	
METHOD 4.5 INJECTING CRACKS, VOIDS OR INTERSTICES	
METHOD 4.6 FILLING CRACKS, VOIDS OR INTERSTICES	
METHOD 4.7 PRESTRESSING – (POST TENSIONING)	

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
The selection of the appropriate size and configuration of such reinforcement, plus the locations where it is to be fixed, must always be determined by the structural engineer.	Shear strength: ≥12 N/mm²	**VANDEX GROUT 20** • Cementitous grouting material **VANDEX GROUT 20 R** • Rapid setting grout with high early strength 10 MPa 1 h **VANDEX FLEXTAPE ADHESIVE** • two-component epoxy resin adhesive
		not available
		not available
The methods and systems are well documented in Principle 3 Concrete restoration. To ensure the necessary performance, these products also have to fulfill the requirements of the EN 1504-3, class 3 or 4.	Mortar/Concrete: Class R4 Class R3 Adhesives: Shear strength ≥6 N/mm²	**VANDEX UNIMORTAR 1,** **VANDEX UNIMORTAR 1 Z** • waterproofing and repairing mortar **VANDEX CEMLINE MORTAR** • reprofiling mortar for drinking water tank **VANDEX CEMLINE MG 4** • fibre reinforced spray and repair mortar **VANDEX CEMLINE MG 4 FF/H** • high density reprofiling mortar **VANDEX CRS HB** • Cementitious, lightweight repair mortar **VANDEX RAPID XL / M,** **VANDEX CEMREP 202** • fast set waterproof repair mortar, also traffic area repairs
		not available
		not available
		not available

EN 1504-9 Principle 5: Physical Resistance (PR)

Increasing the Concrete's Resistance to Physical and / or Mechanical

METHODS	PRACTICE
METHOD 5.1 COATING	
METHOD 5.2 IMPREGNATION	
METHOD 5.3 ADDING MORTAR OR CONCRETE	

Attack

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
Only reactive coatings are able to provide sufficient additional protection to the concrete to improve its resistance against physical or mechanical attack.	Abrasion (Taber-Test): mass-lost <3000 mg Capillary absorption: w <0.1 kg/m² × √h Impact resistance: Class I to Class III Adhesion strength: ≥2.0 N/mm²	**MATACRYL PDS COATING H** • MMA system **DURACON SL BC/TR** **MONACRYL SL BC/TR** • MMA system **MONOPUR INDUSTRY:** **MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC** • hybrid polyurethane concrete **MONILE** • acrylate cement **MONEPOX 110** **MONEPOX SL / SL CONDUCTIVE** **MONEPOX CORACOAT 2 mm** **MONEPOX PDS** • epoxy system **HERMAPUR: 1100, 2200, 2300** • polyurethane coating system
		not available
		not available

EN 1504-9 Principle 6: Chemical Resistance (RC)

Increasing the Concrete's Resistance to Chemical Attack

METHODS	PRACTICE
METHOD 6.1 COATING	
METHOD 6.2 IMPREGNATION	
METHOD 6.3 ADDING MORTAR OR CONCRETE	

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
Only high performance reactive coatings are able to provide sufficient protection to concrete and improve its resistance to chemical attack.	Resistance to strong chemical attack: Class I to Class III Adhesion strength: ≥2.0 N/mm²	**MATACRYL PDS COATING H** • MMA system Class II: **DURACON SL BC/TR** **MONACRYL SL BC/TR** • MMA system **MONOPUR INDUSTRY: MORTAR, SL 2 mm CONDUCTIVE, SL 5 mm, SL 5 mm BC** • hybrid polyurethane concrete **MONILE** • acrylate cement **MONEPOX 110** **MONEPOX SL / SL CONDUCTIVE** **MONEPOX CORACOAT 2 mm** **MONEPOX PDS** • epoxy system **HERMAPUR: 1100, 2200, 2300** • polyurethane coating system
		not available
		not available

EN 1504-9 Principle 7: Preserving or Restoring Passivity

Levelling and Restoring the Concrete Surface and Profile

METHODS	PRACTICE
METHOD 7.1 INCREASING COVER WITH ADDITIONAL MORTAR OR CONCRETE	
METHOD 7.2 REPLACING CONTAMINATED OR CARBONATED CONCRETE	
METHOD 7.3 ELECTROCHEMICAL REALKALISATION OF CARBONATED CONCRETE	
METHOD 7.4 REALKALISATION OF CARBONATED CONCRETE BY DIFFUSION	
METHOD 7.5 ELECTROCHEMICAL CHLORIDE EXTRACTION	

(RP)

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
If the reinforcement does not have adequate concrete cover, then by adding cementitious mortar or concrete the chemical attack (e.g. from carbonation or chlorides) on the reinforcement will be reduced.	Carbonation resistance: Class R4 or R3 Compressive strength: Class R4 or R3 Adhesive bond: Class R4 or R3	**VANDEX UNI MORTAR 1,** **VANDEX UNI MORTAR 1 Z,** **VANDEX CEMLINE MORTAR,** **VANDEX CEMLINE MG 4,** **VANDEX CEMLINE MG 4 FF/H,** **VANDEX RAPID XL / M,** **VANDEX CEMREP 202,** **VANDEX CRS HB**
Through removing damaged concrete and rebuilding the concrete cover over the reinforcement, the steel is again protected by the alkalinity of its surroundings.	Carbonation resistance: Class R4 or R3 Compressive strength: Class R4 or R3 Adhesive bond: Class R4 or R3	**VANDEX UNI MORTAR 1,** **VANDEX UNI MORTAR 1 Z,** **VANDEX CEMLINE MORTAR,** **VANDEX CEMLINE MG 4,** **VANDEX CEMLINE MG 4 FF/H,** **VANDEX RAPID XL / M,** **VANDEX CEMREP 202,** **VANDEX CRS HB**
		not available
		not available
		not available

EN 1504-9 Principle 8: Increasing Resistivity (IR)

Increasing the Electrical Resistivity of the Concrete to reduce the Risk

METHODS	PRACTICE
METHOD 8.1 HYDROPHOBIC IMPREGNATION	
METHOD 8.2 IMPREGNATION	
METHOD 8.3 COATING	

EN 1504-9 Principle 11: Control of Anodic Areas (CA)

Preventing Corrosion of the Steel Reinforcement

METHODS	PRACTICE
METHOD 11.1 ACTIVE COATING OF THE REINFORCEMENT	
METHOD 11.2 BARRIER COATING OF THE REINFORCEMENT	
METHOD 11.3 APPLYING CORROSION INHIBITORS IN OR TO THE CONCRETE	

# of Corrosion

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
		not available
		not available
Coating of a surface is a treatment applied to form a continuous protective layer on the concrete. This to protect or improve concrete against influences. Repair and sealing of fine movement cracks (0.3 mm).	Capillary absorption: w <0.1 kg/m² × √h Water vapour ability: Class I: Sd <5 m Adhesion strength: Elastic: ≥0.8 N/mm² or ≥1.5 N/mm² (trafficking) Rigid: ≥1.0 N/mm² or ≥2.0 N/mm² (trafficking)	**VANDEX CEMELAST,** **VANDEX BB 75 E,** **VANDEX BB 75 E Z,** **VANDEX POLYCEM Z,** **MONEPOX SL CONDUCTIVE,** **MONOPUR INDUSTRY SL 2 mm CONDUCTIVE**

DESCRIPTION	MAIN CRITERIA	PROFESSIONAL SOLUTIONS
These coatings contain active pigments that can function as an inhibitor or provide a passive environment due to its alkalinity. Although care must be taken to apply them properly, they are less sensitive to application defects than barrier coatings. An active coating contain electrochemically active pigments which may function as inhibitors or which may provide localised cathodic protection. Cement is considered to be an active pigment due to its high alkalinity.	Compliance with EN 1504-7	**VANDEX CRS CORROSION PROTECTION M** • corrosion protection of reinforcement steel
		not available
		not available

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