



REFURBISHMENT PRODUCT SELECTION CHART

BUILDING TRUST





SIKA – YOUR PARTNER

Deterioration of concrete may happen due to corrosion, structural damage, water infiltration, freeze and thaw cycles, seismic activity, reactive aggregates etc. Years of research plus decades of practical experience have enabled Sika to develop a fully comprehensive solution to restore and rehabilitate concrete structures. Sika customer advice and support is second to none, from concept to successful completion on site. This is all based on more than 100 years of experience on large and small projects all over the world.

CONTENT

04 Honeycomb Repair

10 Floor repair

12 Fair Faced Concrete Repair (Pin Holes & Bug Holes Repair)

14 Concrete Spalling

18 Masonry Plaster Crack Repair

22 Reinforced Concrete Crack Repair

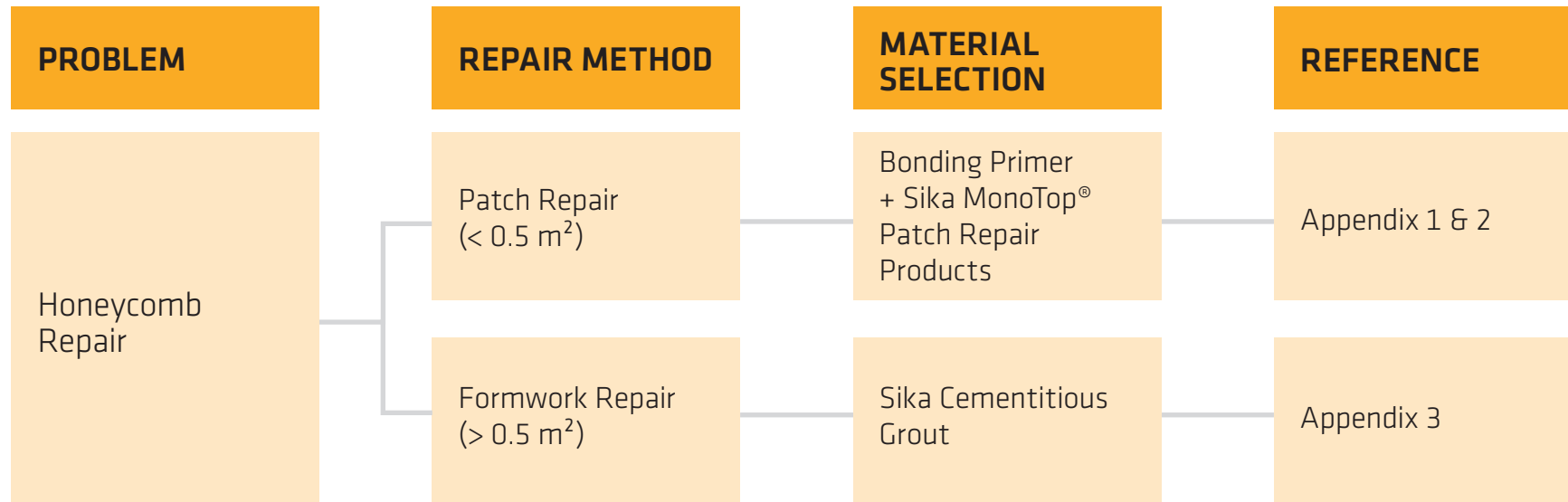
24 Reinforced Concrete Crack Injection Repair

28 Protective Coating for Concrete Structure

32 Protection for insufficient concrete cover

34 Protective coating for concrete and steel in aggressive environment

HONEYCOMB REPAIR





STRUCTURE	Vertical Column and Reinforce Concrete (RC) Wall
PROBLEM	<p>Honeycomb occurred due to:</p> <ul style="list-style-type: none"> ■ No vibration during placement of concrete ■ Concrete mix is too dry or very low slump ■ Very congested reinforcement bars
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Remove loose concrete by hacking until sound concrete. Saw cut the surrounding defective area and make sure no feather edges ■ For expose rebar, remove concrete minimum 20 mm behind main rebar ■ Grind off the rusted layer of the reinforcement bar and apply Sika MonoTop®-910 N as reinforcement corrosion protection ■ Substrate preparation by cleaning the defective area free of dust and loose particles. ■ Prewet the repair area to achieve Saturated Surface Dry (SSD) ■ Its recommended to use patch repair method if the repair area is less than 0.5 m², or otherwise use formwork repair method for area more than 0.5 m² ■ For formwork repair method, please refer to Appendix 3 for selection material for cementitious grout products ■ For patch repair method, apply bonding mortar Sika MonoTop®-910 N. Please refer to Appendix 1 if required longer working time for bonding primer ■ Apply Sika MonoTop® R with maximum 20 mm thickness as patch repair, wet on wet after bonding primer is applied. Please refer to Appendix 2 for required thickness more than 20 mm and required compressive strength

KEY STAGES OF PATCH REPAIR

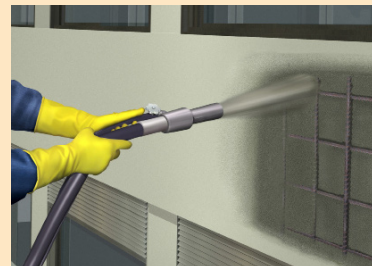
Removal of Damaged Concrete



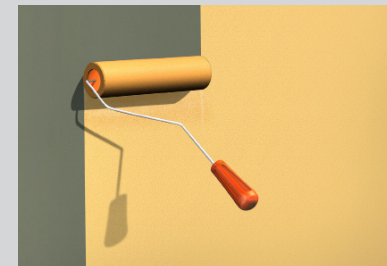
Substrate and Steel Preparation



Application of Repair Mortar



Finishing



APPENDIX 1

Sika Bonding Primer Products

Properties	Sika MonoTop®-910 N	Sikadur®-732	SikaTop® Armatec®-110 EpoCem®
Reinforcement Corrosion Protection	Yes	No	Yes
Composition	Polymer modified cementitious mortar	Epoxy resin	Cementitious epoxy resin
Tensile Adhesion Strength (28 days)	~2.0 MPa (EN 1542)	~2 N/mm ² (Concrete failure) (ASTM D790)	≥ 1.5 N/mm ² (EN 1542)
Pot Life	~90-120 minutes at +20 °C	~35 minutes at +30 °C	~3 hours at +20 °C
Consumption - As Bonding Mortar	~1.5-2.0 kg/m ² /mm	0.3-0.8 kg/m ²	> 1.5-2.0 kg/m ² /mm
Consumption - As Reinforcement Protection	~2.0 kg/m ² /mm/coat (min. 2 coats required)		~2 kg/m ² /mm/coat (min. 2 coats required)
Packaging	25 kg bag	5 kg set	20 kg set

APPENDIX 2

Sika Patch Repair Products

Patch repair products for replacing damaged concrete


Properties	Sika MonoTop® R	Sika MonoTop®-412 MY	Sika MonoTop®-222 Patch Repair
Bonding Bridge Needed	Yes	No (Yes for overhead)	Yes
Composition	Polymer modified cementitious mortar	Fibre reinforced mortar comply to class R4 EN 1504-3 requirement	Fibre reinforced mortar
Compressive Strength @ 1 day	> 15 N/mm ² (ASTM C190)	~15 N/mm ² (EN 12190)	~15 N/mm ² (EN 12190)
Compressive Strength @ 28 days	45-50 N/mm ² (ASTM C190)	~50 N/mm ² (EN 12190)	~50 N/mm ² (EN 12190)
Tensile Adhesion Strength (28 days)	> 1.5 N/mm ² (with bonding bridge) (ASTM D4541)	> 2.8 N/mm ² (EN 1542)	> 2.0 N/mm ² (EN 1542)
Layer Thickness	3-20 mm	6-50 mm	6-30 mm
Overhead Application	No	Yes	No
Yield / m³	71 bags	73 bags	71 bags
Mixing Ratio	3.4-3.5 L water / 25 kg bag	3.5-4.0 L water / 25 kg bag	3.5-3.8 L water / 25 kg bag

APPENDIX 3

Sika Cementitious Grout

Properties	SikaGrout®-214 MY	SikaGrout®-215	SikaGrout®-220	Sikagrout®-228
Layer Thickness	10-100 mm	5-50 mm	10-50 mm	5-50 mm
Compressive Strength @ 1 day	> 20 N/mm ² (ASTM C109)	> 25 N/mm ² (ASTM C109)	~35 N/mm ² (EN 12190)	> 33 N/mm ² (EN 12190)
Compressive Strength @ 7 days	> 50 N/mm ² (ASTM C109)	> 45 N/mm ² (ASTM C109)	~65 N/mm ² (EN 12190)	> 56 N/mm ² (EN 12190)
Compressive Strength @ 28 days	> 60 N/mm ² (ASTM C109)	> 60 N/mm ² (ASTM C109)	~85 N/mm ² (EN 12190)	> 75 N/mm ² (EN 12190)
Yield/m ³ (Flowable)	72 bags	74 bags	77 bags	77 bags
Maximum Grain Size	3.3 mm	1.2 mm	3.3 mm	1.2 mm
Mixing Ratio	4.0-4.4 L water / 25 kg bag	4.0-4.4 L water / 25 kg bag	3.5-3.7 L water / 25 kg bag	3.5-3.6 L water / 25 kg bag

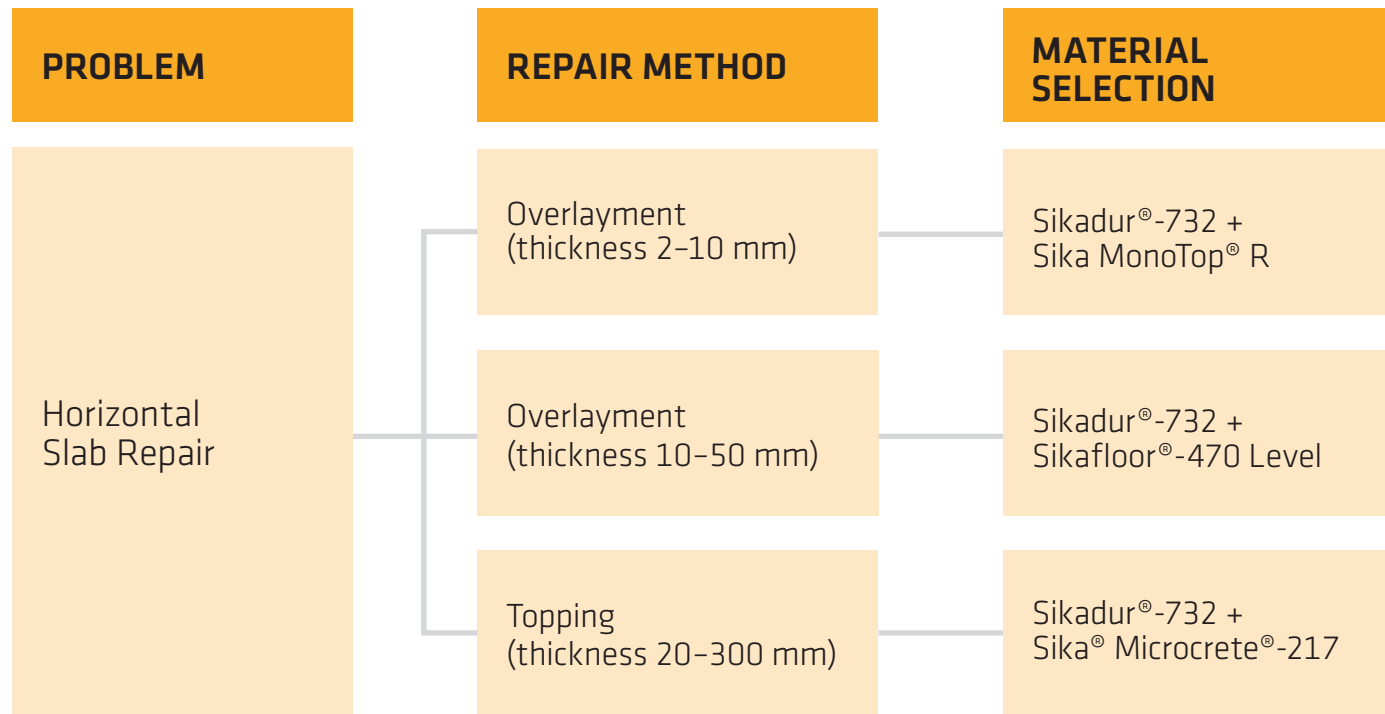
Properties	Sika® Microcrete®-217	Sika® Microcrete®-218	Sika® Microcrete®-2000	Sika® Microcrete®-3000
Layer Thickness	25-300 mm	20-300 mm	≤ 100 mm	≤ 100 mm
Compressive Strength @ 1 day				~20 N/mm ² (EN 12190:1999)
Compressive Strength @ 7 days	~25 N/mm ² (ASTM C109)	~55 N/mm ² (EN 12190:1999)	> 40 N/mm ² (ASTM C109)	~70 N/mm ² (EN 12190:1999)
Compressive Strength @ 28 days	~40 N/mm ² (ASTM C109)	~75 N/mm ² (EN 12190:1999)	> 60 N/mm ² (ASTM C109)	~95 N/mm ² (EN 12190:1999)
Yield/m ³ (Flowable)	90 bags	88 bags	82 bags	82 bags
Maximum Grain Size	6 mm	6 mm	6 mm	6 mm
Chloride Ion Diffusion Resistance @ 28 days		< 1000 (ASTM C1202)	< 1000 (ASTM C1202)	< 500 (ASTM C1202)
Mixing Ratio	3.0-3.3 L water / 25 kg bag	3.0-3.2 L water / 25 kg bag	3.2-3.4 L water / 25 kg bag	3.0-3.2 L water / 25 kg bag

A close-up photograph of a concrete surface exhibiting significant segregation. The surface is uneven, with large, irregular chunks of light-colored concrete and aggregate material. Two vertical steel reinforcement bars (rebar) are visible, showing significant rust and corrosion. The background is a smoother, grey concrete surface. A semi-transparent text box is overlaid on the left side of the image.

WHAT HAPPENED ?

- Lack of vibration
- Segregation due to concrete was poured at height

FLOOR REPAIR





STRUCTURE	Horizontal Reinforce Concrete (RC) Slab
PROBLEM	Surface finish or existing floor level did not meet the project requirement.
SIKA SOLUTION	<ul style="list-style-type: none">■ The concrete shall be free from dust, loose materials, surface contamination, and materials which reduce bond. Delaminated, weak, damaged, and deteriorated concrete and where necessary sound concrete shall be removed by suitable means■ As for steel reinforcement, the rusted area, mortar, concrete, dust, and other loose and deleterious material which reduces bond or contributes to corrosion shall be removed. Surfaces shall be prepared using abrasive blast cleaning techniques or high pressure water-blasting to SA 2 (ISO 8501-1)■ Apply Sikadur®-732 (refer to the relevant Product Data Sheet) as the bonding primer■ For application thickness of 2 mm-10 mm, Sika MonoTop® R is used as overlayment■ For application thickness of 10 mm-50 mm, Sikafloor®-470 Level is used as overlayment. (refer to method statement of Sikafloor®-470 Level)■ For application thickness of 20 mm-300 mm, Sika® Microcrete®-217 is used as topping (refer to method statement)

FAIR FACED CONCRETE REPAIR (PIN HOLES & BUG HOLES REPAIR)

PROBLEM	REPAIR METHOD	MATERIAL SELECTION	REFERENCE
Pin Holes & Bug Holes Repair	Skim coat patch repair	Sika Products as Fairing Coat	Appendix 4



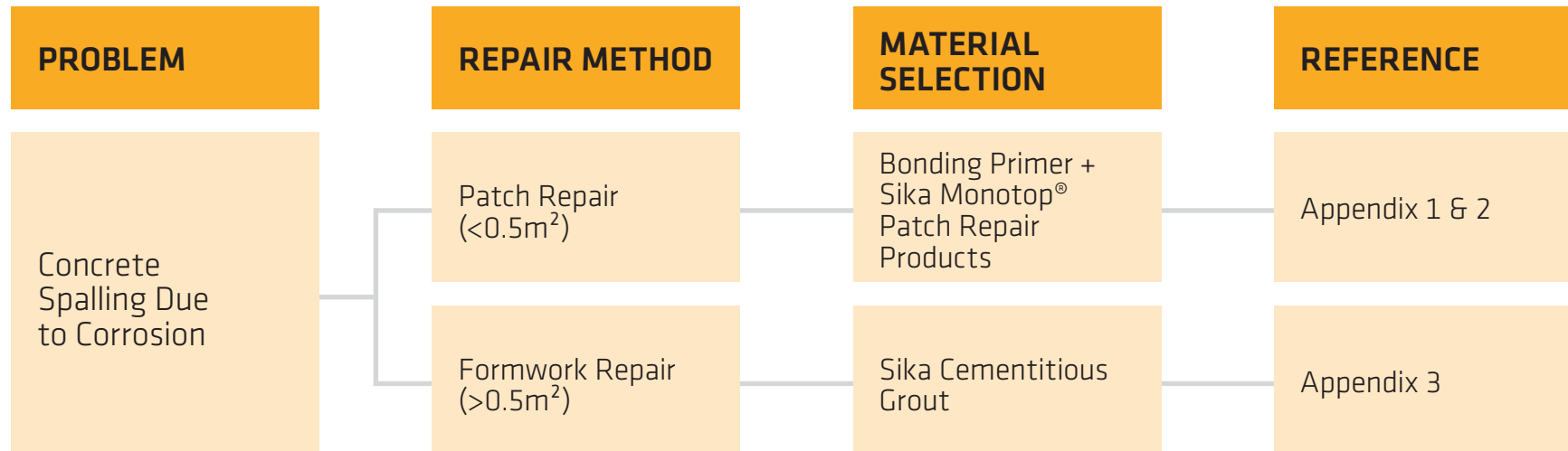
STRUCTURE	Precast Girder, Segmental Bridge Girder, Pier, etc.
PROBLEM	Pin holes and blowholes concrete defects occurred due to: <ul style="list-style-type: none"> ■ Insufficient concrete vibration ■ Insufficient or wrong selection type of mould release agent ■ Insufficient workability flow of the concrete mix design
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Substrate preparation whereby must be sound, clean, dry and free from all contaminants e.g. dirt, oils, grease, coating, surface treatments & etc. ■ Prewet the surface to achieved Saturated Surface Dry (SSD) before application of the repair mortar ■ Apply Sika MonoTop®-711 MY either by hand with a steel trowel or spatula. Sika MonoTop®-711 MY may be spray applied with a suitable spray unit ■ The coat is then levelled off to a smooth surface with a steel trowel. ■ Ensure that the applied coat is dry before application of subsequent coats ■ Kindly refer to Appendix 4 to select a sika product with required finishes and parameter

APPENDIX 4

Sika Products as Fairing Coat for Repairing Pin Holes & Blow Holes

Properties	Sika MonoTop®-711 MY	Sika MonoTop®-620 MY	SikaTop®-121 MY
Technology	Polymer modified cementitious finish skimcoat	Polymer modified cementitious mortar	2 parts polymer modified cementitious mortar
Tensile Adhesion Strength @ 28days	~1.4 N/mm ² (EN 1542)		~1.5 N/mm ² (EN 1542)
Layer Thickness	0.4-2.0 mm	1.5-5.0 mm	5 mm max.
Surface Appearance	Superfine finish coating	Fine finishing	Fine finishing
Consumption	~1.35 kg/m ² /mm	~1.65 kg/m ² /mm	~2.15 kg/m ² /mm

CONCRETE SPALLING





STRUCTURE	Reinforced Concrete Slab, Beam or Column
PROBLEM	<p>Concrete spalling due to:</p> <ul style="list-style-type: none"> ■ Corroded reinforcement bars ■ Fire exposure ■ Alkali silica reaction ■ Insufficient concrete cover
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Remove loose concrete by hacking until sound concrete. Saw cut the surrounding defective area and make sure no feather edges ■ For expose rebar, remove concrete minimum 20 mm behind rebar ■ For rusted exposed rebar, checked the thickness whereby if > 10 % lost in diameter, the affected rebars need to be replace with new rebar. If otherwise, mechanically remove the rusted area and apply SikaTop® Armattec®-110 Epocem as corrosion inhibitor coating ■ Substrate preparation whereby must be sound, clean, dry, and free from all contaminants e.g. dirt, oils, grease, coating, surface treatments & etc. ■ Prewet the surface to achieved Saturated Surface Dry (SSD) before application of the repair mortar ■ Kindly refer to Appendix 3 for grout selection of required parameters

APPENDIX 1

Sika Bonding Primer Products

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Pot Life	~90-120 minutes at +20 °C	~35 minutes at +30 °C	~3 hours at +20 °C
Consumption - As Bonding Mortar	~1.5-2.0 kg/m ² /mm	0.3-0.8 kg/m ²	> 1.5-2.0 kg/m ² /mm
Consumption - As Reinforcement Protection	~2.0 kg/m ² /mm/coat (min. 2 coats required)		~2 kg/m ² /mm/coat (min. 2 coats required)
Packaging	25 kg bag	5 kg set	20 kg set

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Overhead Application	No	Yes	No
Yield / m³	71 bags	73 bags	71 bags
Mixing Ratio	3.4-3.5 L water / 25 kg bag	3.5-4.0 L water / 25 kg bag	3.5-3.8 L water / 25 kg bag

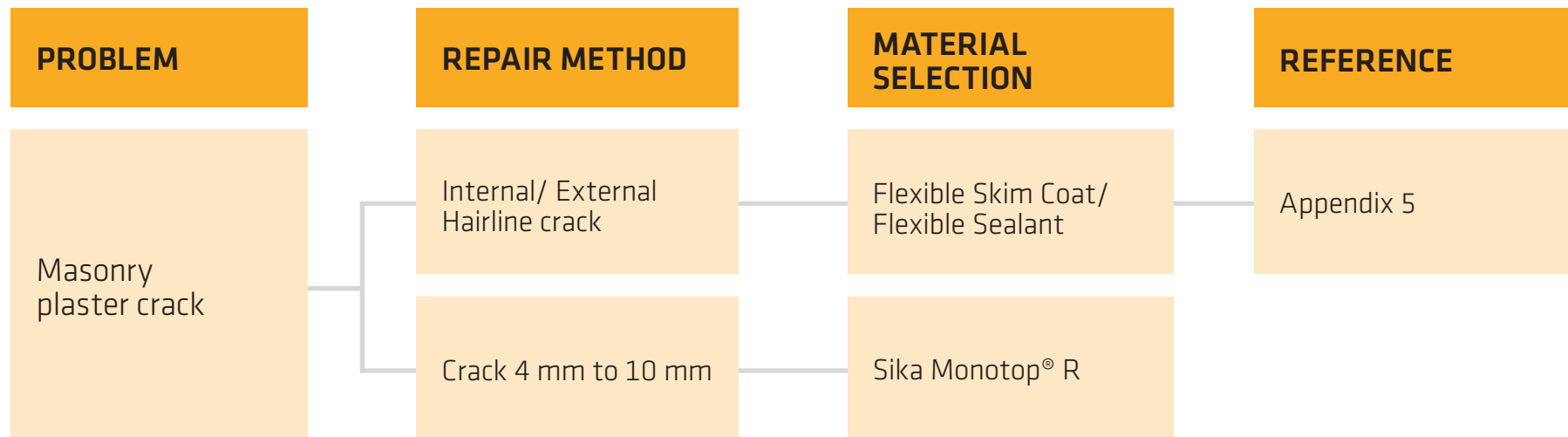
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Properties	Sika® Microcrete®-217	Sika® Microcrete®-218	Sika® Microcrete®-2000	Sika® Microcrete®-3000
Layer Thickness	25-300 mm	20-300 mm	≤ 100 mm	≤ 100 mm
Compressive Strength @ 1 day				~20 N/mm ² (EN 12190:1999)
Compressive Strength @ 7 days	~25 N/mm ² (ASTM C109)	~55 N/mm ² (EN 12190:1999)	> 40 N/mm ² (ASTM C109)	~70 N/mm ² (EN 12190:1999)
Compressive Strength @ 28 days	~40 N/mm ² (ASTM C109)	~75 N/mm ² (EN 12190:1999)	> 60 N/mm ² (ASTM C109)	~95 N/mm ² (EN 12190:1999)
Yield/m ³ (Flowable)	90 bags	88 bags	82 bags	82 bags
Maximum Grain Size	6 mm	6 mm	6 mm	6 mm
Chloride Ion Diffusion Resistance @ 28 days		< 1000 (ASTM C1202)	< 1000 (ASTM C1202)	< 500 (ASTM C1202)
Mixing Ratio	3.0-3.3 L water / 25 kg bag	3.0-3.2 L water / 25 kg bag	3.2-3.4 L water / 25 kg bag	3.0-3.2 L water / 25 kg bag

MASONRY PLASTER CRACK REPAIR





STRUCTURE	Internal / External Hairline crack
PROBLEM	Shrinkage cracks to plasters <ul style="list-style-type: none"> ■ Fine cracks < 2 mm ■ Larger cracks 2 mm to 5 mm
SIKA SOLUTION	<p>Fine cracks < 2 mm</p> <ul style="list-style-type: none"> ■ Prepare the surface of the defective plaster by slightly roughening the surface with a medium grit sandpaper along the crack line ■ Remove dust with a soft brush or vacuum cleaner ■ Apply 1st coat of SikaWall®-603 Acrylic with a clean steel trowel as a primer coat and fill up the minor defects. Allow it to fully cure before subsequent coating ■ Two or three more coats maybe required for a successful resurfacing ■ SikaWall®-603 Acrylic can be painted over <p>For joint treatment</p> <ul style="list-style-type: none"> ■ Sika® Fiber Mesh MY/ SikaWall®-900 Joint Fleece MY can be used to reinforced SikaWall®-603 Acrylic immediately after application of the first coat (wet on wet) and followed with 2nd coat of SikaWall®-603 Acrylic. The Sika® Fiber Mesh MY/ SikaWall®-900 Joint Fleece MY is sandwiched in. Kindly refer to our Method Statement <p>Larger cracks 2 mm to 5 mm</p> <ul style="list-style-type: none"> ■ Prepare the crack surface by clean with wire brush. ■ Cut a V groove of 10 mm wide and 10 mm depth. Remove dust with a soft brush or vacuum cleaner ■ Prime the groove with Sika® Primer®-3N and install a bond breaker ■ Install Sika Hyflex®-140 Construction with a caulking gun until enough to fill the prepared groove ensure full contact of the joint and avoid any air entrapment ■ Level the SikaHyflex®-140 Construction to flush ■ Once cured, there area can be painted ■ Refer Appendix 5 for more information



STRUCTURE	Masonry / Brick Wall
PROBLEM	Plaster cracks due to mild ground settlement with no further movements <ul style="list-style-type: none"> ■ Plaster cracks 4 mm to 10 mm width
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Demarcate the area on both side of the crack line ■ Remove the plasters at a width wider than the reinforcing mesh with an appropriate tool ■ Recommended to use an electrical grinder to pre-cut the perimeter of the plaster to be removed ■ Once the plaster at the affected area has been removed, use vacuum cleaner to remove any dust or loose material ■ Pre wet the surface and do not allow any standing water ■ Apply Sika MonoTop®-910 N as bonding primer (wet on wet) ■ Use a wooden trowel to apply a thin layer of Sika MonoTop® R ■ Place an X-Mesh to reinforce the mortar while it is wet ■ Immediately level the repair area with Sika MonoTop® R ■ Can be painted over after curing

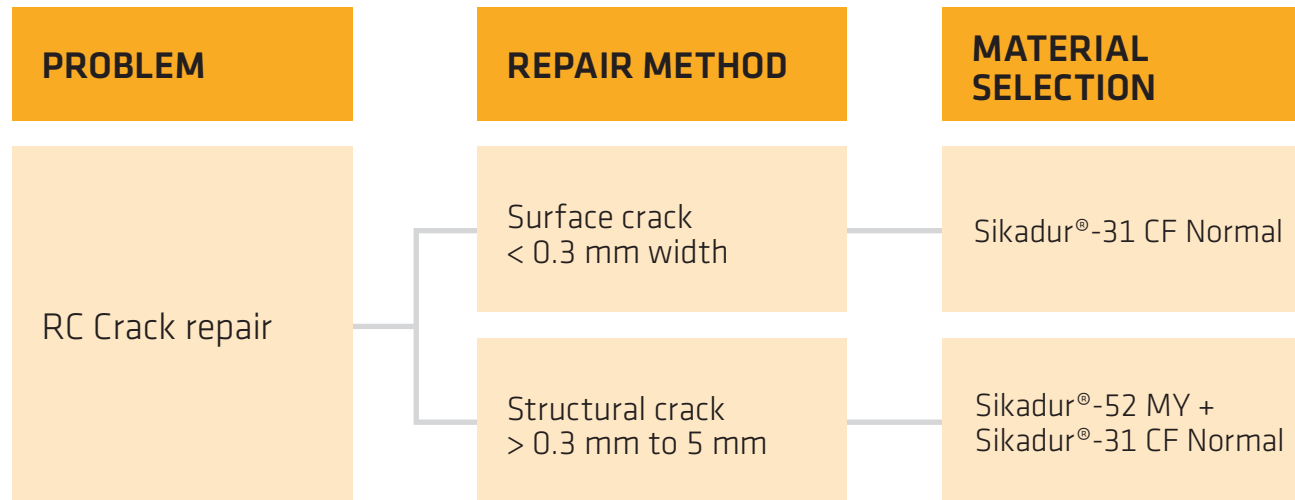
APPENDIX 5

Fine crack plaster / crack repairs

Product Information	SikaWall®-603 Acrylic	SikaHyflex®-140 Construction
Recommended crack width	< 2 mm	2 mm to 5 mm
Movement capability	None	Movement capability of ± 25 %
Composition	Synthetic resin, mineral filler and admixture	i-Cure technology polyurethane
Packaging	<ul style="list-style-type: none"> ■ 5 kg pail ■ 25 kg pail 	600 ml foil pack
Appearance / Colour	White paste	White, grey, black



REINFORCED CONCRETE CRACK REPAIR



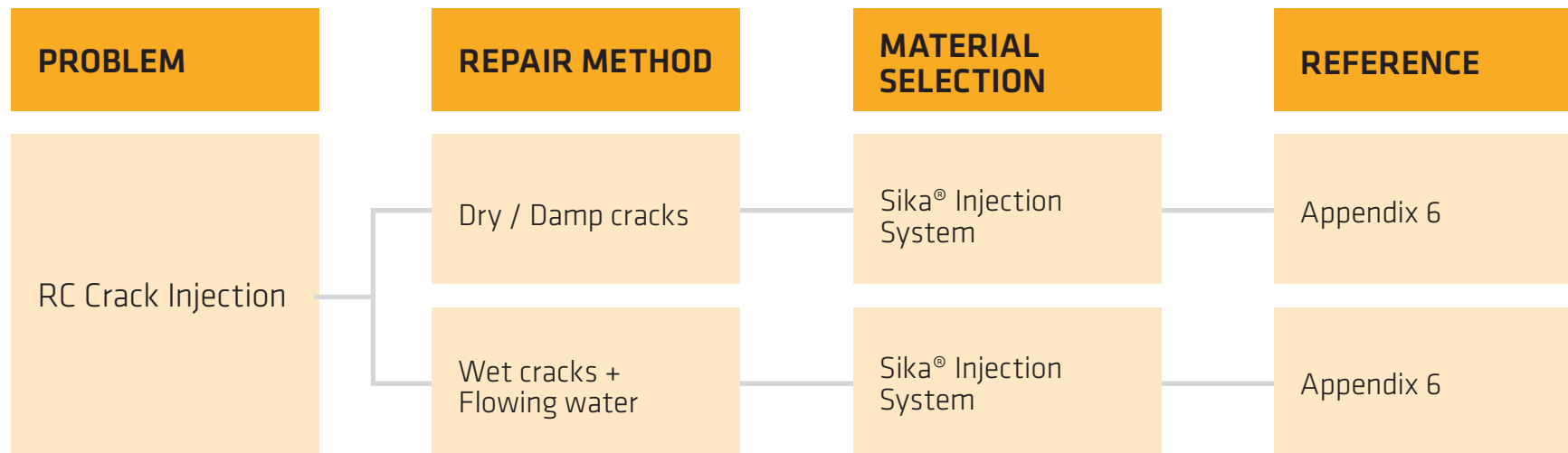


STRUCTURE	Reinforced Concrete Structure
PROBLEM	Shrinkage cracks < 0.3 mm width which is considered as non-structural
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Using an electrical grinder exposed the sound parent concrete ■ Followed by cutting a V groove with width and depth of approximately 5 mm width and 10 mm depth ■ Remove all the dust from the groove with a vacuum cleaner or compress air ■ Apply the properly mixed Sikadur®-31 CF Normal into the groove and flush it with a trowel ■ Once cured, use a mechanical grinder and grind the excess materials from the surface to flush any excess materials



STRUCTURE	Reinforced Concrete Structure
PROBLEM	<p>Cracks ~ 0.3-5 mm width</p> <ul style="list-style-type: none"> ■ Non movement cracks ■ Concrete older than 28 days <p>Recommendation if in doubt seek a structural engineer to determine the cause of the cracks to confirm any current or future structural problems</p>
SIKA SOLUTION	<p>Option 1 - Cracks on horizontal slab (> 0.5 mm width) by gravity pour</p> <ul style="list-style-type: none"> ■ Clean the cracks with compressed air ■ Cracks that penetrate thorough the slab will need to be sealed with Sikadur®-31 CF Normal at the slab soffit a day in advance ■ Prepare a temporary mastic "dam" with materials such as Sikaflex®-11 FC+ to create a reservoir ■ Pour properly mixed Sikadur®-52 MY into the reservoir and allow it fill into the cracks ■ Fill the reservoir several times until you are satisfied that the cracks are fully filled ■ Once the material is cured after 24 hours, excess materials can be removed using an electrical grinder <p>Option 2 - Injection with surface ports</p> <ul style="list-style-type: none"> ■ Clean the surface of the cracks remove loose materials etc ■ Clean the cracks with compressed air ■ Install surface ports with Sikadur®-31 CF Normal as adhesive ■ Seal the surface of the cracks temporary with Sikadur®-31 CF Normal to prevent the injection material from seeping out. Application of Sikadur®-31 CF Normal will need to be done a day ahead for it to be properly cured ■ Injection the Sikadur®-52 MY using a suitable pump. For wall begin from the lowest point and work up wards. For floor begin from the widest crack ■ Once the material has cured, excess materials can be removed with an electrical grinder

REINFORCED CONCRETE CRACK INJECTION REPAIR





STRUCTURE	Reinforced Concrete Structure
PROBLEM	Cracks which is dry and occasionally damp
SIKA SOLUTION	<ul style="list-style-type: none">■ Clean the surface to determine exact location of the cracks■ Remove any loose particles and contaminants in the cracks■ Locate the leaking crack■ Drill holes at a 45° angle at suitable diameter to fit the injection packers■ The holes should be done in alternate side along the crack for better effectiveness and at a distant of 150 mm to 300 mm apart■ Insert injection packer into the hole and tighten using moderate force■ Use a suitable pump to inject Sika® Injection materials■ Load the pump with the injection materials and begin injecting the materials into the crack■ Inject through packers starting at bottom packer and working upwards■ Keep injecting from 3 to 5 minutes until an excess amount of unreacted resin is emitted from the crack■ Remove packers and clean face of the cracks on the next day. Plug up all holes using rapid setting cement or Sika MonoTop® range■ Please refer to Appendix 6 for Sika's injection systems



STRUCTURE	Reinforced Concrete Structure
PROBLEM	Water Leakage with flowing water
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Clean the surface to determine exact location of the cracks ■ Remove any loose particles and contaminants in the cracks ■ Locate the leaking crack ■ Drill holes at a 45° angle at a suitable diameter to fit the injection packers ■ The holes should be done in alternate side along the crack for better effectiveness and at a distance of 150 to 300 mm apart ■ Insert injection packer into the hole and tighten using moderate force ■ Use a suitable pump to inject Sika® Injection materials ■ For cracks with high flowing water or water bearing cracks under hydrostatic pressure, a fast foaming PU Resin such as Sika® Injection-101 AP would be used to inject into the cracks to stop the leakage first prior to a secondary injection for a permanent sealing ■ Load the pump with resin and begin injecting the resin into the crack ■ Inject through packers starting at bottom packer and working upwards ■ Keep injecting from 3 to 5 minutes until an excess amount of unreacted resin is emitted from the crack ■ Remove packers and clean face of the joint on the next day. Plug up all holes using rapid setting cement or Sika MonoTop® R ■ Please refer to Appendix 6 for Sika's injection systems

APPENDIX 6

Overview of Sika's Injection System

	Stage of moisture		
Objectives	Dry and wet	Flowing water without pressure	Flowing water under pressure
Waterproofing	Sika Injection®-101 AP or Sika Injection®-201 CE	Sika Injection®-101 AP or Sika Injection®-201 CE	Sika® Injection-101 AP + Sika® Injection-201 CE or Sika® Injection-304
Structural Repair	Sikadur®-52 MY + Sikadur®-31 CF Normal	Sika Injection®-216	Not possible

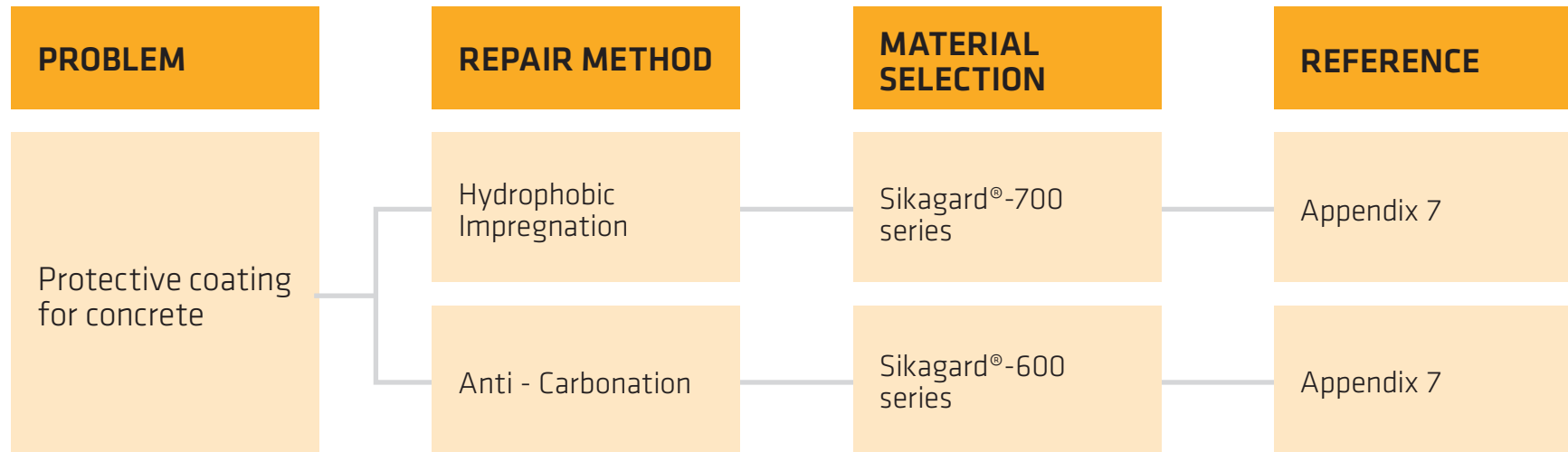
Product Information for Waterproofing Injection System

Product Information	Sika® Injection-101 AP	Sika® Injection-201 CE	Sika® Injection-304
Composition	2 components PU resin	2 components PU resin	2 components polyacrylic resin
Stage of Moisture	<ul style="list-style-type: none"> ■ Dry and wet ■ Wet and flowing water a. without pressure b. with pressure 	<ul style="list-style-type: none"> ■ Dry and wet ■ Wet and flowing water a. without pressure b. with pressure (Must be pre inject with Sika® Injection-101 AP)	Wet and flowing water with pressure
Type of injection pump	Single component pump	Single component pump	2 components pump
Reaction time (expansion start) Material temperature +20 °C	~15 s	can be accelerated to ~5 min	can be accelerated to ~40 s
Viscosity	Part A (Polyol) ~430 mPas Part B (Isocyanate) ~230 mPas	~100 mPas (mixture, +20 °C) (ISO 3219)	~7 mPas (complete mixture, +20 °C) (ISO 3219)

Product Information for Waterproofing Injection System

Product Information	Sikadur®-52 MY	Sika Injection®-216
Composition	2 components modified epoxy resin	2 components PU resin
Stage of moisture	Dry and wet	Wet with flowing water without pressure
Compressive strength	> 80 N/mm ² at 7 days	~70 N/mm ² at 7 days
Viscosity	~110 cps at + 30 °C	~425 cps as at +23 °C

PROTECTIVE COATING FOR CONCRETE STRUCTURE





STRUCTURE

Reinforced Concrete Structure

PURPOSE

Hydrophobic impregnator to reduce of capillary water absorption (moisture control), efflorescence, dirt penetration into the pores and chloride ion ingress

Reinforced Concrete Structure

For protection and embellishment of facades and fair face concrete without obscuring the characteristic surface texture of the concrete:

- Concrete protection system against aggressive pollutants
- Surface protection for exterior areas (No traffic) UV resistant
- Architectural colour design on fair-face concrete structures
- Carbonation
- Weathering and ageing
- Chalking
- Water absorption

SIKA SOLUTION

- The substrate must be free of loose and friable particles, dust and dirt
- Remnants of release agents, particularly oil and wax based, any contaminants that may affect the penetration of the chemical must be removed
- Applied using low pressure spray, brush or roller, working from bottom up taking care not to let the product run
- Apply subsequent coats “wet on wet”
- Does not require any special curing but must be protected from rain for at least 3 hours at + 20 °C
- Please refer to Appendix 7 for Sika’s protective coating systems

- The substrate must be free of loose and friable particles, dust and dirt
- Remnants of release agents, particularly oil and wax based, that may affect the adhesion of the protective coatings must be removed
- Any surface repairs with SikaTop® or Sika MonoTop® mortars can be overcoated after 7 days
- Sika’s protective coating range Sikagard® can be applied by brush or roller or airless spray equipment
- Application must not proceed during rain or high air humidity
- Freshly applied layers must be protected from dew, fog and rain
- Please refer to Appendix 7 for Sika’s protective coating systems

APPENDIX 7

Sika's protective coating system

Hydrophobic Impregnation

Product Information	Sikagard®-700 S	Sikagard®-704 MY	Sikagard®-705 L
Description	Siloxane based water repellent impregnation	Silane/ Siloxane based reactive water repellent impregnation	Silane based reactive water repellent impregnation
Composition	Silanes / Siloxanes blend in organic solvent	Blend of silanes and siloxanes	Silanes
Appearance	Colourless liquid	Water like liquid, colourless	Water like liquid, colourless
Packaging	<ul style="list-style-type: none"> ■ 20 L pail ■ 200 L drum 	<ul style="list-style-type: none"> ■ 20 kg ■ 180 kg drum 	<ul style="list-style-type: none"> ■ 18 kg ■ 180 kg drum

Protective coatings

Product Information	Sikagard®-670 WMY	Sikagard®-678 WMY	Sikagard®-680 MY	Sikagard®-720 EpoCem HC
Composition	Acrylic based	Acrylate based	High performance methyl metacrylate (MMA)	Superfine epoxy-cement
Application	Anti Carbonation Coating	Anti Carbonation Coating	Anti Carbonation Coating	For insufficient concrete cover, Sealing of blow holes, pore sealer 4 mm thk. of Sikagard®-720 EpoCem HC has an equivalent concrete cover of 70 mm based on test report A.29'212-1E
Packaging	<ul style="list-style-type: none"> ■ 20 L pail ■ 200 L drum 	20 kg	<ul style="list-style-type: none"> ■ 20 L pail ■ 200 L drum 	21 kg sets (Part A + B + C)
Permeability to Carbon Dioxide	$S_D > 150$ m (BS EN 1062-6:2002, Method B)		> 250 m equivalent thickness of air (BS EN 1062-6:2002, Method B)	$\mu\text{CO}_2 \sim 5400$ (EN 1062-6)

Note: Sikagard®-678 WMY fully complies to EN 1504.



PROTECTION FOR INSUFFICIENT CONCRETE COVER

PROBLEM

Protection for insufficient concrete cover

MATERIAL SELECTION

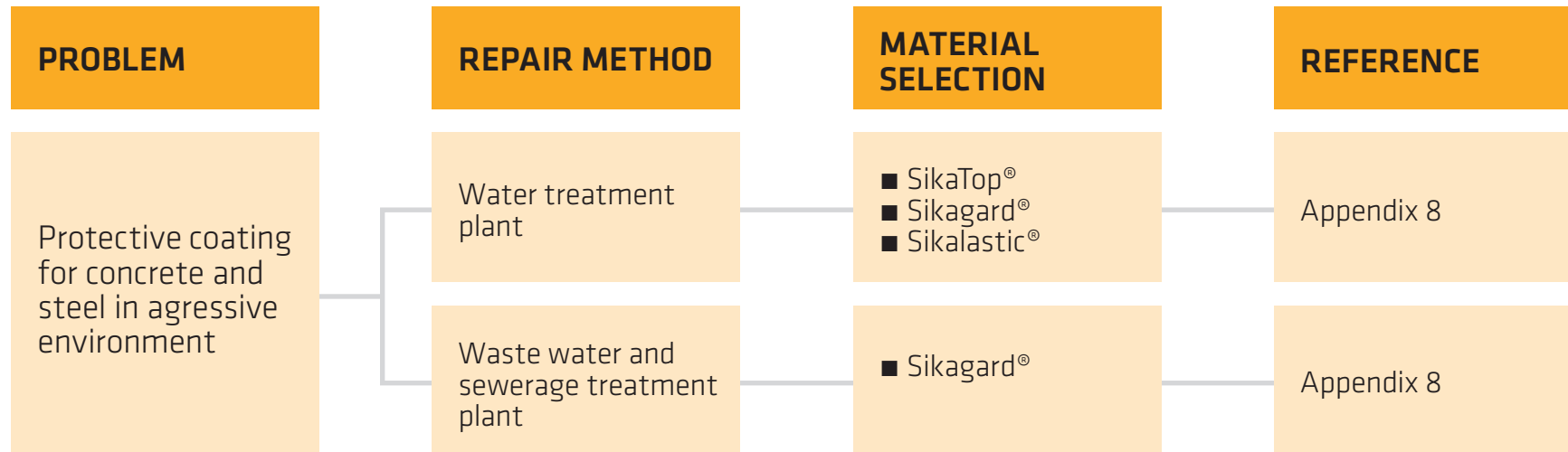
Sikagard®-720
EpoCem HC

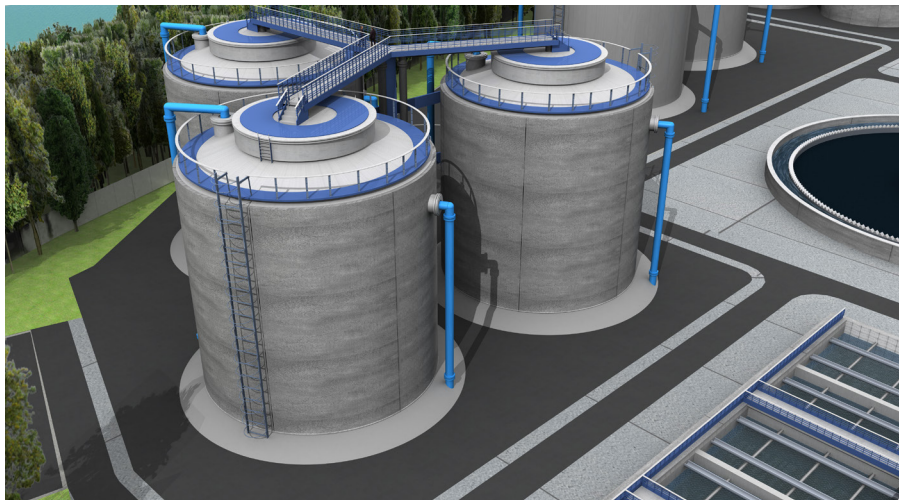




STRUCTURE	Reinforced Concrete Structure – Slab, Beam and Column
PROBLEM	Insufficient concrete cover
SIKA SOLUTION	<ul style="list-style-type: none">■ Concrete substrate must be sound and of sufficient compressive strength■ Surface must be prepared mechanically using abrasive blast cleaning or scarifying equipment to remove laitance and open textured surface. Blowholes / voids and surface levelling to be carried out using suitable Sika products prior to application Sikagard®-720 EpoCem HC a 3 components epoxy cement material■ All dust, loose and friable material must be completely removed by brush or vacuum■ Surface must be pre wet■ Place properly mixed Sikagard®-720 EpoCem HC onto the matt damp substrate and spread evenly to the required thickness with a trowel or spatula. If necessary, it may be finished with a moist neoprene sponge or brush■ Note: 4 mm thick of Sikagard®-720 Epocem HC has an equivalent concrete cover of 70 mm based on test report A.29'212-1E

PROTECTIVE COATING FOR CONCRETE AND STEEL IN AGRESSIVE ENVIRONMENT





STRUCTURE	Reinforced Concrete Tank For Water Treatment Plant	Reinforced Concrete or Steel Tank For Waste Water Treatment Plant and Sewerage Treatment Plant
PROBLEM	Concrete damage due to abrasion causing removal of the cement matrix exposing the aggregates in Water Treatment Plant	Concrete damage from chemical attack due to exposure to aggressive environment in WWTP and STP
SIKA SOLUTION	<ul style="list-style-type: none"> ■ Surface must be sound, free from cement slurry, dust, loose and friable particles and other contamination ■ Surface preparation must be done in compliance to the individual system requirements ■ Damage concrete must be repaired with Sika MonoTop® or SikaGrout® product range (kindly to item 1 to 4) prior to application of protective coating system ■ Large holes, cavities, blow holes should be patched/ filled with Sikadur® range of products ■ Kindly refer to individual product PDS and Method Statement for system selection and application <p>Available system options:</p> <ul style="list-style-type: none"> ■ SikaTop®-121 MY - 2 part cement based polymer modified ■ Sikagard®-62 MYI - 2 component epoxy coating for potable water and chemical tank lining ■ Sikalastic®-871 JW - fast curing polyurea for the use in potable water tank ■ Please refer to Appendix 8 for Sika's protective coating system for WTP, WWTP & STP 	<ul style="list-style-type: none"> ■ Surface must be sound, free from cement slurry, dust, loose and friable particles and other contamination ■ Damage concrete must be repaired with Sika MonoTop® or SikaGrout® product range (kindly to item 1 to 4) prior to application of protective coating system ■ Concrete surfaces should be prepared by thoroughly mechanically wire-brushing, abrading, scarifying or preferably by high pressure water/ sand blasting. This is particularly important in the case of underwater exposure ■ Large holes, cavities, blow holes should be patched/ filled with Sikadur® range of products ■ Apply either Sikagard®-62 MYI or Sikagard® PW, two part reaction hardening chemical resistant epoxy coating with high solid content by brush, roller or airless spray as per Product Data Sheet (PDS) ■ Please refer to Appendix 8 for Sika's protective coating systems

APPENDIX 8

Protective coating for Water Treatment Plant, Waste Water Treatment Plant and Sewerage Treatment Plants

Product Information	SikaTop®-121 MY	Sikagard®-62 MYI	Sikalastic®-871 JW	Sikagard®-PW
Purpose	Concrete Protection in Water Treatment Plant	Concrete and Steel Protection in Water Tank, WWTP and STP	Concrete and Steel Protection in Water Tank, WWTP and STP	Concrete and Steel Protection in Water Tank, WWTP and STP
Composition	2 component cement based polymer modified	Two part, high solid, non toxic epoxy tank lining and protective coating	2 component polyurea designed for the use in potable water	Two component, solvent free, non-toxic epoxy coating with outstanding mechanical and chemical properties
Application Method	by trowel or by spray	brush, roller or spray	2 - part hot spray high pressure equipment	Stiffed brush, roller or spray
Packaging	<ul style="list-style-type: none"> ■ Part A 5 kg can ■ Part B 20 kg bag 	<ul style="list-style-type: none"> ■ Part A 6 kg pail ■ Part B 1 kg pail ■ Part A+B : 7 kg set 	<ul style="list-style-type: none"> ■ Part A (net) : 200 kg drum ■ Part B (net) : 175 kg drum ■ Part C (net) : 15 kg can 	Two components (A+B) 10 Kg pails
Consumption	~2.15 kg/m ² /1 mm thickness	~3.6 m ² /kg/coat at 150 microns thickness, 2 coats	Sikafloor®-161 HC 1-2 layer ~0.20-0.30 kg/m ² /layer Sikalastic®-871 JW ~ 1.10 kg/m ² /mm	3-4 m ² /kg depending upon substrate condition.
Layer thickness	maximum thickness per coat is 5 mm	~180 micron per coat (WFT) ~300 micron in 2 coats (DFT)	2.0 mm	Theoretical dry film thickness of 200 micron (0.2mm) approx. 0.32 kg/m ²



PROJECT REFERENCE

CENTRAL

- North Port, Klang, Selangor
- Parliament Building, Kuala Lumpur
- JKR Headquarters, Kuala Lumpur
- KLCC, Kuala Lumpur
- Tun Razak Exchange, Kuala Lumpur
- Kuala Lumpur International Airport
- JW Marriot, Kuala Lumpur
- PLUS Highway
- DASH Highway
- Pullman, Putrajaya
- LRT Project, Kuala Lumpur
- KVMRT Project, Kuala Lumpur
- AIR Selangor
- SYABAS, Selangor
- Sunway Resort Hotel, Selangor
- SUKE Highway
- DHL Warehouse, Shah Alam, Selangor
- Pavilion Bukit Jalil, Kuala Lumpur
- Oxley KLCC, Kuala Lumpur
- Hospital Tengku Ampuan Rahimah (HTAR), Klang Selangor
- University Malaya, Kuala Lumpur
- IKEA Warehouse Pulau Indah, Selangor
- Sunway Velocity, Cheras, Selangor

EAST COAST

- Kuantan Port, Kuantan, Pahang
- Kemaman Port, Terengganu
- Sultan Yahya Petra Bridge, Kota Bharu
- Kuala Terengganu Hospital, Terengganu
- East Coast Rail Link (ECRL) Project

SOUTHERN

- Johor Port, Johor
- MMHE Facility, Johor
- Pengerang Rapid, Johor
- Forest City, Johor
- Melaka Power Plant, Melaka
- Rapid Pengerang, Johor
- Water Dam, Gunung Ledang, Johor
- Kukup Jetty Refurbishment, Johor
- Kem Desa Bina Diri at Mersing, Johor
- TNB Pengerang, Johor
- PTP Jetty, Johor
- Jabatan Laut Mersing, Johor
- TRI Space Tower, Johor

NORTERN


- UTC, Alor Setar, Kedah
- Penang Port, Pulau Pinang
- Penang Bridge, Pulau Pinang
- Western Digital, PN2, Pulau Pinang
- Lumut Port, Lumut, Perak
- Komtar Building, Pulau Pinang
- MSM Prai, Seberang Perai, Pulau Pinang
- Shell Bagan Luar, Pulau Pinang
- Petron, Bagan Luar, Pulau Pinang
- Teluk Ewa Jetty, Langkawi

EAST MALAYSIA


- Sabah Port Kota Kinabalu, Sabah
- Petronas SOGT Sabah Concrete Fly-Over Bridge, Sabah
- Sabah Port, Tawau Jetty, Sabah

- Sabah Port, Sandakan Jetty, Sabah
- Sepanggar Navy Base, Sabah
- Pantai Inn Kota Kinabalu, Sabah
- TM Malaysia HQ Building, Kota Kinabalu, Sabah
- UTC Main Building Kota Kinabalu, Sabah
- Le Meridien Hotel Kota Kinabalu, Sabah
- BELB Pitas Zone 3 Power Station, Sabah
- Sabah Ammonia Urea Petronas Plant, Sabah
- Pan Borneo Highway, Sabah
- Gentingmas Mall Sandakan Sabah
- Oceanus Mall Kota Kinabalu, Sabah
- DE Leon Hotel Lahad Datu, Sabah
- Pan Borneo Highway, Sarawak
- Samalaju Port, Bintulu, Sarawak
- Balingian Coal Power Plant, Mukah, Sarawak
- CMS Mambong Clinker, Kuching, Sarawak
- Sarawak Energy Substation, Baram, Miri, Sarawak
- Polytechnic Matang Library, Sarawak
- Masjid Jamek Petrajaya, Kuching, Sarawak
- Telekom Were Road, Kuching, Sarawak
- JKR Miri Quarter, Miri, Sarawak
- Sg. Stuum Mudah & Sg Stuum Toman Bridge, Sarawak
- Sadong Whaft Repair, Sarawak
- MCOT SLPS Bridge Culvert Repair, Sarawak
- Batang Sadong Bridge, Serian, Sarawak
- Sacofa Office, Kuching, Sarawak
- Pulau Muara Besar Bridge, Brunei
- Temburong Bridge, CC3 Package Brunei
- Brunei Fertilizer Industries Complex, Brunei
- Hengyi Petro Chemical Complex, Brunei

FOR MORE INFORMATION




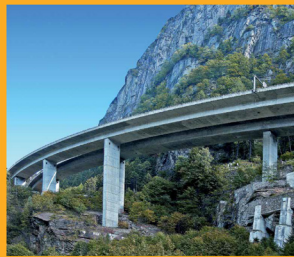
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LEAK SEALING SOLUTIONS
WITH SIKA INJECTION SYSTEMS**
FOR CONCRETE, MASONRY AND NATURAL STONE STRUCTURES

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**SIKA SOLUTIONS
FOR THE OIL & GAS INDUSTRY**

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**REFURBISHMENT
THE REPAIR AND PROTECTION
OF REINFORCED CONCRETE
WITH SIKA**
IN ACCORDANCE WITH EUROPEAN STANDARDS EN 1504

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**SIKA SOLUTION FOR
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**REFURBISHMENT
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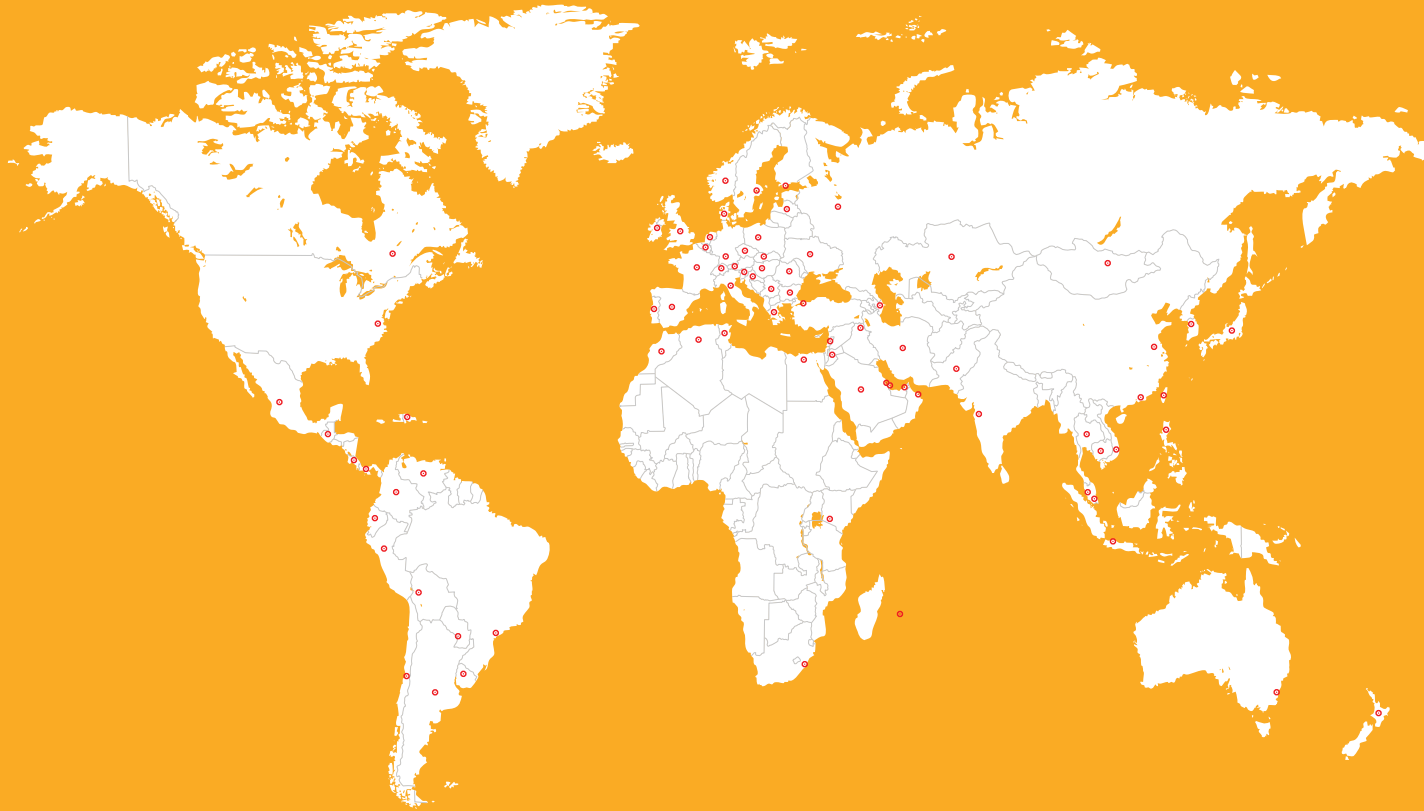


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ANCHORS
Sika AnchorFix®**

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GLOBAL BUT LOCAL PARTNERSHIP



WHO WE ARE

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, flooring as well as roofing and waterproofing systems.

Our most current General Sales Conditions shall apply.
Please consult the Data Sheet prior to any use and processing.

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