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SIKA SYSTEM SPECIFICATION

Project:
Date:
Reference:
Client:

A 1.8 MM THICK, FLEXIBLE, LIQUID APPLIED, UV-STABLE, WATERPROOFING SYSTEM
USING
SIKAROOF® MTC 18 SYSTEM CONSISTING OF:

SIKA® CONCRETE PRIMER
SIKALASTIC®-601 BC BASE COAT
SIKA®-REEMAT PREMIUM GLASS FIBRE MAT REINFORCEMENT
SIKALASTIC®-621 TC TOP COAT

Part 1 - General

1.01 Summary

A. This specification describes the coating of new or existing exposed areas of onshore wind turbines concrete foundations with a cold-applied, seamless, highly elastic and UV-stable, moisture triggered polyurethane waterproofing system.

B. Related sections include:

1. None

C. **SikaRoof® MTC 18** is based on new moisture curing technology with the advantage of speed of installation and simplicity of design, together with a seamless application.

D. Related Work
The work includes but is not limited to the installation of:

1. Substrate Preparation
2. Waterproofing Membrane
3. Sealants

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1.02 Quality Assurance

A. This waterproofing system shall be applied only by a Trained Applicator authorised by Sika prior to bid (Sika "Applicator").
B. Upon completion of the installation and the delivery to Sika by the Applicator of certification that all work has been done in strict accordance with the contract specifications and Sika's requirements, a Sika Representative will review the installed waterproofing system where a Standard warranty has been specified.
C. There shall be no deviation made from the Project Specification without prior written approval by the Owner, the Owner's Representative and Sika.
D. All work pertaining to the installation of Sika's membrane shall only be completed by Applicators personnel trained and authorized by Sika in those procedures.

1.03 Delivery, Storage, and Handling

A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.
B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.
C. As a general rule all materials should be stored at temperatures between 5ºC and 27ºC. Read instructions contained on adhesive canister for specific storage instructions.
D. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
E. Any materials which the Owner's representative or Sika determines to be damaged are to be removed from the job site and replaced at no cost to the Owner.

1.04 Job Conditions

A. Some materials may be installed under certain adverse weather conditions but only after consultation with the manufacturer, as installation time and system integrity may be affected.
B. Only as much of the new waterproofing as can be made weathertight each day, including all detail work, shall be installed.
C. All surfaces to receive new membrane shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.
D. Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air or similar methods.
E. The Applicator shall follow all safety regulations as required by OSHA, COSHH and any other applicable authority having jurisdiction.
F. Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.
G. Keep lids on unused cans at all times.
H. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.
I. Always follow OSHA and other relevant fall protection standards when working on roofs.

1.05 Submittals

A. At the time of bidding, the Applicator shall submit to the Owner (or Representative) the following:

1. Copies of Specification.
2. Samples of each primary component to be used in the waterproofing system and the manufacturer's current literature for each component.
3. Certification from the Applicator that the system specified meets all identified code and insurance requirements as required by the Specification.
4. Material Safety Data Sheets (MSDS)

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1.06 Warranty

A. A project specific warranty for the performance of the specified product should be agreed and confirmed in writing from the specialist applicator, backed by the product manufacturer's standard product supply warranty for the same period'. This warranty should form part of the tender bid documents.

Part 2 - Products

2.01 Liquid-applied, waterproofing system overview:

SikaRoof® MTC-18, 1.8mm thick, liquid-applied, UV-stable, roof waterproofing system by Sika or similar approved manufacturer consisting of:

A. **Sika® Concrete Primer:** Two-component, rapid curing polyurethane / polyurea hybrid primer.

B. **Sikalastic®-601 BC:** Liquid applied, polyurethane base coat membrane.

C. **Sika® Reemat Premium:** Glass fibre mat reinforcement.

D. **Sikalastic®-621 TC:** Liquid applied, polyurethane top coat membrane.

E. All products listed in the system above shall be supplied by the same manufacturer to ensure single source responsibility & warranty.

2.02 Liquid-applied, roof waterproofing performance specification:

A. The liquid-applied, waterproofing system shall be **SikaRoof® MTC 18,** a 1.8mm thick, cold-applied, seamless, highly elastic and UV-stable, moisture triggered polyurethane waterproofing system, with the following minimum system performance properties:

Technical Data	Standard	Min requirement
Description		A 1.8mm thick, cold-applied, seamless, highly elastic and UV-stable, moisture triggered polyurethane, waterproofing system consisting of Sikalastic®-601 BC, Sika® Reemat Premium and Sikalastic®-621 TC.
Tensile strength	EN ISO 527-3	> 12 N/mm^2
Elongation at break	EN ISO 527-3	Approx. 58%
Tear strength	EN ISO 6383-1	Approx 47N/mm^2
Reaction to fire	EN 13501-1	Euroclass E
Salt spray resistance	ASTM B117	No effect after > 1000 hours continuous exposure
Salt spray resistance	ASTM G85-94 Annex 5	No effect after > 1000 hours cyclic exposure
Service temperature		-30°C to +80°C

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Colours		Sikalastic®-601 BC: Oxide red (RAL 3011) Sikalastic®-621 TC: Slate grey (RAL 7015), shale grey (RAL 8500), traffic white (RAL 9016), other colours available upon request
Theoretical coverage rates		Sika® Concrete Primer: 1 - 2 coats at ~0.35 - 0.55 kg/m^2/ coat Sikalastic®-601 BC: 1.0 litre/m^2 (≥ 1.36 kg/m^2) Sikalastic®-621 TC: 1.1 litres/m^2 (≥ 1.6 kg/m^2)

B. In addition to the above **SikaRoof® MTC 18** system performance, the liquid-applied waterproofing system shall consist of the following materials which are subject to individual minimum performance properties as follows:

1. **Primer:**

   The primer on concrete surfaces for the **SikaRoof® MTC 18** waterproofing system shall be **Sika® Concrete Primer** or similar two component, rapid curing, high solids, solvent based polyurea/polyurethane-hybrid primer with the following minimum properties:

Technical Data	Standard	Min requirement
Description		Two component, rapid curing, high solids, solvent based polyurea/polyurethane-hybrid primer.
Density		~1.02 kg/litre
Bond strength to concrete	EN 13596	≥ 1.0 N/mm^2 @ 23°C without freeze / thaw cycle ≥ 1.0 N/mm^2 @ 23°C after 20 freeze / thaw cycles
Packaging		11.5 litre (11.78kg) pack
Consumption Coverage rate		Apply 1 - 2 coats at ~0.35 - 0.55 kg/m^2/ coat (depending on porosity)

2. **Liquid-applied waterproofing membrane base coat:**

   The liquid-applied base coat for the **SikaRoof® MTC 18** waterproofing system shall be **Sikalastic®-601 BC**, a one-component, cold-applied, seamless, highly elastic, moisture-triggered polyurethane membrane, with the following minimum properties:

Technical Data	Standard	Min requirement
Description		A one-component, cold-applied, seamless, highly elastic, moisture-triggered polyurethane Base Coat (BC).
Root resistance	FLL (Institute of Horticulture)	Passes

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Reaction to fire	EN 13501-1	Euroclass E
Density at 23°C	EN ISO 2811-1	1.36 kg/litre
Solid content		~ 78% by volume ~ 84.3% by weight
Service temperature		-30°C to +80°C
Colours		Oxide red (RAL 3011)
Packaging		5 litre (~6.8 kg) metal pail 15 litre (~20.4 kg) metal pail

3. **Glass fibre mat reinforcement:**

   The glass fibre mat reinforcement in between the base & top coats of the **SikaRoof® MTC 18** waterproofing system shall be **Sika® Reemat Premium,** random glass fibre matting, with the following minimum properties:

Technical Data	**Standard**	**Min requirement**
Description		A glass fibre mat reinforcement for Sikalastic® Liquid Applied Membrane systems.
ETAG 005	European Organisation for Technical Assessment	Approved as part of SikaRoof® MTC systems
Colour		White
Mass per unit area		225 g/m^2
Packaging		1.3m wide x 150m long, 1.3m wide x 90m long & 0.3m wide x 150m long

4. **Liquid-applied roof membrane top coat:**

   The liquid-applied top coat for the **SikaRoof® MTC 18** roof waterproofing system shall be **Sikalastic®-621 TC,** a one-component, cold-applied, seamless, highly elastic, moisture-triggered polyurethane membrane, with the following minimum properties:

Technical Data	**Standard**	**Min requirement**
Description		A cold-applied, one-component, seamless, highly elastic and UV-stable moisture-triggered polyurethane Top Coat (TC).

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Colour		Slate grey (RAL 7015), shale grey (RAL 8500), traffic white (RAL 9016), other colours available upon request
Density at 23°C	EN ISO 2811-1	1.44 kg/litre
Solid content		~ 81.3% by volume, 87.4% by weight
Flash point		62°C
Service temperature		-30°C to +80°C
Packaging		5 litre (7.2 kg approx.) metal pail 15 litre (21.6 kg approx.) metal pail

Part 3 – Execution

3.01 Substrate condition

A. The applicator shall be responsible for acceptance or provision of proper substrate to receive new waterproofing materials.

B. The applicator shall verify that the work done under related sections meets the following conditions:
   1. All coated surfaces are compatible with the new waterproofing system
   2. All surfaces are smooth and free of dirt, debris and incompatible materials.
   3. All roof surfaces shall be free of water, ice and snow.

3.02 Substrate preparation

A. **New Concrete – new foundations:** New Concrete shall be designed and placed in accordance with current working practices and is to have a minimum compressive strength of 25kN/m² (C20/25) and must be allowed to cure for a minimum of 28 days. Consideration is to be given to joints, interfaces and terminations. Concrete must be suitably finished. The surface finish must be uniform and free from defects such as laitance, voids or honeycombing. Surfaces to be coated are to be free of contamination such as oil, grease. Surface preparation must be carried out in accordance with our specification and power washing can often assist in revealing suspect areas. Any defective areas must be made good using an appropriate **Sika MonoTop®** concrete repair mortar and allowed to cure for a minimum period of 72 hours checking the moisture content before over coating, in accordance with standard concrete repair procedures. Concrete surfaces where laitance is present must be mechanically prepared using dust controlled mechanical preparation equipment. Surfaces that have been mechanically ground are to be vacuumed to a dust free state. If the concrete is to be coated earlier than 28 days, then moisture content must be considered.

B. **Outgassing:** Outgassing is a naturally occurring phenomenon of concrete that can produce pinholes in subsequently applied coatings. The concrete must be carefully assessed for moisture content, air entrapment and surface finish prior to any coating work. Any requirement for priming must also be considered. Installing the membrane either when the concrete temperature is falling or stable can reduce outgassing. It is generally beneficial, therefore, to apply the embedment coat in the late afternoon or evening.

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C. **Initial Cleaning:** All surfaces to be coated are to be thoroughly cleaned by conventional means. Ensure that surfaces are free from visible dampness and that surface lying dust, dirt and other forms of contamination are removed.

Generally

A. **Surface Moisture:** Surface lying moisture, loose debris, etc., must be removed from areas to be coated immediately prior to treatment.

B. **Joints:** Prepare all joints with the suitable sealing system. Debonding tapes may be required in the connection between steel flange and concrete foundation surface if big movements are expected.

C. **Exposed Metal Surfaces:** All exposed metal surfaces to be included in the coating schedule must be free from rust/scale or oxidation, treat bright metal wherever possible. If they are coating, make a compatibility test in advance to assure the correct bonding of the new waterproofing system.

D. **Final Cleaning:** Immediately prior to application, ensure that all surfaces are free from visible dampness and that surface lying dust, dirt and other forms of contamination are removed.

3.03 Priming

A. **Exposed Metallic Surfaces:** Apply a full coat of **Sikalastic® Metal Primer** to all prepared, exposed metallic surfaces and allow to dry for a minimum of period of 9 hours before over coating. Note: Brush application is recommended. Do not apply too thickly.

B. **Exposed Concrete:** Apply a coat of **Sikalastic® Concrete Primer** to prepared, sound exposed concrete or timber surfaces by brush and leave to dry for 30 minutes before over coating.

3.04 Detailing

A. Termination details are to be agreed.

B. **Tower/ Flange:** Inspect that all surfaces to be waterproof are prepare as required in order to accept the coating.

Apply the primer as specified to the coated tower/ flange prior to coating.

Dress the coating onto and up the tower to finish a minimum 150mm above the finished flange level.

3.05 Waterproofing

A. **Base Coat:** Apply an initial embedment coat of **Sikalastic® -601 BC** to the surface, using a minimum quantity of **1.0** litre per square metre (**1.4** kg per square metre) and whilst wet, strengthen by inserting **Sika® Reemat Premium** glass fibre matting, followed by rollering until the mat is completely embedded and thoroughly saturated. Overlap adjacent areas already laid by 50mm ensuring sufficient embedment material is applied to these areas. At this stage, check the coating for pinholes and/or exposed matting and apply further material to correct if necessary. Allow to dry before applying the second coat.

B. **Top Coat:** Apply a coat of **Sikalastic® -621 TC** to these reinforced areas by roller (brushes may be used for detail work) using a minimum quantity of **1.1** litres per square metre (**1.6** kg per square metre) to achieve an approximate overall system dry film thickness of **1.8mm** (1800 microns). Allow to dry.

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Note: Where **Sikalastic® -621 TC** is to be applied to vertical surfaces, it may well be necessary to apply more than one coat to achieve the required finished dry film thickness.

Reinforcement: When embedding **Sika® Reemat Premium** Glass Fibre Matting onto rough, uneven surfaces, etc., tamping of the matting may be required. Use a soft nylon/bristle brush or small specialised roller, work the matting as required to give all round contact with the substrate.

C. **Material Coverage:** Coverage rates may vary depending on substrate condition. Contact the local **Sika®** office for advice.

D. **Completion:** On completion of coating works, check the finish for pinholes, voids, damage, etc. Spot treat to rectify. The site should be left clean, tidy and free from spillage, waste or other residue and in a manner acceptable to the client or their representative.

END OF SIKA PRODUCT SPECIFICATION FOR

A 1.8 MM THICK, FLEXIBLE, LIQUID APPLIED, ROOF WATERPROOFING SYSTEM