

SBC

SYSTEM SPECIFICATION

THERMO SHIELD® AQUA IR 2K

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1. PURPOSE OF THE DOCUMENT

This System Specification defines the technical requirements for the application of the **THERMO SHIELD® AQUA IR 2K** two-component, water-based infrared reflective acrylic-polyurethane coating system.

The purpose of this document is to establish uniform requirements for surface preparation, material mixing, application procedures, quality control and final acceptance in order to achieve the intended long-term performance and durability of the coating system.

This specification applies exclusively to the **THERMO SHIELD® AQUA IR 2K** coating system and shall be used together with the relevant product documentation.

2. SCOPE

This specification applies to all projects involving the use of **THERMO SHIELD® AQUA IR 2K**, including new construction, refurbishment and maintenance applications.

The document is intended for:

- Designers
- Architects
- Contractors
- Supervising Engineers
- Quality Inspectors
- Facility Owners and Operators
- Authorized SBC Partners and Applicators

Compliance with this specification contributes to consistent application quality and reliable long-term system performance.

3. SYSTEM DESCRIPTION

THERMO SHIELD® AQUA IR 2K is a two-component, water-based infrared reflective acrylic-polyurethane coating system developed to protect building and industrial substrates while significantly reducing solar heat absorption.

The primary objectives of the system are:

- Reflection of near infrared (NIR) solar radiation
- Reduction of surface temperature
- Lower thermal loading of the substrate
- Improved weather resistance
- Long-term colour and appearance retention
- Contribution to improved building energy efficiency

When properly applied to a suitably prepared substrate, the coating forms a continuous protective film capable of withstanding normal environmental exposure while maintaining its thermal reflective properties.

The specified performance can only be achieved when all application requirements contained within this specification and the relevant Technical Data Sheet (TDS) are fully observed.

4. INTENDED USE

The **THERMO SHIELD® AQUA IR 2K** coating system is intended for applications where long-term weather resistance, high infrared reflectance and reduced surface temperatures are required.

Typical suitable substrates include:

- Concrete
- Cement-based renders
- Fibre cement boards
- Galvanized steel
- Structural steel with an appropriate primer system
- Aluminium
- Pre-coated metal sheets
- Roof and façade cladding
- Existing sound coating systems

Each project shall include an assessment of substrate condition, compatibility and suitability prior to application.

5. SUITABLE SUBSTRATES

The **THERMO SHIELD® AQUA IR 2K** coating system shall only be applied to clean, stable, structurally sound and properly prepared substrates.

Suitability shall be confirmed by site inspection and, where appropriate, trial application.

5.1 Concrete

Concrete shall be:

- Fully cured
- Structurally sound
- Free from laitance
- Free from loose particles
- Dry prior to coating application

Mechanical preparation such as grinding or abrasive blasting may be required where necessary.

5.2 Cement-Based Render

Rendered surfaces shall be adequately cured and shall be:

- Crack-free
 - Uniformly absorbent
 - Clean
 - Free from dust and salt contamination
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5.3 Metal Substrates

Steel, galvanized steel and aluminium surfaces shall be:

- Free from corrosion products
 - Degreased
 - Properly prepared for coating adhesion
 - Primed where required using an approved primer system
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5.4 Previously Coated Surfaces

Existing coatings shall be evaluated for:

- Adhesion
- Compatibility
- Structural integrity

- Surface condition

Loose or deteriorated coatings shall be completely removed prior to application.

5.5 Unsuitable Substrates

Direct application is not recommended on:

- Loose or friable substrates
- Wet surfaces
- Oil or grease contaminated surfaces
- Frozen substrates
- Salt contaminated or biologically contaminated surfaces without appropriate treatment

Such substrates shall be repaired or suitably prepared before coating application.

6. SURFACE PREPARATION

Proper surface preparation is essential to achieve optimum coating performance and service life.

Insufficient preparation may result in reduced adhesion, premature coating failure and reduced durability.

6.1 General Requirements

Prior to application the substrate shall be:

- Clean
- Dry
- Sound
- Dust-free
- Free from oil and grease
- Free from loose material

Any contamination likely to impair coating adhesion shall be completely removed.

6.2 Cleaning

Suitable cleaning methods include:

- High-pressure water cleaning
- Industrial vacuum cleaning

- Mechanical brushing
- Neutral cleaning agents
- Approved degreasers

Following cleaning, the substrate shall be allowed to dry completely.

6.3 Mechanical Preparation

Where required, preparation may include:

- Grinding
- Scarifying
- Abrasive blasting
- Wire brushing
- Mechanical profiling

The selected preparation method shall create an adequate surface profile without damaging the substrate.

6.4 Surface Repairs

Prior to coating application, defects including:

- Cracks
- Voids
- Spalled areas
- Surface irregularities
- Damaged joints

shall be repaired using compatible repair materials.

6.5 Priming

Where required by the substrate or project specification, an SBC-approved primer system shall be applied.

The primer shall:

- Promote adhesion
- Provide uniform substrate absorption
- Be fully compatible with the THERMO SHIELD® AQUA IR 2K coating system

Application of the finish coat shall only commence after complete curing of the primer.

6.6 Surface Acceptance

Before coating application, the substrate shall be formally inspected and approved.

The substrate shall comply with:

- This System Specification
- Project requirements
- Applicable quality standards

Only approved substrates shall proceed to coating application.

7. ENVIRONMENTAL CONDITIONS

The **THERMO SHIELD® AQUA IR 2K** coating system shall only be applied under suitable environmental conditions. Application outside the recommended limits may adversely affect coating adhesion, curing, appearance and long-term performance.

7.1 Ambient Temperature

The recommended ambient temperature during application is:

+10 °C to +30 °C

Application is not recommended when:

- ambient temperature is below +5 °C;
- substrate temperature exceeds +35 °C;
- surfaces are exposed to intense direct sunlight causing excessive heating.

7.2 Relative Humidity

Recommended relative humidity:

30–80%

Application should not be carried out:

- during fog;
- when condensation is present;
- when relative humidity exceeds 85%;
- under conditions likely to cause condensation before the coating has cured.

7.3 Dew Point

The substrate temperature shall be at least **3 °C above the dew point** before and during application.

Failure to observe this requirement may result in condensation, reduced adhesion and coating defects.

7.4 Weather Conditions

Application shall not be carried out:

- during rain or snowfall;
- on frozen substrates;
- during strong winds causing contamination;
- when precipitation is expected before the coating has reached its initial curing stage.

Freshly applied coatings shall be protected from adverse weather until adequately cured.

8. MATERIAL MIXING

THERMO SHIELD® AQUA IR 2K is supplied as a two-component coating system and shall only be mixed in the ratio specified by SBC.

8.1 Mixing Ratio

Component A : Component B

5 : 1 (by weight)

The applicable Technical Data Sheet (TDS) shall always take precedence where project-specific mixing ratios are specified.

8.2 Mixing Procedure

The following procedure shall be followed:

1. Thoroughly stir Component A before use.
2. Add the complete contents of Component B to Component A.
3. Mix using a low-speed mechanical mixer.
4. Continue mixing until a homogeneous, lump-free material is obtained.

Recommended mixing time:

3–5 minutes

Only clean mixing equipment shall be used.

8.3 Pot Life

The mixed material shall be applied within the specified **pot life**.

Material remaining after expiry of the pot life shall not be diluted, re-mixed or reused.

9. APPLICATION PROCEDURE

The coating system shall only be applied to substrates that have been prepared and approved in accordance with this specification.

Uniform film thickness and continuous coverage shall be maintained throughout the application process.

9.1 Application Methods

The coating may be applied using:

- Roller
- Brush
- Airless spray equipment
- Other SBC-approved application equipment

The selection of application method shall consider:

- substrate type;
 - project size;
 - required surface finish;
 - site conditions.
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9.2 Recommended System Build-Up

The recommended coating system generally consists of:

1. Surface preparation
2. Primer (where required)
3. First coat of THERMO SHIELD® AQUA IR 2K
4. Second coat of THERMO SHIELD® AQUA IR 2K (where specified)

Additional coats may be required depending on the project specification or the required dry film thickness.

9.3 Film Thickness

The coating shall be applied to achieve the nominal **Wet Film Thickness (WFT)** and **Dry Film Thickness (DFT)** specified in the Technical Data Sheet.

Insufficient film thickness may reduce:

- opacity;
- weather resistance;
- infrared reflectance;
- expected service life.

Excessive film thickness may increase:

- drying time;
- internal stress;
- the likelihood of surface defects.

9.4 Recoating Interval

Each subsequent coat shall only be applied after the previous coat has reached the minimum recoating condition specified in the Technical Data Sheet.

Premature overcoating may impair coating performance and adhesion.

9.5 Interrupted Application

Where application is interrupted:

- work shall be terminated at natural breaks or panel joints;
- adjoining coated areas shall be inspected before recommencing work;
- if necessary, the surface shall be lightly abraded and cleaned to ensure proper intercoat adhesion.

This procedure helps to achieve a visually uniform finish and consistent coating performance across the entire treated surface.

10. MATERIAL CONSUMPTION

The material consumption of **THERMO SHIELD® AQUA IR 2K** depends on several factors, including substrate type, surface profile, porosity, application method and the required dry film thickness.

Reference consumption values are provided in the applicable **Technical Data Sheet (TDS)**.

Actual material consumption may vary depending on:

- substrate roughness;
- substrate absorbency;
- application equipment;

- operator technique;
- environmental conditions.

For quality assurance purposes, actual material consumption should be recorded during the application process and compared with the planned consumption.

11. DRYING AND CURING

Drying and curing times are influenced by ambient temperature, substrate temperature, relative humidity, ventilation and applied film thickness.

The coating typically progresses through the following stages:

- Dust dry
- Touch dry
- Recoatable
- Fully cured

Typical drying and curing times are specified in the relevant **Technical Data Sheet (TDS)**.

During the curing period, the coated surface shall be protected against:

- rain;
- condensation;
- dust and contamination;
- mechanical damage;
- chemical exposure;
- excessive thermal loading.

Premature exposure may adversely affect the appearance and long-term performance of the coating system.

12. QUALITY CONTROL

Quality control shall be carried out throughout the application process to ensure compliance with the project specification and SBC requirements.

The following items shall be verified as a minimum:

- substrate condition;
- environmental conditions;
- material identification;
- mixing ratio;

- pot life;
- application method;
- number of coats;
- wet and dry film thickness;
- visual appearance;
- completion of application records.

Where required by the project specification, additional inspections may include:

- Wet Film Thickness (WFT) measurements;
- Dry Film Thickness (DFT) measurements;
- adhesion testing;
- coating continuity inspection;
- visual surface assessment.

All inspection results should be documented and retained as part of the project quality records.

13. ACCEPTANCE CRITERIA

The completed coating system shall be considered acceptable when it complies with the requirements of this specification and the relevant project documentation.

Surface Finish

The finished coating shall exhibit:

- uniform colour;
- uniform gloss level (where applicable);
- complete and consistent coverage;
- continuous protective film.

Surface Defects

The completed coating shall be free from significant defects, including:

- runs and sags;
- blistering;
- peeling;
- cracking;
- pinholes;

- excessive orange peel;
- contamination or embedded foreign matter.

Minor visual variations that do not affect the performance of the coating system may be accepted subject to project requirements.

Film Thickness

The measured dry film thickness shall comply with the nominal values specified in the applicable Technical Data Sheet and project specification.

Adhesion

The coating shall demonstrate satisfactory adhesion to the prepared substrate.

Where specified, adhesion testing may be carried out in accordance with the relevant international test standards.

Documentation

The following documents shall be available at project completion where applicable:

- Technical Data Sheet (TDS)
 - Application Guide
 - Declaration of Conformity
 - Inspection & Acceptance Checklist
 - Maintenance Guide
 - Safety Data Sheet (SDS)
 - Project Quality Records
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14. NON-CONFORMITIES AND REPAIRS

Any non-conformity identified during application or final inspection shall be documented and evaluated before corrective action is taken.

Corrective measures shall be selected according to the nature and extent of the defect.

Repair methods may include:

- localised repair;
- partial recoating;
- complete removal and replacement of the coating system.

All repair work shall be carried out in accordance with SBC application procedures using approved materials.

15. RELATED DOCUMENTS

This System Specification shall be used in conjunction with the latest approved versions of the following SBC documents:

- Technical Data Sheet (TDS)
 - Application Guide
 - Product Description
 - Product Label
 - Packaging Specification
 - Storage & Transport Guide
 - Maintenance Guide
 - Inspection & Acceptance Checklist
 - Declaration of Conformity
 - Safety Data Sheet (SDS)
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16. DOCUMENT CONTROL

This document forms part of the controlled documentation of the SBC Quality Management System.

Revisions shall only be issued through the approved document control process.

Only the latest approved revision of this document shall be used.