

SBC APPLICATION GUIDE

THERMO SHIELD® AQUA IR 2K

Two-Component Water-Based Infrared Reflective Acrylic–Polyurethane Protective Coating

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1. PURPOSE OF THIS DOCUMENT

This Application Guide provides practical instructions for the correct preparation, application and maintenance of **THERMO SHIELD® AQUA IR 2K**.

The document is intended to assist contractors, coating applicators, project engineers and technical personnel in achieving optimum coating performance and long-term durability.

Following the recommendations contained in this guide will help ensure proper adhesion, abrasion resistance, weather resistance and infrared reflective performance throughout the coating's service life.

2. PRODUCT DESCRIPTION

THERMO SHIELD® AQUA IR 2K is a two-component, water-based acrylic–polyurethane protective coating developed for long-term protection of interior and exterior surfaces exposed to severe mechanical and environmental conditions.

The coating incorporates infrared-reflective (IR/NIR) pigments together with UV absorbers and light stabilisers to reduce solar heat gain, improve colour stability and extend coating durability.

When used together with suitable primer systems, the coating may be applied to concrete, asphalt, steel, galvanised steel, aluminium and other properly prepared mineral substrates.

3. INTENDED USE

THERMO SHIELD® AQUA IR 2K is recommended for applications including:

- Industrial flooring
- Parking areas
- Traffic surfaces
- Road marking systems
- Logistics centres
- Warehouses

- Energy facilities
- Roof surfaces
- Exterior steel structures
- Concrete and asphalt pavements

The coating is specifically designed for surfaces subjected to heavy mechanical wear and long-term outdoor exposure.

4. SUITABLE SUBSTRATES

After appropriate surface preparation, the coating may be applied to:

- Concrete
- Reinforced concrete
- Cement-based substrates
- Asphalt
- Slate
- Timber
- Steel
- Galvanised steel
- Aluminium
- Other sound mineral substrates

Certain substrates require the application of a suitable primer to ensure optimum adhesion and long-term performance.

5. REQUIRED EQUIPMENT

Mixing Equipment

- Low-speed mechanical mixer
- Graduated measuring containers
- Clean mixing vessel

Application Equipment

- Airless spray equipment
- Conventional spray gun
- Roller
- Brush

Surface Preparation Equipment

- Industrial vacuum cleaner
- High-pressure washer (where required)
- Grinding equipment
- Wire brush
- Abrasive blasting equipment (for steel substrates)

Inspection Equipment

- Dry Film Thickness (DFT) gauge
- Thermometer
- Hygrometer
- Dew point meter
- Concrete moisture meter (where applicable)

6. SURFACE PREPARATION

Proper surface preparation is essential to achieve the expected performance and durability of the coating system.

Before application, the substrate shall be:

- Clean
- Dry
- Sound
- Free from dust
- Free from grease and oil
- Free from soluble salts
- Free from loose particles and contaminants

All weak or poorly bonded material shall be completely removed.

Concrete surfaces shall be fully cured with laitance removed where necessary.

Steel substrates shall be free from corrosion, mill scale and contaminants before primer application.

7. MATERIAL PREPARATION

THERMO SHIELD® AQUA IR 2K is supplied as a two-component coating system consisting of **Component A (Base)** and **Component B (Hardener)**.

The two components shall only be mixed immediately prior to application.

Mixing Ratio

Component A : Component B = 5 : 1 (by weight)

Both components shall be thoroughly mixed using a low-speed mechanical mixer (approximately **300–500 rpm**) until a completely homogeneous mixture is obtained.

The recommended mixing time is **2–3 minutes**.

Important Recommendations

- Always mix the complete quantity of both components.
 - Avoid excessive air entrapment during mixing.
 - Do not add water or any other thinner unless specifically recommended by SBC.
 - Material that has exceeded its pot life shall not be reused or re-mixed.
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8. APPLICATION PROCEDURE

THERMO SHIELD® AQUA IR 2K may be applied using several application techniques depending on the project requirements.

Recommended Application Methods

- Airless spray
- Conventional spray equipment
- Roller
- Brush

Airless spray application is recommended for large surfaces in order to achieve optimum film uniformity, productivity and coating quality.

Brushes and rollers are suitable for detail work, repairs and smaller surface areas.

The selected application method shall be compatible with the substrate geometry, specified dry film thickness and project requirements.

9. RECOMMENDED COATING SYSTEM

The coating system shall always be selected according to the substrate type, environmental exposure and expected service conditions.

Steel Substrates

Recommended system:

1. Surface preparation
2. CATEPOX® KM epoxy primer
3. THERMO SHIELD® AQUA IR 2K topcoat

Recommended total dry film thickness:

140–200 µm

Concrete Substrates

Recommended system:

1. Surface preparation
2. Suitable concrete primer (where required)
3. THERMO SHIELD® AQUA IR 2K topcoat

Concrete shall be fully cured, dry and structurally sound before coating application.

Asphalt Substrates

Recommended system:

1. Cleaning and dust removal
2. Trial application
3. THERMO SHIELD® AQUA IR 2K topcoat

A trial application is recommended to verify adhesion, compatibility and final appearance before full-scale application.

10. RECOMMENDED APPLICATION CONDITIONS

Parameter	Recommended Value
Ambient Temperature	+10 °C to +35 °C
Substrate Temperature	Minimum +10 °C
Relative Humidity	Maximum 80 %
Dew Point	Minimum 3 °C above the dew point

Do not apply the coating under the following conditions:

- During rainfall
- Immediately before expected precipitation
- When condensation is likely to occur
- On frozen or wet substrates

For large-area applications at temperatures above **25 °C** or relative humidity below **50 %**, the use of the slower-reacting **B003 Hardener** is recommended to maintain sufficient working time.

11. DRYING AND CURING

Drying and curing times depend on several factors, including:

- Ambient temperature
- Substrate temperature
- Relative humidity
- Applied film thickness
- Air movement

Typical values under laboratory conditions ($23 \pm 2\text{ }^{\circ}\text{C}$) are shown below.

Property	Typical Value
Dust Dry	Several hours
Recoatable	In accordance with the manufacturer's recommendation
Full Cure	Several days

The coating achieves its full mechanical strength and chemical resistance only after complete curing.

Lower temperatures and higher humidity may significantly extend drying and curing times.

12. MATERIAL CONSUMPTION

Material consumption depends on several factors, including:

- Surface roughness
- Application method
- Specified dry film thickness
- Substrate absorbency
- Surface profile

Actual consumption should be determined by means of a trial application under site conditions.

For large-scale projects, it is recommended to prepare a representative test area to verify both coating performance and material consumption before commencing production work.

13. CLEANING AND MAINTENANCE

THERMO SHIELD® AQUA IR 2K is designed to provide long-term protection with minimal maintenance when properly applied.

To preserve its appearance and performance throughout its service life, periodic inspection and cleaning are recommended.

Recommended Cleaning Methods

- Clean water

- Neutral pH detergents
- Soft brushes or microfiber cloths
- Low-pressure water cleaning

Contaminants such as dust, dirt, industrial deposits and biological growth should be removed periodically to maintain the coating's reflective properties and aesthetic appearance.

Not Recommended

The following cleaning methods should be avoided:

- Strong acidic cleaners
- Strong alkaline cleaners
- Chlorine-based cleaning agents
- Organic solvents not approved by SBC
- Abrasive cleaning materials
- High-pressure water jets applied at close range

Improper cleaning methods may damage the coating surface and reduce its service life.

14. REPAIR PROCEDURE

If mechanical damage or local coating defects occur, repairs should be carried out as soon as possible to prevent further deterioration.

The recommended repair procedure is as follows:

1. Remove all damaged or poorly adhering coating.
2. Clean and prepare the exposed substrate.
3. Apply the appropriate primer where required.
4. Reapply THERMO SHIELD® AQUA IR 2K to the specified dry film thickness.

For large or highly visible surfaces, a trial repair is recommended to verify colour consistency and surface appearance before completing the full repair.

15. COMMON APPLICATION DEFECTS

Observed Defect	Possible Cause	Recommended Corrective Action
Poor adhesion	Inadequate surface preparation	Prepare the substrate in accordance with this guide

Observed Defect	Possible Cause	Recommended Corrective Action
Blistering	Moisture or condensation	Apply only to dry substrates under suitable environmental conditions
Uneven appearance	Incorrect application technique	Follow the recommended application procedures
Slow drying	Low temperature or excessive humidity	Improve environmental conditions before application
Colour variation	Different production batches or insufficient mixing	Use material from the same batch whenever possible and mix thoroughly
Premature wear	Insufficient dry film thickness	Apply the specified DFT

Inspection during application is recommended to detect and correct defects before the coating has fully cured.

16. HEALTH AND SAFETY

All application work shall be carried out in accordance with applicable occupational health, safety and environmental regulations.

The following personal protective equipment (PPE) is recommended:

- Safety goggles
- Chemical-resistant gloves
- Protective clothing
- Safety footwear
- Appropriate respiratory protection during spray application

Because **Component B contains isocyanates**, particular attention shall be given to:

- adequate ventilation;
- preventing inhalation of spray mist or vapours;
- avoiding skin and eye contact;
- compliance with all applicable workplace exposure limits.

For detailed hazard information, always refer to the latest **Safety Data Sheet (SDS)** before handling or applying the product.

17. WASTE MANAGEMENT

Unused product, contaminated packaging and cleaning residues shall be disposed of in accordance with all applicable local, national and international environmental regulations.

Liquid product residues shall **not** be discharged into:

- surface water;
- groundwater;
- drainage systems;
- soil.

Empty containers may only be recycled after they have been completely emptied and cleaned in accordance with local waste management requirements.

18. TECHNICAL SUPPORT

SBC provides technical assistance throughout the entire coating project.

Technical support includes:

- coating system selection;
- substrate evaluation;
- surface preparation recommendations;
- application guidance;
- coating specification development;
- project-specific engineering support;
- on-site technical consultation where required.

For complex or large-scale projects, consultation with SBC Technical Services before commencement of work is strongly recommended.

19. RELATED DOCUMENTS

The following technical documents should be used together with this Application Guide:

- Technical Data Sheet (TDS)
- Safety Data Sheet (SDS)
- Declaration of Performance (where applicable)
- Application Specifications
- System Specifications
- Project-Specific Technical Requirements
- Maintenance Recommendations

The latest approved versions of all documents should always be used.

20. LEGAL NOTICE

This Application Guide has been prepared using the technical knowledge, laboratory testing and practical experience available at the date of publication.

The information contained herein is intended to assist users in achieving the best possible application results. However, it does not relieve the user of the responsibility to determine the suitability of the product for the intended application or to verify performance under actual site conditions.

The performance of the coating system depends on numerous factors including substrate condition, environmental conditions, application technique, film thickness, curing conditions and service environment.

Users shall ensure that the product is applied in accordance with this Application Guide, the current Technical Data Sheet (TDS), the applicable Safety Data Sheet (SDS), relevant project specifications and all applicable legal requirements.

SBC reserves the right to modify product formulations, technical documentation and recommendations without prior notice as part of its continuous product development programme.