AUSSECURITYPRODUCTS

YSHIELD® HSF54

Application Guide

Professional RF & EMF Shielding Solution

YSHIELD®

Purpose of This Guide

This guide explains how to apply and ground YSHIELD® HSF54 conductive shielding paint.

It consolidates installation steps, safety notes, grounding requirements, and verification tips.

If you follow this guide and use a licensed electrician for grounding, you will:

- Improve shielding performance
- Reduce the chance of weak points / "hot spots"
- Ensure the installation is safe and electrically compliant

What YSHIELD® HSF54 Does (and Does Not Do)

What it does

YSHIELD® HSF54 is designed to effectively shield against high-frequency electromagnetic fields (RF/EMF) and low-frequency electric fields. This includes:

- Wi-Fi and Bluetooth signals
- Cellular radiation from mobile towers and devices
- Smart meter transmissions
- Cordless phones (DECT)
- Radio and TV broadcasting signals
- Electric field radiation from building wiring (when properly grounded)

What it does not do

It is important to note that YSHIELD® HSF54 conductive shielding paint does not provide protection against magnetic fields. Magnetic fields are typically generated by electrical appliances, power lines, and transformers. Effective shielding against magnetic fields requires specialized materials and approaches, which are beyond the scope of this product.

Performance, Coats, and What to Expect

Shielding effectiveness depends on continuous coverage and application thickness (coverage density).

Manufacturer data is typically stated at 1 GHz and at a defined application rate.

Typical attenuation (published)

Published attenuation varies with application rate and test method. Manufacturer lab reports indicate a tolerance of approximately ±2 dB across batches.

Thick application (~4 m^2/L):

- 1 coat: ~44–46 dB
- 2 coats: ~53 dB
- 3 coats: ~60 dB

Thin application (~8 m^2/L):

- 1 coat: ~38–39 dB
- 2 coats: ~46 dB
- 3 coats: ~51 dB

Practical meaning:

- 40 dB = 99.99% reduction
- 50 dB = 99.999% reduction
- 60 dB = 99.9999% reduction

99.99% corresponds to ⩾40 dB. Thick application commonly achieves this; thin application may fall slightly below depending on coat count and frequency.

Colour and finishing

- The paint dries black.
- Most installations use two topcoats of standard water-based acrylic/latex to fully cover the black and protect the conductive layer.
- Topcoats reduce scuffing; damage to the conductive layer can create weak points.

Health, Odour, and Environmental Notes

HSF54 is water-based and low-emission.

Reference values published for this product include:

- VOC: 0.18 g/L ("virtually zero")
- Mild odour during application, typically dissipating within 24–48 hours

Safety-critical points:

Once applied, the paint becomes electrically conductive.

Large conductive coated areas must be grounded via the building equipotential bonding system.

The coating has a high staining capacity; wipe splashes immediately while wet.

Ensure good ventilation during application and drying; avoid inhaling spray mist.

Avoid eating, drinking, or smoking during application; rinse eyes/skin with water if contacted.

Standards, Electrical Compliance, and Responsibilities (Australia)

Grounding work must comply with Australian electrical rules and be completed or verified by a licensed electrician.

Typical references used on Australian projects include:

- AS/NZS 3000 (Wiring Rules)
- NCC requirements (where applicable)

Responsibility:

- Aus Security Products supplies materials and guidance.
- The installer and supervising electrician are responsible for safe, compliant installation.

Substrate Suitability and Surface Preparation

Suitable substrates (typical)

HSF54 is commonly used on:

- Plasterboard / drywall (gypsum board)
- Cement sheet
- Rendered masonry
- Timber panels
- Existing water-based (latex) paint
- Wallpaper / construction board (stable and properly prepared)

Surface must be:

- Structurally sound
- Clean and dry
- Free of dust, grease, and loose/flaking paint

Priming and special cases

- Porous/absorbent surfaces: prime first to prevent binder/water absorbing into the substrate.
- Oil-based paints: sand lightly (fine grit ~180–220) to remove gloss, then apply a quality bonding primer.

Avoid / caution substrates

Mineral-based coatings and fillers can reduce adhesion and/or compatibility.

As a practical rule:

- Avoid applying HSF54 over pure mineral paints/coatings (e.g. clay, lime, chalk; some silicate systems) unless you have a proven compatible primer system.
- Many "eco" paints and purely mineral plasters can adhere poorly to the graphite-like surface; do a test patch.

Topcoat note:

- Do not apply oil-based topcoats over HSF54.
- Suitable topcoats include plastic-bonded water-based emulsion paints; dispersion-silicate and silicone-resin paints are also listed as acceptable topcoats by the manufacturer.

Coverage Planning (Paint Quantity)

Coverage varies with substrate and shielding result required.

Published guidance for a 5 L container:

- Typical interior coverage: up to ~35 m^2
- Optimal shielding results: ~20 m^2
- Exterior/demanding surfaces: plan closer to thicker application rate

Best practice:

- Minimum two full coats
- Third coat if higher attenuation is required

Tools and Materials Checklist

Painting tools

- Quality paint roller (6–13 mm pile; commonly 10–15 mm)
- Quality brush for edges and corners
- Drill with mixing paddle
- Painter's tape
- Drop sheets / plastic protection
- Damp cloth for spills

Grounding components

- GSX grounding tape (**10 m** or **50 m**)
- **Grounding plates (interior/exterior)**
- Grounding cable (**1–10 m options**)
- Optional **AF3 carbon fibre additive**

GSX Grounding Tape

Conductive adhesive tape for connecting painted surfaces

Grounding Plates (GS2 / GS3)

Interior and exterior grounding connection points

Grounding Cable

Connects grounding plates to equipotential bonding system

AF3 Fibre Additive

Carbon fibre additive for exterior applications

Grounding Basics (Mandatory)

Once dry, the paint is conductive.

Grounding is required to:

- Prevent surface electrification / induced voltage
- Reduce low-frequency electric fields
- Meet electrical safety principles

Ungrounded conductive surfaces can present an electric shock risk.

Grounding Layout and Placement

Grounding tape placement (GSX)

Typical layout:

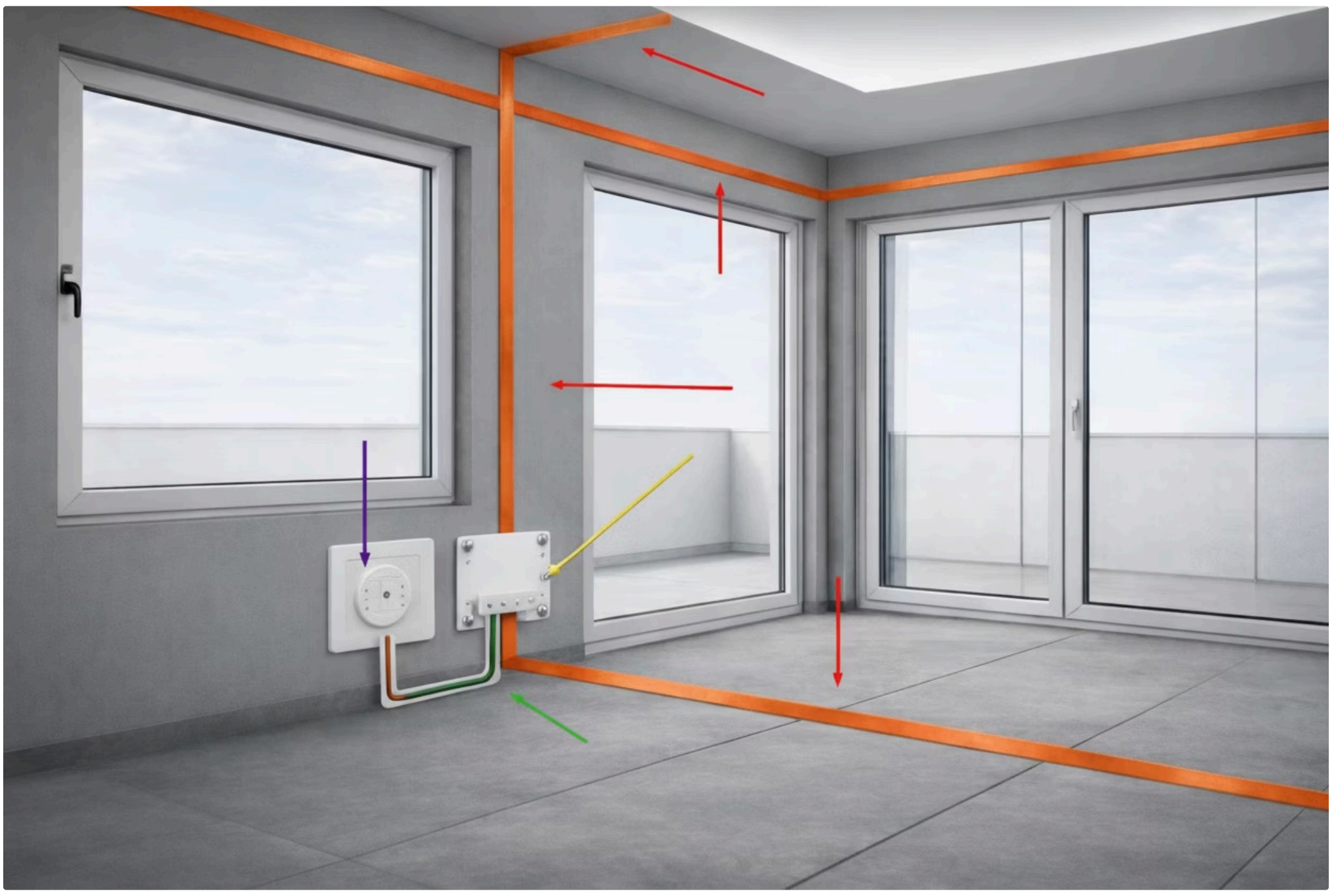
- One horizontal strip connecting all painted walls
- Vertical strip to grounding plate
- Extend across ceiling if ceiling is shielded

Placement notes:

- Tape may create a small ridge
- Can be hidden behind skirting or trim

Grounding plate placement

- One **grounding plate** per fully shielded room
- One plate per non-adjoining wall
- Large areas: approx. every 18 m



This diagram shows a practical example of how grounding tape is installed around a room connecting walls, ceiling, and down to the grounding plate.

- Red arrows - Grounding tape GSX10/50
- Green arrow - Copper wire
- Purple arrow - Power point
- **Yellow arrow** - Grounding Plate

Critical Grounding Equipment

The shielding paint must be grounded for safety and to dissipate low-frequency electric fields.

- **Grounding Plate**
- **Grounding Cable** (Multiple lengths available)
- **Grounding Strap** (Multiple lengths available)
- **View All Grounding Products**

Interior Application – Step-by-Step

Preparing to Start (Recommended Pre-Checks)

- Measure RF levels
- Identify dominant source directions
- Record baseline readings
- Measure AC electric fields if available

01

Protect and prepare

Mask edges and fixtures, cover floors, clean surfaces

02

Apply grounding tape (GSX)

Install before painting, ensure continuity

03

Mix the paint

Shake and drill-mix until uniform

04

First coat

Even, continuous coverage

05

Second coat

Allow full drying, apply perpendicular to first coat

Detailed step-by-step diagrams are contained within the manufacturer PDF and are not individually hosted as image files.

Spraying Notes (Airless)

- Suitable for heavy latex coatings
- Nozzle guidance varies:
  - 0.021"–0.025"
  - 0.2–0.5 mm

If AF3 is added: do not spray.

Exterior Application

- **GSX tape** may not adhere well outdoors
- Use **AF3 additive**
- Roller/brush only

Grounding Connection, Verification & Finishing

Grounding Connection (Electrician Step)

- Grounding must be completed by a licensed electrician
- Integrate into **equipotential bonding system**

Verification and Testing

- Continuity <10 ohms per square inch
- Re-measure RF levels
- Check for hot spots

Finishing Coats (Topcoats)

- Apply two compatible water-based topcoats
- Improves durability and appearance

Limitations and Performance Variability

Results vary due to:

- Openings and gaps
- Untreated surfaces
- Thin coats
- Poor continuity

Safety Notes and Disclaimer

- Conductive surfaces must be grounded
- RCD protection strongly recommended
- Power must be isolated before work
- Avoid multiple earth points

Aus Security Products supplies materials and guidance only and assumes no liability for incorrect installation.

Support & Contact

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YSHIELD® HSF54 is a conductive coating. All grounding, electrical connections, and integration into a building's electrical or equipotential bonding system must be carried out and verified by a licensed electrician in accordance with applicable Australian Standards, including AS/NZS 3000, and any local regulatory requirements.

Aus Security Products accepts no responsibility or liability for:

- Incorrect, incomplete, or non-compliant installation or grounding
- Electrical faults, damage to property, personal injury, or loss arising from installation or use of the product
- Performance outcomes affected by site conditions, application method, continuity, coating thickness, untreated areas, or building design
- Any work undertaken by unqualified persons or outside applicable electrical regulations

By using this product and any associated guidance, the installer and/or property owner assumes full responsibility for ensuring that all work is performed safely, lawfully, and by appropriately qualified professionals.