

## YSHIELD Shielding Paints

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YSHIELD shielding paints are **electro-conductive coatings** for the protection of large areas from electromagnetic radiation (EMR). They offer best shielding qualities for the protection against high-frequency (HF) radiation and (or) against low-frequency (LF) electric fields. Typical areas of application are living areas (e. g. bedrooms, nurseries, living rooms), or the protection of whole buildings; the shielding paints are to be covered with latex (or vinyl) paint.



	HSF54	HSF54-FR	HSF71	HSF53-P	NSF34	NSF21	NSF33-P
Shielding HF (high frequency)	X	X	X	X			
Shielding LF (low frequency)	X	X	X	X	X	X	X
Application area	Interior/ Exterior	Interior/ Exterior	Interior	Interior	Interior/ Exterior	Interior	Interior
Screening (Shielding power) at typical coverage	40 dB (99,99%)	35 dB (99,97%)	35 dB (99,97%)	30 dB (99,9%)	40 dB	40 dB	40 dB
Typical coverage with 1 liter (1.057 US quarts)	Interior: 7,5 m <sup>2</sup> (~81 ft <sup>2</sup> ); Exterior: 5 m <sup>2</sup> (~54 ft <sup>2</sup> )	Interior: 7,5 m <sup>2</sup> (~81 ft <sup>2</sup> ); Exterior: 5 m <sup>2</sup> (~54 ft <sup>2</sup> )	7,5 m <sup>2</sup> (~81 ft <sup>2</sup> )	7,5 m <sup>2</sup> (~81 ft <sup>2</sup> )	Interior: 15 m <sup>2</sup> (~161 ft <sup>2</sup> ); Exterior: 10 m <sup>2</sup> (~108 ft <sup>2</sup> )	15 m <sup>2</sup> (~161 ft <sup>2</sup> )	10 m <sup>2</sup> (~108 ft <sup>2</sup> )
Binding agent	Pure acrylic	Pure acrylic	Natural resin/ Natural latex	Poly acrylic	Pure acrylic	Natural resin	Poly acrylic
Solvent	Water	Water/ Ethyl alcohol	Water	No solvent	Water	Water	No solvent
Screening agent	Carbon	Carbon	Carbon	Carbon	Carbon	Carbon	Carbon
Ecology	Good	Good	Very good	Average	Good	Very good	Average
Water resistance	Excellent	Excellent	Average	Limited	Excellent	Average	Limited
Delivery form	Ready for use, liquid	Ready for use, liquid	Ready for use, liquid	Powder to mix with water	Ready for use, liquid	Ready for use, liquid	Powder to mix with water
Frost resistance in delivery form	Not to be frozen	5 frost-/ thaw cycles	Not to be frozen	Permanent frost resistant	5 frost-/ thaw cycles	Not to be frozen	Permanent frost resistant
Delivery sizes	1 liter (1.057 US quarts); 5 liters (1,321 US gallons)	1 liter (1.057 US quarts); 5 liters (1,321 US gallons)	1 liter (1.057 US quarts); 5 liters (1,321 US gallons)	Powder for 1 liter (1,057 US quarts)	1 liter (1.057 US quarts); 5 liters (1,321 US gallons)	1 liter (1.057 US quarts); 5 liters (1,321 US gallons)	Powder for 1 liter (1,057 US quarts)
Shelf live	12 months	12 months	3 months	12 months	12 months	3 months	12 months

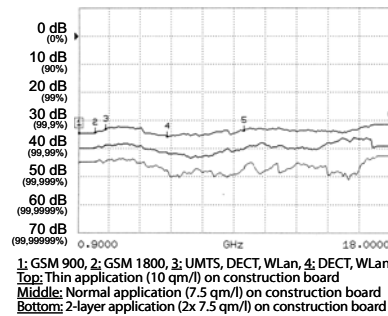
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### General Product descriptions

#### HSF54 (Pure-acrylic, HF radiation + LF electric fields, Interior + Exterior application)

**Our standard product for interior and exterior application.**

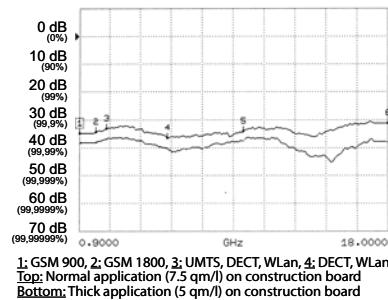
- Based on a high quality pure-acrylic binder this shielding paint offers a perfect compromise of **excellent attenuation, high water resistance and good ecology.**
- Good adhesion on many surfaces and substrates like latex paint, construction boards, cement, plaster, polystyrene, masonry surfaces, etc.
- Attenuation of **40 dB** (shielding effectiveness of 99.99 %) at typical coverage in one layer.
- Ingredients: Water, pure-acrylic binder, graphite, carbon black, additives, preservative.



#### HSF54-FR (Pure-acrylic, HF radiation + LF electric fields, Interior + Exterior application)

**Like HSF54, but frost-resistant in delivery form.** Optimized for shipping to regions with low average temperatures, and optimized for sea shipment / air shipment in the cold season.

- Attenuation of **35 dB** (shielding effectiveness of 99.97 %) at typical coverage in one layer.
- Ingredients: Water, pure-acrylic binder, graphite, carbon black, ethyl alcohol, additives, preservative.

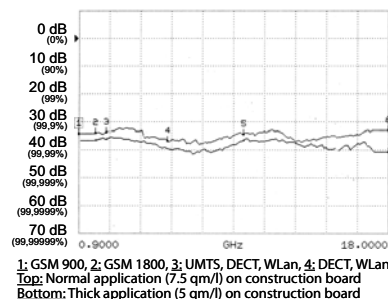


#### HSF71 (Natural resin, HF radiation + LF electric fields, Interior application)

**Our natural shielding paint for interior application.**

- Based on natural, renewable resources with natural resins and natural latex as binder, this paint offers a good compromise between a **maximum of ecology, good attenuation and limited water resistance.**

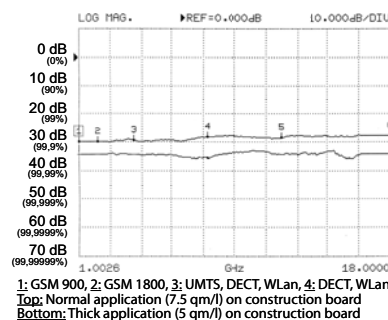
- For interior application on dry surfaces only.
- Attenuation of **35 dB** (shielding effectiveness of 99.97 %) at typical coverage in one layer.
- Ingredients: Water, natural resins, graphite, carbon black, natural latex, liquid ammonia, additives. No preservative, no terpenes, no isoaliphatics!



#### HSF53-P (Acrylic, HF radiation + LF electric fields, Interior application)

**Shielding paint powder to mix with water.**

- Based on a redispersible acrylic powder, this paint offers an optimum compromise between **good attenuation, average ecology and limited water resistance.**
- Optimized for worldwide shipping: This paint is frost resistant, has a long shelf life and a low shipping weight.
- For interior application on dry surfaces only.
- Attenuation of **30 dB** (shielding effectiveness of 99.9 %) at typical coverage in one layer.
- Ingredients: Acrylic powder, graphite, carbon black, additives, preservative.



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### NSF34 (Pure-acrylic, LF electric fields, Interior + Exterior application)

Like HSF54, but for protection from low-frequency electric fields only.

### NSF21 (Natural resin, LF electric fields, Interior application)

Like HSF71, but for protection from low-frequency electric fields only.

### NSF33-P (Acrylic, LF electric fields, Interior application)

Like HSF53-P, but for protection from low-frequency electric fields only.

## Common Characteristics of all Shielding Paints

### Carefully Selected Ingredients

YSHIELD shielding paints **do not contain toxic solvents, plasticisers, or any other toxic ingredients**; they only contain marginal amounts of VOC containing components. Therefore they are **low-emission** products and meet the strictest standards for application in "Building Biology" projects. All ingredients are selected carefully, according to their high quality; and their safety for the environment and for all humans who get in contact with the paint: the factory personnel, the painters applying the paint, and the individuals occupying the rooms shielded with YSHIELD shielding paints.

### Simple handling and processing

YSHIELD shielding paints **can be universally applied**. The shielding paints are easy to apply, even in structured rooms with bays, pitched roofs and dormers. House painters recommend YSHIELD's shielding paints for ease of application. All shielding paints are best applied with a paint roller.

### Perfect Corrosion resistance

Most shielding products containing metal components are not adequately protected against corrosion. YSHIELD shielding paints are **shielding without metal particles** using only carbon. Therefore they offer **perfect corrosion resistance** (no oxidizing) and **long-term durability**.

### Security and protection even against future High-Frequency applications

Due to its holohedral structure, without fibers or meshes, all YSHIELD shielding paints offers almost constant attenuation, without preferred direction of polarization, for frequencies of up to 18 GHz. This means: **perfect protection against future developments of the telecommunications industry in the higher Gigahertz range is guaranteed, when using our shielding paints.**

### Areas of application

**Living areas:** Protection against HF-radiation from cellphone towers, TV and radio broadcasting antennas, radar, digital standard cordless telephones and wireless networks, etc. Protection against low-frequency electric fields from power supply lines, etc. **Industry:** To prevent interception of data from wireless networks („data-stealing“) and to prevent interception of potentially bugged conference rooms.

**Science and R&D:** Shielding of EMI-sensitive facilities and equipment. **Medicine:** Protection of sensitive technical equipment; to guarantee that important medical data is derived correctly and will not be altered by electromagnetic interference (EMI). **Electronic Industry** (e.g. recording studios): To reduce induction and interference. **Further applications:** schools, nurseries, hotel rooms, hospital rooms, etc.

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### Certificate of shielding

**Tested and certified** by the Microwave Laboratory of the **University of the German Federal Armed Forces** in Munich, Germany. Professor Diploma-Engineer Peter Pauli states: "Another remarkable fact is the very constant and almost frequency independent **outstanding shielding**." Please ask for certificate.

### Common handling and processing instructions

**Underground:** Underground needs to be solid, clean, degreased and dry. **Interior:** Shielding paints may be applied over existing latex paint, wallpaper, construction boards, cement, plaster, etc. **Exterior:** Shielding paints may be applied on concrete, plaster, cement, facade latex paint, polystyrene, masonry surfaces, etc. Strongly absorbent or porous surfaces are to be prepared with a prime coat. **Application:** Best use a paint roller; also possible is airless spraying. **Minimum application temperature:** (MFFT) +5°C / 41°F. **Covering of shielding paint / Top coat:** Depending on environment temperature and humidity paint needs 12-24 hours to dry. The surfaces of YSHIELD shielding paints have to be protected against mechanical exposure. **Interior:** Cover with typical latex or vinyl paint with good hiding power. **Exterior:** Cover with hydrophobic latex facade paint. **NOTE: Do not cover with silicate paints, plasters, mortars, etc. (applies for interior + exterior paint)!**

## Grounding / Ground connection and Accessoires

Depending on local regulations, e.g. the DIN-Code in Germany, grounding requires a licensed electrician. Please be sure to follow all local laws and standards. **To ensure good ground connection of the shielding paint coat, we recommend YSHIELD Ground-Connection-Set ES in combination with Ground-Strap EB (interior) or Ground-Strap LB (exterior).**

### Ground-Connection-Set ES

**Ground-Connection-Set for all YSHIELD Shielding Paints.** Ground-Connection-Set ES is specifically designed to guarantee proper grounding of the shielding paint coat. For each connected area (or surface) of shielding paint coat, one Ground-Connection-Set is required! • High-grade steel plate 8 x 8 x 0,3 cm with conductive fleece backside. • 4 Stainless steel screws, 4 dowels / wall plugs  $\varnothing$  6 mm; • 2 cable sockets 2,5 mm<sup>2</sup>; • 1 m grounding cable  $\varnothing$  2,5 mm<sup>2</sup>; • Detailed description of installation (with pictures) included in set.



### Ground-Strap EB „interior“

**Ground-Strap for shielding paints for interior use.** All areas / surfaces shielded with YSHIELD shielding paints need to be grounded for personal protection. In case of cracks forming in the walls, which would possibly disconnect grounding for parts of the painted surfaces, the ground strap will secure grounding even for those parts which are disconnected from the grounding / the ground plate due to the crack(s). Therefore, ground strap is to be applied uninterrupted, in one piece on all shielded surfaces, to secure good ground connection in case of cracks in walls, etc. • Self-adhesive strap with highly conductive silver-containing glue; • Corrosion resistant copper strap, tin-coated on both sides; • **Length 10 m**, width 2 cm, thickness 0,06 mm.



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### Ground-Strap LB „exterior“

**Ground-Strap for shielding paints for exterior use.** All areas / surfaces shielded with YSHIELD shielding paint need to be grounded for personal protection. In case of cracks forming in the walls, which would possibly disconnect grounding for parts of the painted surfaces, the ground strap will secure grounding even for those parts which are disconnected from the grounding / the ground plate due to the crack(s). Therefore, ground strap is to be screwed without interruption, in one piece to all shielded surfaces, to secure good ground connection in case of cracks in walls, etc. • Corrosion resistant stainless steel strap with holes, made from V4A steel; • **Length 10 m**, width 17 mm, thickness 0,8 mm, diameter of holes: 5mm.



### Mixer / Beater attachment for powder paints -P

For **optimum dispersion of powder shielding paints in water** we recommend our special mixer / beater attachment: • Mixer / Beater attachment 120 mm in diameter, M8 thread; • Axle 10 mm in diameter, length of 50 cm, M8 thread; • For preparing 4 to 20 liters of paint.



## YSHIELD Shielding Paints

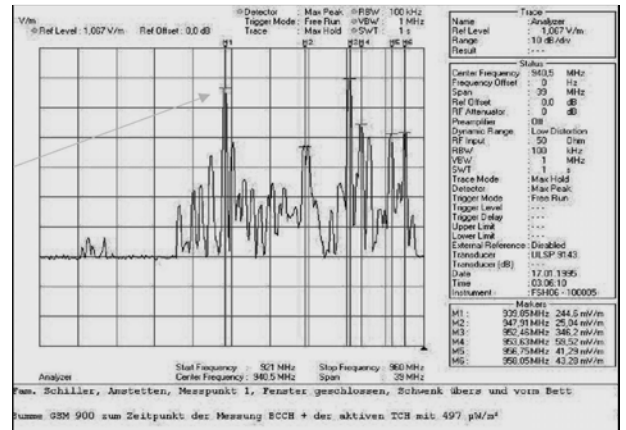
### EMR-Shielding of a loft / attic flat

Documentation of the shielding of a loft against microwave radiation from a nearby cell phone tower, and against low-frequency fields from electrical installation; project carried out by Grabmann Co., Austria, www.elektrosmog-messung.at.

1) Cellular phone tower on a house nearby.



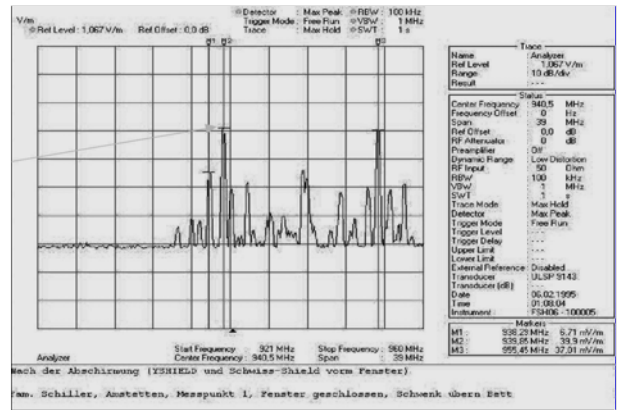
2) Before HF-shielding: 158.7  $\mu\text{W}/\text{m}^2$ .



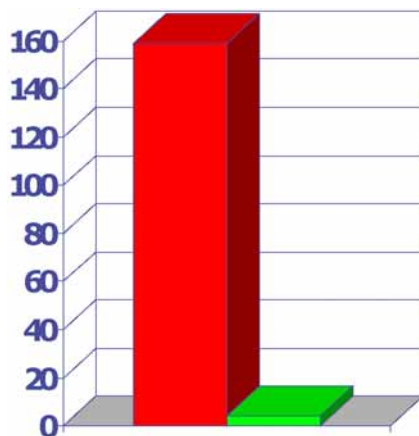
3) Application of HF shielding paint.



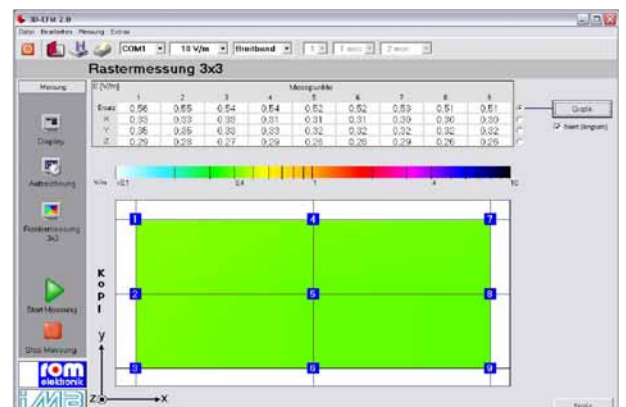
4) After HF shielding: 4.2  $\mu\text{W}/\text{m}^2$ .



5) Shielding effectiveness ( $\mu\text{W}/\text{m}^2$ ).



6) Graph shows: perfect shielding against LF-electric fields.

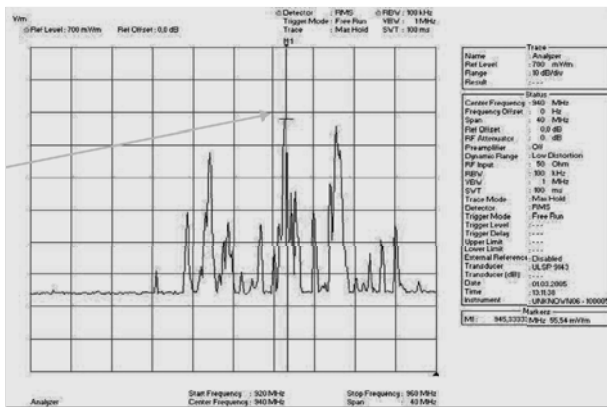


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**EMR-Shielding of sleeping area and of a children's room**

Documentation of the shielding of a sleeping area and of a children's room against microwave radiation from a nearby cell phone tower; project carried out by Grabmann Co., Austria, www.elektrosmog-messung.at.

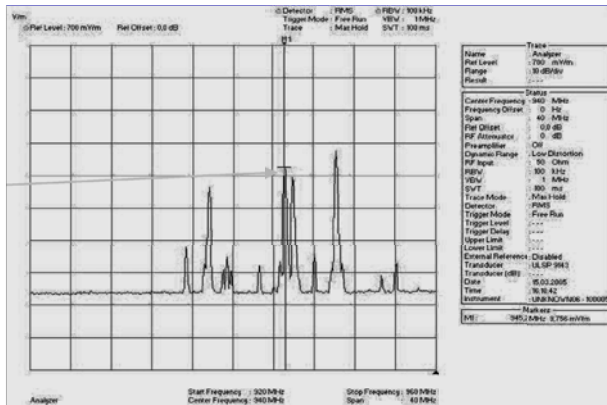
1) Before HF-shielding:  $8.2 \mu\text{W}/\text{m}^2$ .



2) Application of HF shielding paint.



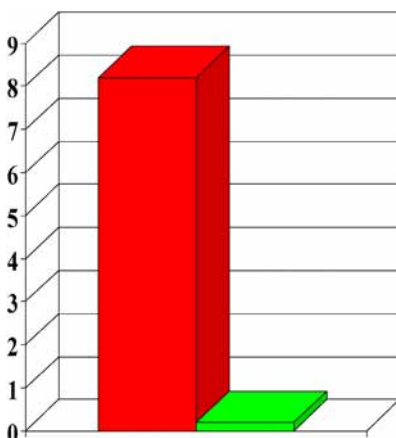
3) After HF shielding:  $0.2 \mu\text{W}/\text{m}^2$ .



4) White again with two layers of latex paint.



5) Shielding effectiveness ( $\mu\text{W}/\text{m}^2$ ).



**Testimonial**

"... On behalf of my family I want to inform you, that the application of HF shielding paint, and the use of shielding fabric as curtains, has much improved the situation in our bedrooms for both ourselves and for our children. Our little daughter sleeps through the nights now, what was unknown before, and she is also more even-tempered during the day. My wife and I feel that the overall quality of our lives has significantly improved. We think that - given the circumstances (cell phone tower in close vicinity) - we have done the best for us and for the health of our children. Thank you much for your help..."

Dr. J. and M. Z., name and address withheld

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### EMR-Shielding of a family home in Austria

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Documentation of the shielding of a family home against microwave radiation from a cellular phone tower. Two sides of the house were shielded using YSHIELD HF shielding paint.

1) Application of shielding paint.



2) Shielding paint applied on both sides.



3) Grounding of the shielding paint.



4) Application of the top coat.



6) Perfectly white again.



6) Point of measurement marked;  
power flux density in  $\mu\text{W}/\text{m}^2$ ;  
before shielding: after shielding:



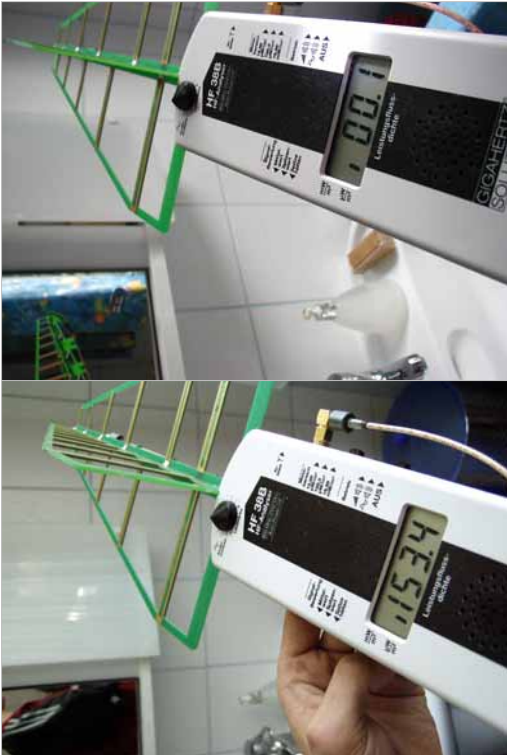
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### EMR-Shielding of a family home in Austria

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Bathroom, first floor; before shielding = 153.4  $\mu\text{W}/\text{m}^2$ ;  
 after shielding = 0.1  $\mu\text{W}/\text{m}^2$



Hallway, first floor; before shielding = 119.0  $\mu\text{W}/\text{m}^2$ ;  
 after shielding = 0.6  $\mu\text{W}/\text{m}^2$



Bathroom, ground floor; before shielding = 193.9  $\mu\text{W}/\text{m}^2$ ;  
 after shielding = 0.1  $\mu\text{W}/\text{m}^2$



Change room; before shielding = 106.6  $\mu\text{W}/\text{m}^2$ ;  
 after shielding = 0.2  $\mu\text{W}/\text{m}^2$

