

YSHIELD Shielding paints

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Product overview

YSHIELD shielding paints are **electro-conductive coatings** for the protection of large areas from electromagnetic radiation (EMR). They offer best shielding qualities for 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.

	HSF 54	HSF 74	HSF 92	NSF 34
Shielding HF	X	X	X	
Shielding LF	X	X	X	X
Brief description	Our well-established paint for HF (+ LF)	Our ecological mineral paint for HF (+ LF)	Our silver/copper paint for HF (+ LF)	Our well-established paint for LF
Screening 1-layer	36 dB (99.975%) at 7.5 m ² /l	37 dB (99.98%) at 7.5 m ² /l	> 60 dB (99.9999 %) at 7.5 m ² /l	40 dB / at 7.5 m ² /l
Screening 2-layer	43 dB (99.995%) at 2x 7.5 m ² /l	45 dB (99.997%) at 2x 7.5 m ² /l		
Screening basis	Carbon	Carbon	Copper, silver	Carbon
Color	Black	Black	Silver, beige	Black
Application area	Interior / Exterior	Interior	Interior	Interior / Exterior
Substrates	Almost all	Mineral	Almost all	Almost all
Surface, mechanical resilience	Medium elastic, limited resilient	Medium elastic, limited resilient	Medium elastic, normal resilient	Medium hard, normal resilient
Moisture resistance	High	High	None	High
Ecology	Good	Very good	Good	Good
Binding agent(s)	Pure acrylic	Waterglass	Pure acrylic	Pure acrylic
Solvent	Water	Water	Water	Water
VOC content *	0.2 g/l	< 0.1 g/l	0.2 g/l	0.2 g/l
Sd-value	~ 0.1 m	~ 0.02 m	~ 0.1 m	~ 0.1 m
pH-value	7-8	12	7-8	7-8
Density	1.25 kg / l	1.3 kg / l	1.35 kg / l	1.05 kg / l
MFFT	5° C	5° C	5° C	5° C
Grounding required	Interior: ES + EB; Exterior: ESA	Interior: ES + EB	Interior: ES + EB	Interior: ES + EB; Exterior: ESA+EB
Frost resistant in delivery form / Shipping warranted	> 3 frost-, thaw cycles / Always	No / Under 0° C only with UPS Express	> 3 frost-, thaw cycles / Always	> 3 frost-, thaw cycles / Always
Delivery sizes	1 / 5 Liter	1 / 5 Liter	0.25 / 1 / 5 Liter	1 / 5 Liter
Shelf life	12 months	12 months	12 months	12 months
Typical coverage, 1 liter, single-layer	Interior: 7.5 m ² ; Exterior: 5 m ²	Interior: 7.5 m ²	Interior: 7.5 m ²	Interior: 7.5 m ² ; Exterior: 5 m ²
Price (plus VAT) per m ² (5 liter container, 1-layer application)	EUR 5.60	EUR 5.60	EUR 16.81	EUR 4.48
Selection guide	Our standard paint for HF that we always recommend! Superior mechanical and chemical properties, combined with a very high ecological standard.	Only to recommend, when a maximum of ecology is important. Otherwise HSF54 is better in all details.	Only to recommend, when a very high attenuation is needed. Only on permanently dry substrates, otherwise corrosion. Very high ecological standard for a silver-/copper paint.	Our standard paint for LF that we always recommend! Superior mechanical and chemical properties, combined with a very high ecological standard.

* EU limit value for this product (Cat. A/a): 30 g/l (ab 2010).

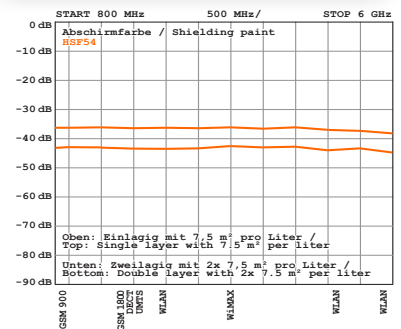
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General product descriptions

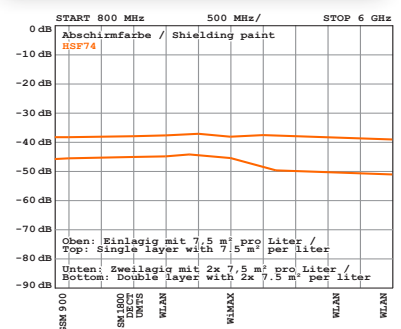
YSHIELD HSF54 (Pure acrylic, HF radiation + LF electric fields, Interior + Exterior application)

Our well-established metal-free paint for interior and exterior application. To shield high-frequency radiation (HF) and low-frequency electric fields (LF). ❶ This paint achieves **high attenuation** even at **single-layer application**. Does not contain any metals but only carbons, so it is **long lasting corrosion resistant**, even in humid environment. ❷ On basis of a high quality pure acrylic binder, low VOC content, highly breathable, free of solvents, etc. ❸ Excellent adhesion on many interior and exterior surfaces and substrates like old emulsion paint layers, sheetrock, cement, plaster, masonry, wood, etc. Can easily be covered with water-based paints. ❹ To bridge forming gaps in the underground, this paint is **reinforced with long conductive fibers**. Nevertheless we recommend the use of grounding strap EB. ❺ This paint is **frost resistant** and can thus be shipped even in wintertime by air cargo or by ship. ❻ **Attenuation of 36 dB** (shielding effectiveness of 99.98 %) in one layer, **attenuation of 43 dB** (shielding effectiveness of 99.995 %) with two layers. ❼ Ingredients: Water, pure acrylic binder, graphite, carbon black, additives, preservative, carbon fibers.



YSHIELD HSF74 (Pure silicate, HF radiation + LF electric fields, Interior application)

Our metal-free ecological mineral paint for interior application. To shield high-frequency radiation (HF) and low-frequency electric fields (LF). ❶ This paint achieves **high attenuation** even at **single-layer application**. Does not contain any metals but only carbons, so it is **long lasting corrosion resistant**, even in humid environment. ❷ On basis of potassium silicate as binder. Developed with an absolute minimum of ingredients for a maximum ecology. Preservative-free, highly breathable, free of solvents, free of VOC, etc. ❸ Good adhesion on mineral substrates like lime plaster, concrete, clay, etc.. Do not use on gypsum based substrates! After testing and on your own risk, even on many absorbent undergrounds like wallpaper, absorbent wall paint, natural resin paints, etc.. Can easily be covered with water-based paints, sol-silicate paints, dispersion silicate paints, natural resin paints, etc.. **Application only from a professional painter with protective equipment due to the ph-value of 12 (strongly alkaline).** ❹ To bridge forming gaps in the underground, this paint is **reinforced with long conductive fibers**. Nevertheless we recommend the use of grounding strap EB. ❺ **Not frost resistant**, shipping only on temperatures over 0°C or with UPS Express. ❻ **Attenuation of 37 dB** (shielding effectiveness of 99.98 %) in one layer, **attenuation of 45 dB** (shielding effectiveness of 99.997 %) with two layers. ❼ Ingredients: Potassium silicate, water, graphite, carbon black, additives, carbon fibers.



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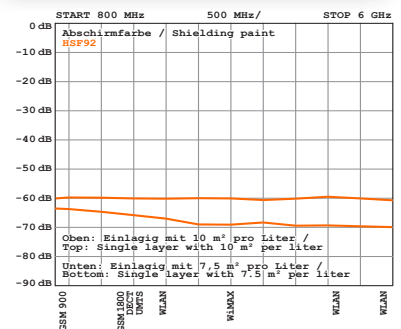
YSHIELD HSF92 (Pure acrylic, HF radiation + LF electric fields, Interior application)

Our silver/copper-paint for interior application. To shield high-frequency radiation (HF) and low-frequency electric fields (LF).

❶ This paint achieves **very high attenuation** even at **single-layer application**. This paint is formulated **completely without chemical solvents** and without corrosion inhibitors. A very high silver content hamper the corrosion of the copper content. Nevertheless we recommend to use it only on permanently dry undergrounds, further for corrosion protection it is obliged, that you apply **under and over** the HSF92 our primer G25! ❷ On basis of a high quality pure acrylic binder, low VOC content, highly breathable, free of solvents, etc.

❸ Excellent adhesion on many interior and exterior surfaces and substrates like old emulsion paint layers, sheetrock, cement, plaster, masonry, wood, etc. Limited use on low-energetic plastic substrates, developed as wall paint without solvents! Can easily be covered with water-based paints / laquers. ❹ To bridge forming gaps in the underground, we recommend the usage of our ground-strap EB.

❺ This paint is **frost resistant** and can thus be shipped even in wintertime by air cargo or by ship. ❻ **Attenuation of more than 60 dB** (shielding effectiveness of 99.9999 %) in one layer. ❼ Ingredients: Water, pure acylic binder, copper, silver, glass, additives, preservative.



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

Our well-established metal-free paint for interior and exterior application. To shield low-frequency electric fields (LF).

❶ This paint achieves **high attenuation** at single-layer application. ❷ On basis of a high quality pure acrylic binder, low VOC content, highly breathable, free of solvents, etc. ❸ Undergrounds as with HSF54. ❹ To bridge forming gaps in the underground, we recommend the usage of our ground-strap EB. ❺ Frost resistance as with HSF54. ❻ Attenuation more than 40 dB. ❼ Ingredients: Water, pure acylic binder, carbon black, graphite, additives, preservative.



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Common characteristics

Simple handling and processing

YSHIELD shielding paints **can be applied universally**. 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 applied simply with a paint roller.

Perfect corrosion resistance

Most shielding products containing metal components are not adequately protected against corrosion. Our **standard products HSF54 and NSF34 does not contain any metals**, they are based on a mixture of carbons. Therefore they offer **perfect corrosion resistance** (no oxidizing) and **long-term durability**. HSF92 contains copper and much silver, on permanently dry undergrounds, together with our primer G25, corrosion can be suspended.

Carefully selected Ingredients

YSHIELD shielding paints **do not contain toxic solvents, plasticisers, or any other toxic ingredients**. 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 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.

Security and protection even against future high-frequency applications

Due to its holohedral structure without meshes, all YSHIELD shielding paints offer 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.**

VOC emissions

All of our shielding paints are tested for volatile organic compound (VOC) emissions according to **EU standard 2004/42/EG ChemVOCFarbV**. This testing is done by an accredited and independent laboratory. Test results are given in the table on page 1. Current limits (from 2010) as prescribed by law are 30 g/l for A/a classified products. YSHIELD shielding paints **boasts a 0.2 g/l VOC value, a 150 times below the current limit of 30 g/l.**

Certificate of shielding

The shielding attenuation is regularly tested by **Professor Dipl.Ing. Pauli at the Microwave Laboratory of the University of the German Federal Armed Forces** in Munich due to the standards ASTM D4935-99 and/or MIL-Standard 285. The line in the diagram stands for the radial direction of polarisation (both directions, horizontal/vertical) and indicates the attenuation achievable in practice. You find the measuring diagrams on the corresponding product pages. The complete expert reports can be found on our internet pages.

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Areas of application

Living areas: Protection against HF-radiation from cell phone 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:** data centers, technical rooms, schools, nurseries, hotel rooms, hospital rooms, etc.

Common handling and processing instructions

Underground: Underground needs to be solid, clean, degreased and dry. Interior: Shielding paints may be applied over existing emulsion paint, wallpaper, construction boards, cement, plaster, etc. Exterior: Shielding paints may be applied on concrete, plaster, cement, facade emulsion paint, polystyrene, masonry surfaces, etc. Strongly absorbent or porous surfaces are to be prepared with our primer G25. **Application:** Best use a typical high quality paint roller. **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 and humidity. Interior: Cover with typical emulsion or vinyl paint with good hiding power. Exterior: Cover with hydrophobic emulsion facade paint. **NOTE:** Do not use mineral bonded systems like silicate paints, clay paints, lime cement paints, plasters, spackles, etc. These products may cause adhesion problems!

You find detailed instructions in our technical data sheets on our website on the corresponding product pages! Dont hesitate to contact us, we will send you this data sheets!

YSHIELD Shielding Paints

Project examples

Shielding apartment (150 $\mu\text{W}/\text{m}^2 \rightarrow 0.08 \mu\text{W}/\text{m}^2$), The Netherlands



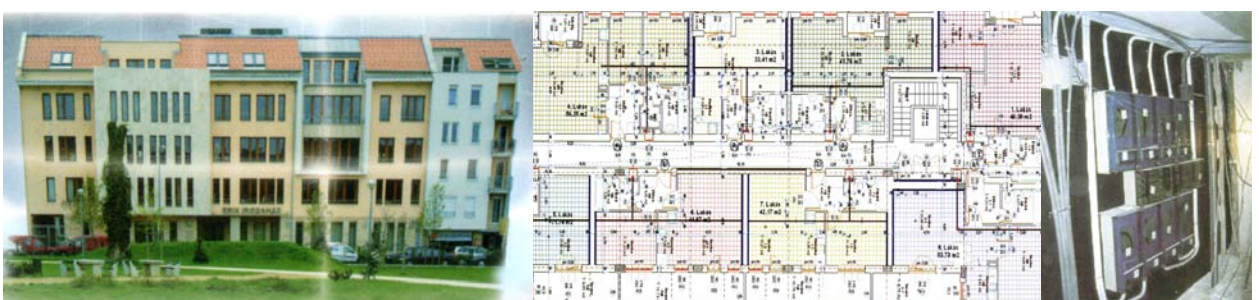
Shielding one-family house (798 $\mu\text{W}/\text{m}^2 \rightarrow 0.47 \mu\text{W}/\text{m}^2$), Austria



Shielding semi-detached house (2648 $\mu\text{W}/\text{m}^2 \rightarrow 10.2 \mu\text{W}/\text{m}^2$), Germany



Shielding multifamily building complex, Hungary



YSHIELD Shielding Paints

Project examples

Shielding one-family house ($194 \mu\text{W}/\text{m}^2 \rightarrow 0.01 \mu\text{W}/\text{m}^2$), Austria



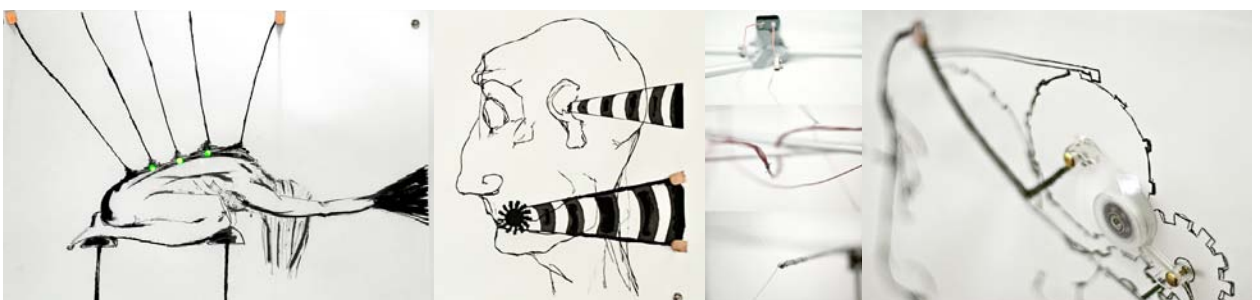
Shielding one-family house ($604 \mu\text{W}/\text{m}^2 \rightarrow 0.26 \mu\text{W}/\text{m}^2$), Australia



Shielding one-family house, Australia



Art installation with conductive paint HSF54, Great Britain



YSHIELD Shielding Paints

Project examples

Shielding airport terminal, Asia



Shielding development department at Asus-computer, Taiwan



Shielding apartment houses, Greece



Shielding BAUFRITZ framehouses, Germany



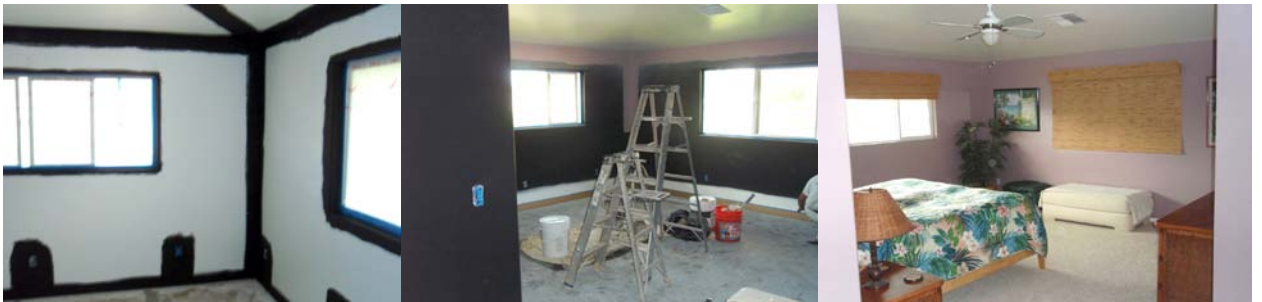
YSHIELD Shielding Paints

Project examples

Shielding one-family house, Germany



Shielding one-family house ($616 \mu\text{W}/\text{m}^2 \rightarrow 0.5 \mu\text{W}/\text{m}^2$), Hawaii



Shielding student project school building, Austria



Shieldings recording studios, Taiwan

