2K high-solid epoxy resin coating, certified according to Regulation (EU) 1935/2004, Regulation (EU) 10/2011 for direct contact with food

FAKOLITH

Material type

FK 45 FOODGRADE is a highly durable 2K high-solid epoxy resin coating. Tested for direct contact with food in accordance with Regulation (EU) 1935/2004 and Regulation (EU) 10/2011. Odourless, quick-drying, for indoor use.

FK 45 FOODGRADE is particularly suitable for surfaces that are in temporary or constant direct contact with solid or liquid foodstuffs. FK 45 FOODGRADE is also recommended for coating ceilings and walls in production, refrigeration and storage rooms. Ideal for any indoor application where a certified and highly durable hygienic coating is required.

FK 45 FOODGRADE is explicitly recommended by the German Federal Association of Food Inspectors (Bundesverband der Lebensmittelkontrolleure Deutschland e.V.) for use in food processing establishments.

Properties

- Certified according to Regulation (EC) 1935/2004, Regulation (EU) 10/2011 for direct contact with food.
- Surface protection against viruses and bacteria thanks to tested GREEN-BIO.FILM.STOP technology (ISO 21702:2019-05, ISO 22196:2011-08)
- Recommended by the German Federal Association of Food Inspectors (Bundesverband der Lebensmittelkontrolleure Deutschlands e.V.).
- Disinfectant resistance (TÜV SÜD).
- FK 45 produces a heavy-duty surface with good resistance to most cleaning agents commonly used in the food industry.
- High abrasion resistance: UNE EN ISO 5470-1:1999.
- Water impermeable. Once dry, FK 45 FOODGRADE forms a water-impermeable film that is easy to clean.
- No water absorption/non-swellable (prevents microbial infestation).

Recommended by the Federal Association of Food Inspectors Germany e.V.

In combination with the system primers FK 44-POX (primer/corrosion protection), DISPERLITH PRIMER (deep primer for microbially contaminated substrates) and FK 16 deep primer, FK 45 FOODGRADE is suitable for coating mineral substrates, metals, tiles, plastics, glass fibre and intact old coatings (e.g. epoxy coatings, emulsion paints). A sample test with a positive cross-cut test of category 0-1 UNE DIN EN ISO 2409:2007 is expressly recommended.

GREEN-BIO.FILM.STOP Technology
The selected combination of active ingredients produces a colour film with high qualitative and quantitative resistance to viruses and bacteria. The tests were carried out in accordance with ISO 21702:2019-05 (measurement of antiviral activity on plastics – feline coronavirus, Munich strain) and ISO 22196:2011-08 (measurement of antibacterial activity on plastics – Escherichia coli, Listeria monocytogenes, Bacillus subtillis, Pseudonomas aeruginosa). BIO.FILM.STOP technology has a preventive effect in the reversible phase. The formation of biofilm on the surface of the coating is demonstrably inhibited by BioFilmStop prophylaxis.

Areas of application

FK 45 FOODGRADE is particularly recommended as a heavy-duty, antibacterial ceiling and wall coating in production and cold storage rooms in the food industry. FK 45 FOODGRADE is also ideal as a renovation coating for metal panels/sandwich panels that have been damaged by daily cleaning and chemical and mechanical loads.

Other recommended areas of application include interior coatings for tanks and silos in which food and feed are stored. It can also be used to coat machines/boilers in which food is produced. Please note: Minimum dry film thickness for coating tanks and silos = 400µ.

When using strongly acidic/alkaline cleaning agents or fillings, we recommend consulting our application technology department. The aim is to check whether FK 45 FOODGRADE has the optimum properties for the intended use. FK 100 FOODGRADE could then also be a possible alternative. With dual certification according to Regulation (EU) 10/2011 **and** FDA 21 CFR 175.300, FK 100 FOODGRADE is a variant with maximum chemical resistance, especially in the area of tank and silo coatings (see product information FK 100 FOODGRADE).

Legal requirements and certification

FK 45 FOODGRADE complies with all current European regulations for materials that come into contact with foodstuffs in accordance with Regulation (EC) 852/2004.

Further regulations for the certification of FK 45 FOODGRADE: Regulation (EC) No 1935/2004, Regulation (EC) No 2023/2006, Commission Regulation (EU) No 10/2011 and its subsequent amendments (EC) No 1282/2011 with regard to plastic materials and articles intended to come into contact with food. Regulation (EC) No. 1895/2005, Regulation (EC) No. 2018/213 on the use of bisphenol A in varnishes and coatings intended to come into contact with food. The implementation of European regulations harmonises criteria for the European market. The standards define, among other things, various simulants and global and specific migration tests for each food group. Previous tests for FK 45 FOODGRADE were carried out with simulants A, B, D2 (OM2-40°C) and C (OM4-100°C). All information on the tests carried out is contained in the manufacturer's declaration of conformity.

The tests carried out by FAKOLITH Chemical Systems at the independent institutes APPLUS, TECNALIA and the National Institute for Food Technology (CNTA) confirm that the FAKOLITH FK 45 coating meets the requirements for global and specific migration limits in all test procedures.

Categories/criteria of test simulants	
Contact Food	**Simulant**
Aqueous foodstuffs only	Simulant A
Acidic foods only	Simulant B
Alcoholic foods only	Simulant C
Only fatty foods	Simulant D
All watery and acidic foods	Simulant B
All alcoholic and aqueous foods	Simulant C
All alcoholic and acidic foods	Simulants C + B
All fatty and aqueous foods	Simulants D + A
All fatty and acidic foods	Simulants D + B

HACCP

FAKOLITH Chemical Systems is an associate member of the CNTA and a participating partner in official R&D projects related to high-quality technical coatings for the food industry and the health sector.

FAKOLITH Chemical Systems is registered in both the Health Register for the Food Industry of the Spanish Province of Catalonia (Registro Sanitario de

CNTA Centro Nacional de Tecnología y Seguridad Alimentaria Entidad asociada

Industrias y Productos Alimenticios de Cataluña, RSIPAC) under number 39.05377/CAT and in the Spanish Health Registration System for the Food Industry (Registro General Sanitario de Empresas Alimentarias y Alimentos, RGSEAA) under number ES-39.005259/T. FAKOLITH Chemical Systems guarantees the manufacture of products of impeccable quality within the framework of the implementation of its internal HACCP concept. In accordance with Regulation (EU) 1935/2004/EC, the traceability of production is guaranteed.

FAKOLITH Farben GmbH and FAKOLITH Chemical Systems have been certified according to the DIN EN ISO 9001:2008 quality management system since 2006. Cert. No. 01100071679/01.

Substrates

Substrate preparation in accordance with VOB. Substrates must be dry and free of dirt and separating substances. Observe VOB, Part C, DIN 18363, Section 3. Substrate preparation depends on the substrate:

- **Concrete:**
  Remove release agent residues with FAKOLITH FK 11 Cleaner, if necessary. Remove sanding substances. Pretreat chalking substrates with DISPERLITH PRIMER. On non-chalking substrates apply FK 45 FOODGRADE directly with approx. 2-4% thinner in the first coat.

- **Mineral substrates:**
  Check the strength and absorbency of the substrate. Prime highly to moderately absorbent or chalky substrates with DISPERLITH PRIMER. Otherwise, apply FK 45 FOODGRADE directly to the mineral substrate.

- **Sheetrock/Aquapanels:**
  Prime with DISPERLITH PRIMER or FAKOLITH FK 16 deep primer.

- **2K epoxy resin coatings:**
  A sample application is always necessary. Clean and sand the surface (>100 grit sandpaper). Coat directly with FK 45 FOODGRADE.

- **Powder-coated substrates**:
  A sample application is always required. Clean and sand the surface. If necessary, coat directly with FK 45 FOODGRADE.

- **Plastic/GRP substrates:**
  A sample application is always required. Clean and sand the surface. If necessary, coat directly with FK 45 FOODGRADE.

- **Substrates affected by mould and bacteria:**
  Clean with FAKOLITH FK 12, diluted 1:4 with water. Then prime with DISPERLITH PRIMER.

- **Substrates affected by yeast and bacteria:**
  Clean with FAKOLITH FK 39. Then prime with DISPERLITH PRIMER.

- Substrates **contaminated with grease, oil or soot:**
  Clean with FAKOLITH FK 11, diluted 1:20 with water.

- **Non-load-bearing coatings:**
  Remove and clean the substrate. Prime with DISPERLITH PRIMER.

- **Stable emulsion paints:**
  Clean the substrate. It is essential to check the strength and suitability of the old coating(s) by applying a sample. Coat directly with FK 45 FOODGRADE.

- **Wood:** Sand, thoroughly clean off residues, apply FK 45 FOODGRADE undiluted. Due to the different types of wood/surfaces, it is essential to test on a sample.

- **Anti-rust primer and bonding agent for aluminium, copper and stainless steel with signs of wear/rust spots**:

  Prepare the surface and remove any oil, grease, salt or dirt residues. Recommendation: Apply FAKOLITH FK 11 cleaner, diluted 1:20 with water, and wipe off immediately. Wipe with solvent to prevent corrosion.

  Information on surface preparation methods can be found in DIN EN ISO 12944-4.

  Apply FAKOLITH FK 44-POX rust protection primer and bonding agent in 1-2 coats. FAKOLITH FK 44-Pox is odourless and can be applied at temperatures above +4°C.

- **Iron, steel, stainless steel:**
  Surface preparation in accordance with DIN EN ISO 12944-4. Direct coating with a minimum dry film thickness of 250 µm.

- **Tiles:**
  Clean and sand the tiles. Remove dust and repair joints if necessary. Apply a thin coat of FK 45 FOODGRADE + 5% FK 45 thinner to highly absorbent joints, overlapping the previous coat. Once dry (at least 24 hours), apply at least two coats of FK 45 FOODGRADE.

- **Vessel coatings:**
  Prime steel containers that are filled with liquid foodstuffs with FAKOLITH FK 44-POX. For drying times for FK 44-POX, see technical data sheet. Recommended dry film thickness for FK 44-Pox 40-80 µ/m² (= 125-250ml/m²). Then apply FK 45 FOODGRADE with a total coating thickness (>400 µm, dry) in several coats. This type of coating should only be carried out by specialist companies.

Please read the technical information and safety data sheets before processing. Check the substrate moisture, test the strength of the old coatings using a cross-cut test and clarify the spatial/temporal conditions at the object.

Carrying out renovation and maintenance work in industrially used rooms requires thorough planning. Before starting work, we recommend inquiring about the individual requirements for the coating and clarifying the conditions on site:

- Which cleaning agents are used in what concentration, at what temperature and how often during the daily production process?

- What are the temperatures/humidity levels during the renovation work?

We recommend detailed coordination of the work, taking into account the processing conditions and the expected drying times. When will production restart? What moisture load ist to be expected and when will the first cleaning of the renovated section take place?

Processing

Application: The substrate must be clean, dry and stable. The room and substrate temperature must not fall below +12°C or exceed +30°C during application and drying. The surface temperature of the substrate to be coated should always be 3°C above the dew point. Maximum relative humidity during processing: 70%.

Mixing: Stir components A and B separately. This process is important because both components are highly viscous when at rest. Then slowly stir component B

into component A. Stir manually or at the lowest speed for approx. 2-3 minutes and then leave to rest for 2 minutes. Avoid mixing in air.

Thinning: The viscosity of the 2K epoxy resin coating varies depending on storage and ambient temperatures. Low temperatures increase viscosity, high temperatures decrease viscosity. We therefore recommend adjusting the product on site with FAKOLITH FK 45 THINNER. Addition for manual application up to max. 4%. With dilutions >4%, there is a risk of the coating running during manual application, especially on non-absorbent substrates.

Important: Transfer the mixture to a clean bucket for processing. Any residues of component A from the edge of the container can lead to film formation problems. Only mix the amount of material that can be processed within 25 minutes (see pot life).

Manual application: Apply with a short-pile roller (<= 5 mm) or brush. Apply at least 2 coats. The use of special paint rollers for solvent-based 2K epoxy resin paints is expressly recommended. Wash and dry the roller thoroughly before use.

Airless spraying: Due to the short pot life, the spraying process should be well planned. Optimum spraying results were achieved with the SF23 Plus airless device from Wagner using the AirCoat process. Nozzle 9/40 flat jet, spraying pressure 180 bar. AirCoat data: ACF 3000 spray gun, blue air cap, red spray gun filter, air pressure 3 bar, 5-10% FAKOLITH FK 45 thinner. Other sprayers should be tested.

After the pot life has expired, the unused mixture may reach a temperature of up to +80°C (only applies to containers >5 kg). Do not leave these containers unattended in exposed areas.

Pot life

A + B (2.5 kg)	10	20	30°C
Pot life	1 hour 45 min	40 min	20 min

A + B (5.0 kg)	10°C	21°C	32°C
Pot life	1 hour 35 min	35 min	15 min

VOC content

Category: j (Lb)
Maximum 500 g/l VOC (Directive 2004/42/EC-2010)
The mixture of components A+B contains less than 500 g/l VOC

Specific weight

Specific weights of the finished mixture (components A+B):
FK 45 FOODGRADE white, grey: 1 l = ~ 1.35 kg
FK 45 FOODGRADE transparent: 1 l = ~ 1.10 kg

Mixing ratio:
By weight: 1 kg A : 0.41 kg B = white (approx. RAL 9003), grey (approx. RAL 7004)
1 kg A : 0.76 kg B = transparent

By volume: 1 L A = 0.34 L B = white (approx. RAL 9003), grey (approx. RAL 7004)
1 L A = 0.83 L B = transparent

The mixing ratio depends on the colour shades. Please enquire at the factory for information on other colour shades.

Solid content

90 ± 1% (UNE EN ISO 3233-1:2013) FK 45 FOODGRADE white/grey
95 ± 1 % (UNE EN ISO 3233-1:2013) FK 45 FOODGRADE transparent

Gloss	Gloss
Opacity (UNE-EN 13300)	Dry film thickness 200 µm = Class 2 Dry film thickness 350 µm = Class 1
Colour	**Standard colours**: white (approx. RAL 9003), grey (approx. RAL 7004), transparent. **Additional colours in FOODGRADE quality:** For orders of **30 kg** or more: light ivory (approx. RAL 1015), light blue (approx. RAL 5012), oxide red (approx. RAL 3009) Manufactured on request. For orders of **100 kg** or more: black (approx. RAL 9017), dark green (approx. RAL 6002), ivory (approx. RAL 1014), ochre brown (approx. RAL 8001), signal yellow (approx. RAL 1003), telegrey (approx. RAL 7047), micaceous iron ore (approx. RAL 9006). Please note that delivery times for these colours may vary. We only use powder pigments approved for food contact to tint FAKOLITH FK 45 in FOODGRADE quality. There may be slight deviations from the defined RAL shades. It is generally possible to tint FAKOLITH FK 45 with suitable liquid colour concentrates. However, FAKOLITH FK 45 then does not meet the requirements of Regulation (EC) 1935/2004, Regulation (EU) 10/2011 and Regulation (EC) 1895/2005 for products in direct contact with food. In this case, a declaration of conformity cannot be issued. Any compatibility issues should be ruled out by sampling beforehand.
Consumption	**Layer thickness and theoretical yield of FK 45 FOODGRADE:**

Transparent			
Layer thickness per application: approx. 75 µm wet (= 82.50 g/m²)			**Theoretical coverage**
dry	**wet**	**g/m² wet**	
50 µm	54 µm ± 2%	58 g/m²	17.27 m²/kg
75 µm	79 µm ± 2%	87 g/m²	12.95 m²/kg
100 µm	105 µm ± 2%	116 g/m²	8.63 m²/kg

White / grey			
Layer thickness per pass: Approx. 125 µm wet (= 170 g/m²)			**Theoretical coverage**
dry	**wet**	**g/m² wet**	
75 µm	83 µm ± 2%	113 g/m²	8.28 m²/kg
100 µm	111 µm± 2%	151 g/m²	6.63 m²/kg
150 µm	166 µm ± 2%	226 g/m²	4.14 m²/kg

Classification of layer thickness				
	Layer thickness – consumption			**Theoretical Yield***
	dry	**wet**	**wet*(g/m²)**	
	100 µm	111 µm ± 2%	151 g/m	6.62 m²/kg

Low	200 µm	222 µm ± 2%	302 g/m²	3.31 m²/kg
Medium	300 µm	333 µm ± 2%	453 g/m²	2.21 m²/kg
High	400 µm	444 µm ± 2%	604 g/m²	1.66 m²/kg
Very high	500 µm	555 µm ± 2%	755 g/m²	1.32 m²/kg

Material consumption depends on the type of application, the environmental conditions, the shape and condition of the substrate, and the technical requirements for the surface. Apply at least 2 coats. **For tank coatings, silos and surfaces subject to very high mechanical stress, we recommend using only FK 45 FOODGRADE in white/grey with a dry film thickness of 400 µm.** For other applications, e.g. as ceiling and wall paint, the minimum film thickness can vary between 200-300 µm.

Thinning

FAKOLITH FK 45 Thinner. For manual application approx. 2.5%. For machine application, 5-10% max. For use on floors, approx. 5% for the first coat. We generally recommend ordering FK 45 Thinner to optimally adjust the 2K coating to the conditions of the object and achieve the best application properties. As an alternative to FK 45 Thinner, an epoxy resin or universal thinner that is not part of the FOODGRADE system can also be used. Compatibility must be checked. The coating is then no longer compliant with Regulation (EU) No 10/2011.

Drying time

Relative drying times:			
111 µm wet film – 100 µm dry (relative humidity 60-70%)	*+ 10º C*	*+ 20º C*	*+ 30º C*
Non-slip	*15-20 h*	*10-12 hours*	*6-7 hours*
Can be painted over with FK 45 FOODGRADE after	*24-36 hours*	*12-24 hours*	*8-12 hours*

The drying times between coats are determined by the layer thickness, temperature, relative humidity and ventilation. The drying time between coats with FK 45 FOODGRADE should not exceed 48 hours.

Containers for liquid foodstuffs: The coating in white/grey is fully cured for contact with liquid foodstuffs after 28 days (conditions: 23ºC, 50% relative humidity, layer thickness 400 µm dry). The lower the temperature or the higher the humidity and layer thickness, the longer the ideal curing time. Additional ventilation must be provided during application. Warm air accelerates curing. Before filling a container with food, clean the coating with clear water. Maximum continuous operating temperature of the metal container (inside and surface): 40°C.

Other applications: The coating exhibits good general properties after a curing time of 72 hours at the earliest. However, we recommend exposing the coating to heavy chemical and mechanical stress only after a curing time of at least 2 weeks.

Application temperature

From +12°C substrate temperature.

Test criteria

Regulation (EC) 1935/2004, Regulation (EC) 1895/2005, Regulation (EC) 2023/2006, Regulation (EU) 10/2011, Regulation (EU) 1282/2011, EN 11861:2002, EN 1186-3:2002, EN 11.86-14:2002

Declaration of conformity

Please request the declaration of conformity from the factory.

Storage	Up to 24 months from the date of filling, in well-sealed original packaging. It is recommended to store the product at a temperature between 15°C and 25°C. If stored at too low a temperature, crystals may form in component A, which can be dissolved again by warming the container to 20°C. This is a reversible effect that has no influence on product quality. FK 45 FOODGRADE should never be stored below +12°C.
Containers	1.0 kg, 2.5 kg and 7.5 kg.
Occupational safety	Exclusive product for professional use. For correct handling, read the safety data sheet, use your personal protective equipment and take the necessary measures.
Disposal	Local regulations must be observed for disposal. Liquid materials must be disposed of in accordance with official regulations.
Note	Successful renovation requires professional planning and detailed documentation. We offer you the "FAKOLITH checklists" and property-specific "renovation concepts" for this purpose. The documents are available on the Internet at www.fakolith.de. Our application technology team will be happy to provide you with personal advice.
Safety data sheet	Safety data sheet FAKOLITH FK 45 A Safety data sheet FAKOLITH FK 45 B Safety data sheet FAKOLITH FK 45 Thinner

LEGAL NOTICE:

FAKOLITH Farben GmbH and FAKOLITH Chemical Systems S.L.U. are jointly certified by TÜV Rheinland Cert in accordance with the DIN EN ISO 9001:2015 quality management system, cert. no. 01100071679/01.

This technical information and recommendation regarding the processing and use of the product is based on our current knowledge and experience in standard situations and on the use of the product within its shelf life. This information does not release the purchaser and/or user from the obligation to determine whether our offer, our recommendation or the technical quality and properties of our products meet their specific requirements. FAKOLITH reserves the right to update the properties and specifications of the products. Updated editions will be published at www.fakolith.de. An updated edition of this document invalidates the previous version (see date of creation).

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