THE NEXT GENERATION OF SYNTHETICS FROM **SCHÖNOX** IS HERE.

NEW SCHÖNOX AP RAPID AND AP RAPID PLUS SYNTHETICS WITH HYBRID ACTIVE-DRY TECHNOLOGY

Introducing Schönox AP Rapid and AP Rapid Plus synthetic gypsum hybrid self-leveling compounds. Offering the benefits of both worlds by combining the versatility, strength and durability of synthetic gypsum with the speed of fast-curing cement. Dust-reduced properties and low VOC content only add to the many advantages of AP Rapid and AP Rapid Plus.

SCHÖNOX AP RAPID AND AP RAPID PLUS

100% ACTIVE DRYING, RAPID-CURING, PUMPABLE SELF-LEVELERS

Schönox AP Rapid and AP Rapid Plus synthetic hybrid self-leveling compounds are ideal for application in healthcare, education, multi-family, hospitality and more.

AP Rapid ready for covering in as little as 6 hours, AP Rapid Plus overnight.

CASTOR WHEEL LOADING | INTERIOR FLOOR | EC1 EC1 CERTIFIED | UL UL CLASSIFIED

PRODUCT CHARACTERISTICS

- For interior use only
- Designed for fast track installations over critical substrates
- Dust reduced properties
- Self-leveling
- Suitable on underfloor heating systems
- Very low shrinkage
- Pumpable
- Suitable for castor wheel loadings
- AP Rapid layer thicknesses above 1/16" up to 1/2"
- AP Rapid Plus layer thicknesses above 1/8" up to 3"

RECOMMENDED APPLICATION DETAILS

Schönox AP Rapid and AP Rapid Plus are suitable for filling, smoothing and leveling of substrates under:

- Flexible coverings
- Wood floor, layer thickness above 1/8"

Suitable on:

- Concrete and cement substrates
- Gypsum substrates
- Old floorings such as ceramic tiles, terrazzo, sheet vinyl, rubber, and resilient floor coverings
- Old, water-resistant adhesive residues
- OSB board and plywood

PRIMING

- Standard absorbent substrates such as concrete and cement substrates, prime with Schönox VD (1:3) or KH Fix
- Non-absorbent, smooth, sound substrates such as ceramic tiles or old water-resistant adhesive residues (removed as far as possible), prime with Schönox SHP
- For gypsum substrates, sanded and vacuumed, prime with Schönox KH FIX
- For wooden substrates such as OSB board and plywood prime with Schönox SHP

MIXING RATIO - AP RAPID

- Mix each 55lb. bag with 5.5 liters / 5.8 quarts of water

MIXING RATIO - AP RAPID PLUS

- Mix each 55lb. bag with 4.2 liters / 4.5 quarts of water
- To extend AP Rapid Plus, we recommend mixing with dry, clean aggregate at a layer thickness above 2". Type and amount of aggregate used will affect product performance. We recommend performing tests prior to use on a larger scale.
- Do not overwater! Foam while mixing or settling of the sand aggregate while placing, indicates overwatering.

TECHNICAL DATA - AP RAPID

- Pot life: approx. 30 minutes at 68°F
- Ready for foot traffic: approx. 2 – 3 hours
- Ready for covering:
  - after 6 hours at 1/4" thickness
  - after 24 hours at 1/2" thickness
- Working temperature: 41°F – 90°F
- Coverage per unit: approx. 60 sq.ft. at 1/8"
- Compressive strength (ASTM C109): 5800 psi after 28 days 3800 psi after 1 day

TECHNICAL DATA - AP RAPID PLUS

- Pot life: approx. 30 minutes at 68°F
- Ready for foot traffic: approx. 2-3 hours
- Ready for covering:
  - after 16 hours at 1/2" thickness
  - after 48 hours at 2" thickness
- Working temperature: 41°F – 90°F
- Coverage per unit: approx. 14 sq.ft. at 1/2"
- Compressive strength (ASTM C109): 6300 psi after 28 days 3800 psi after 1 day

LEED V4

May help contribute to LEED v4 certification of projects in these categories:

- EQc2 – 3 points Low-Emitting Materials
- MRc1 – up to 2 points Life-Cycle Impact Reduction
- MRc2 – 1 point Environmental Product Declaration
- MRc3 – 1 point Sourcing of Raw Materials
- MRc4 – 1 point Material Ingredients

HYBRID ACTIVE-DRY-TECHNOLOGY

DUST REDUCED

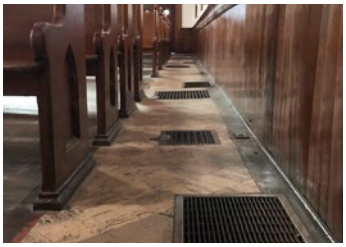
SCHÖNOX | CASE STUDY: ST. ANDREWS EPISCOPAL CHURCH

Project Name: St. Andrews Episcopal Church
Project Location: Richmond, VA
Contractor: Cavalier Flooring Systems
Existing Substrate: VAT tile poorly adhered to a wood subfloor
Products Used: Schönox **Renotex® 3D, RS 50, AP Rapid Plus**

Listed on the National Register of Historic Places, St. Andrews Episcopal Church was built in 1901 with a California Redwood frame and a rough-faced Virginia granite exterior. With almost 120 years of service, the church requires periodic renovation work completed with careful consideration of the structure and its historical significance. St. Andrews is one of many structures financed and organized by Grace Arents, a Christian activist and philanthropist working at the turn of the 20th century. While a strong subfloor and new floor covering were desired, the project goals also called for minimal impact on the structure. The project plan resulted in almost no impact, using a floating construction solution.

Existing Substrate

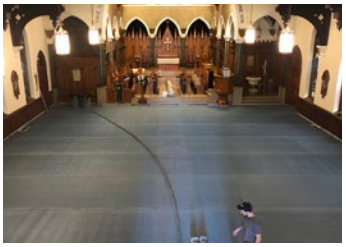
Removal of the carpet floor covering revealed VAT tiles confirmed by lab tests to contain asbestos. The tiles were poorly adhered to the wood subfloor below.



The project plan called for the VAT tiles to remain in place and for nothing to be adhered to the church's subfloor structure. A floating construction was used.

Preparation

The existing subfloor was cleaned and vacuumed. Poly sheeting was laid over the entire space with its seams fully taped, preventing any liquid subfloor materials used from reaching the underlying church structure.



Schönox Renotex® 3D, a multi-dimensional fiber reinforcement fabric, was rolled in place throughout the project area, acting as a decoupling layer between the self-leveling material to come and the poly sheeting on the wood subfloor.

Leveling

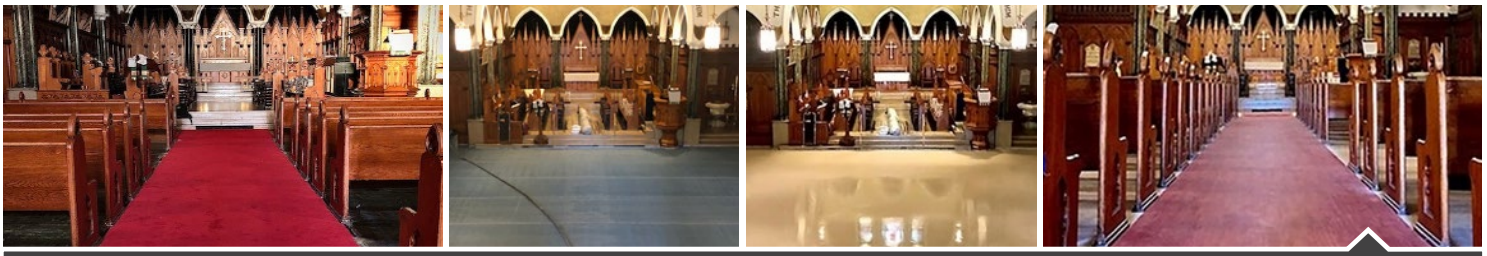
The expanse of the project and the ½ inch intended depth of the pour made pumping of the self-leveling compound atop the Renotex® 3D fabric an ideal project solution for efficiency and consistency.

Schönox AP Rapid Plus, hybrid active-dry based, self-leveling compound, was used to form the subfloor surface which would receive floor covering. It dries independently of the job site's environmental conditions, accepting foot traffic in 2 to 3 hours and floor covering in 16 hours at the ½" project depth.

Floor Covering

LVT flooring was installed, completing the renovation project with a finished, durable floor with none of the renovation materials adhered to the church's underlying structural surface.

Renovated Subfloor – Going from Here to There



From red carpet over old, poorly adhered VAT tiles to new LVT tiles on a floating construction formed by Schönox AP Rapid Plus over Renotex® 3D.

SCHÖNOX AP RAPID PLUS

Self-leveling Compound based on Hybrid Active Dry Technology

Designed for deep pour, fast track installations on most substrates in interior areas such as appartment buildings. SCHÖNOX AP RAPID PLUS can be installed above 1/8" up to 3", in small, well defined areas without limitation.

Product characteristics

- EMICODE EC 1PLUS R: very low emission
- based on Hybrid Active Dry Technology
- for interior use only
- designed for fast track installations in residential areas
- self-leveling
- suitable on underfloor heating systems
- very low shrinkage
- low dust
- pumpable
- suitable for castor wheel loadings
- layer thicknesses above 1/8" up to 3"

Applications

SCHÖNOX AP RAPID PLUS is suitable for filling, smoothing and leveling of substrates under:

- flexible coverings
- under wood floor, layer thickness at least 1/8" (use elastic adhesives only)
- suitable coatings

Substrates

SCHÖNOX AP RAPID PLUS is suitable on:

- concrete
- cement substrates
- gypsum substrates
- old substrates such as ceramic tiles, terrazzo and sheet vinyl/rubber/resilient floor coverings
- old, water-resistant adhesive residues
- OSB board, plywood (well screwed and/or bonded)

Requirements of substrate

- Subfloors must be smooth, sound, clean, dry and free of any contaminants which may hinder adhesion.
- Surface treatments or any "friable" areas of the subfloor must be mechanically removed back to a sound base and the substrate repaired with SCHÖNOX repair compounds as required.
- All slabs on or below grade level must be known to have an intact vapor retarder directly beneath the concrete in conformance to the relevant standards. If in doubt, please contact our SCHÖNOX representative for further advise.
- This product is not a vapor barrier and will allow free passage of moisture. Follow the directions of the floor covering manufacturer regarding the maximum allowable substrate moisture content and test the substrate prior to installing SCHÖNOX AP RAPID PLUS. Where substrate moisture exceeds the maximum allowed then application of SCHÖNOX SDG PLUS, SCHÖNOX MR 18 or SCHÖNOX EPA may be used to suppress residual moisture (see data sheet).
- Do not install where moisture vapor emission rate (MVER) exceeds 5 lbs. per 1,000 sq. ft. per 24 hours, when using the anhydrous calcium chloride test (ASTM F1869) or when the relative humidity (RH) of the concrete slab exceeds 80% (ASTM F2170).
- Gypsum screeds should always be dry. Do not use moisture mitigation systems on gypsum substrates.
- Old water-soluble adhesives should be removed completely, old water-resistant adhesives should be mechanically removed as far as possible. The complete mechanical removal of cutback (i.e. grinding, sanding, blasting) can be hazardous as old cutback adhesive may contain asbestos. Do not sand or grind adhesive residue. Refer to the Resilient Floor Covering Institute's publication "recommended work practice for removal of resilient floor coverings" for instruction. Prime remaining adhesive residues accordingly.
- Old floors such as ceramic tiles should be thoroughly cleaned and abraded.
- Prior to install ceramic tiles we recommend to use SCHÖNOX US.
- The requirements of the relevant valid standards (such as ASTM 2873-13), guidelines and data sheets apply.

Priming

- **standard absorbent substrates such as:**
  - concrete, cement substrates

  prime with SCHÖNOX VD (1:3) or KH FIX
- **non-absorbent, smooth, sound substrates such as:**
  - ceramic tiles
  - old water-resistant adhesive residues, removed as far as possible
  - OSB board, plywood (well screwed down and/or bonded)

  prime with SCHÖNOX SHP
- **gypsum substrates (sanded and vacuumed)** prime with SCHÖNOX KH FIX

Mixing ratio

- mix each 55lb. bag with 4.2 l / 4.5 quarts of water
- We recommend to extend SCHÖNOX AP RAPID PLUS with dry, clean aggregate (aggregate is added last) at a layer thickness above 2": type and amount of aggregate used will affect product performance. As qualities of locally available aggregates vary, we recommend to perform tests prior

Technical data

- pot life: approx. 30 minutes at 68°F
- ready for foot traffic: approx. 2 - 3 hours
- ready for covering:
  - after 16 hours at 1/2" thickness
  - after 48 hours at 2" thickness
- working temperature: 41°F - 90°F
- coverage per unit:
  approx. 14 sq.ft. at 1/2" (depending on substrate conditions and aggregate used)
- compressive strength (ASTM C109/mod - Air cure only):
  6300 psi / 40 N/mm² / 420 kg/cm² after 28 days
  3,800 psi / 26 N/mm² / 240 kg/cm² after 1 day
- flexural strength (ASTM C348):
  approx. 10 N/mm² / 1500 psi after 28 days
- tensile strength (ASTM C1583):
  approx. 2.5 N/mm² / 400 psi after 3 days
- initial Set (ASTM C191):
  approx. 65 minutes at 70°F
- final Set (ASTM C191):
  approx. 70 minutes at 70°F
- cured density: 119 lbs. / cu.ft.
- UL-classified in accordance with ASTM E84 (ANSI/UL 723):
  Flame Spread 0; Smoke Development 0

All values are approximate, are subject to local climatic fluctuations based upon conditions at 70°F with atmosphere of less than 65 % relative humidity following the recommended mixing ratio. Do not install underlayment or topping before the substrate has dried thoroughly.

SCHÖNOX®

SCHÖNOX AP RAPID PLUS

to use on a larger scale.
Do not overwater! Foam while mixing, or settling of the sand aggregate while placing, indicates overwatering.

Recommended method of working

- Using a clean mixing drum, add SCHÖNOX AP RAPID PLUS to cold, clean water to form a homogeneous mixture. Mix thoroughly for approx. 3 minutes using a heavy-duty drill (min. 600 rpm) to obtain a lump-free mix. Then pour the mix and spread using a smoothing trowel. Even surfaces are easily achieved using a pin leveler. In higher thicknesses using a spike roller is recommended.
- Contact to vertical structures should be avoided by putting in SCHÖNOX FOAMTAPE.
- If a second layer of leveling compound (or a patching and smoothing compound such as SCHÖNOX SL) is to be applied, prime the first layer with SCHÖNOX KH FIX when walkable. The maximum layer thickness must not be exceeded in case of two layer applications. The second layer must not exceed the layer thickness of the first layer.
- Protect curing SCHÖNOX AP RAPID PLUS layers from high ambient temperatures, direct sunlight and draughts and ensure an adequate air circulation.
- Clean tools in water immediately.

Packaging

- 25kg / 55lb. net weight in paper bags

Storage

- Store in cool and dry conditions.
- Shelf life: 12 months unopened.
- End of shelf life does not generally indicate the end of the products suitability for the intended use. Always test in a small area.

Disposal

- Empty packaging and dispose of in accordance with federal, state and local waste disposal egulations.

VOC Content

- 0g/l (calculated), SCAQMD 1113

LEED

May help contribute to LEED v4 certification of projects in the categories:

- EQc2 - 3 points
  Low-Emitting Materials
- MRc1 - up to 2 points
  Life-Cycle Impact Reduction
- MRc2 - 1 point
  Environmental Product Declaration
- MRc3 - 1 point
  Sourcing of Raw Materials
- MRc4 - 1 point
  Material Ingredients

Environmental Product Declaration (EPD)

- Declaration number: EPD-DIV-2013311-EN

Instructions

- Do not use in areas of constant water exposure (such as interior swimming pools).
- Always install an adequate number of properly located test areas, to include the finish flooring, to determine the suitability of the product for its intended use. As floor coverings vary, always contact and rely upon the floor covering manufacturer for specific directions such as maximum allowable moisture content, adhesive selection, and intended end use of the product.
- Low substrate temperatures and/or high ambient humidity require longer drying times.

Precautions

- SCHÖNOX AP RAPID PLUS contains sand aggregate. Avoid eye and skin contact. In case of contact, rinse immediately with plenty of water. In case of contact with eyes seek additional medical advice. Mix in a well ventilated area and avoid breathing powder or dust.
- Never mix with cement or additives other than SCHÖNOX approved products. Observe the basic rules of concrete work. Do not install below 41°F surface temperature. Install quickly if substrate is warm.

Prior to each use of any SCHÖNOX product, the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at www.schonox.us, or by calling the Technical Service Department at 855-391-2649. Nothing contained in any SCHÖNOX materials relieves the user of the obligation to read and follow the warnings and instruction for each Schönox product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to product use. This product data sheet supersedes all previous editions.

Management system certified to ISO 9001 and 14001 by SQS.

In North America provided by:
HPS North America, Inc
511 Wilhite Street Florence, AL 35630
Phone: 256.246.0345
Fax: 256.246.0346
Email: info@hpsubfloors.com
http://www.hpsubfloors.com

SCHÖNOX®

Safety Data Sheet

SCHÖNOX® AP RAPID PLUS

Revision Date 02/22/2018 Print Date 02/22/2018

1. Identification

Product name	:	SCHÖNOX® AP RAPID PLUS
Supplier	:	HPS North America, Inc., 511 Wilhite Street, Florence, AL 35630 USA
Telephone	:	256.246.0345
Telefax	:	256.246.0346
E-mail address	:	info@hpssubfloors.com
Emergency telephone	:	GBK/Infotrac ID 108313 at 1 800 535 5053 (USA) INTERNATIONAL: (001) 352 323 3500
Recommended use of the chemical and restrictions on use	:	For further information, refer to product data sheet.

2. Hazards identification

GHS Classification

Skin corrosion, Category 1C	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Carcinogenicity, Category 1A (Inhalation)	H350i: May cause cancer by inhalation.
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Specific target organ systemic toxicity - repeated exposure, Category 1, Lungs	H372: Causes damage to organs through prolonged or repeated exposure.

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.
H350i May cause cancer by inhalation.
H372 Causes damage to organs (Lungs) through prolonged or repeated exposure.

Precautionary Statements : P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.
Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P310 Immediately call a POISON CENTER/doctor.
P363 Wash contaminated clothing before reuse.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

See Section 11 for more detailed information on health effects and symptoms.
There are no hazards not otherwise classified that have been identified during the classification process.
There are no ingredients with unknown acute toxicity used in a mixture at a concentration >= 1%.

3. Composition/information on ingredients

Hazardous ingredients

Chemical name	CAS-No.	Concentration (%)
Quartz (SiO2)	14808-60-7	>= 25 - < 50 %
Portland cement	65997-15-1	>= 10 - < 20 %
Quartz (SiO2) <5µm	14808-60-7	>= 0.1 - < 1 %

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

If inhaled	:	Move to fresh air. Consult a physician after significant exposure.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
In case of eye contact	:	Small amounts splashed into eyes can cause irreversible tissue damage and blindness. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Continue rinsing eyes during transport to hospital. Remove contact lenses. Keep eye wide open while rinsing.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting without medical advice. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	:	Prolonged exposure can cause silicosis. Health injuries may be delayed. corrosive effects irritant effects carcinogenic effects Cough Respiratory disorder Dermatitis See Section 11 for more detailed information on health effects and symptoms. Causes serious eye damage. May cause respiratory irritation. May cause cancer by inhalation. Causes damage to organs through prolonged or repeated exposure. Causes severe burns.
Protection of first-aiders	:	Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance.
Notes to physician	:	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Avoid breathing dust. Deny access to unprotected persons.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. Handling and storage

Advice on safe handling	:	Avoid formation of respirable particles. Avoid exceeding the given occupational exposure limits (see section 8). Do not get in eyes, on skin, or on clothing. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Follow standard hygiene measures when handling chemical products.
Conditions for safe storage	:	Prevent unauthorized access. Store in original container. Keep in a well-ventilated place. Observe label precautions. Store in accordance with local regulations.
Materials to avoid	:	No data available

8. Exposure controls/personal protection

Component	CAS-No.	Basis **	Value	Exposure limit(s)* / Form of exposure
Quartz (SiO2)	14808-60-7	OSHA Z-3	TWA	10 mg/m3 / %SiO2+2 respirable

		OSHA Z-3	TWA	250 mppcf / %SiO2+5 respirable
		OSHA P0	TWA	0.1 mg/m3 Respirable fraction
		ACGIH	TWA	0.025 mg/m3 Respirable fraction
		OSHA Z-1	TWA	0.05 mg/m3 Respirable dust
calcium sulfate	7778-18-9	OSHA Z-1	TWA	15 mg/m3 total dust
		OSHA Z-1	TWA	5 mg/m3 respirable fraction
		OSHA P0	TWA	15 mg/m3 Total
		OSHA P0	TWA	5 mg/m3 Respirable fraction
		OSHA P0	TWA	15 mg/m3 Total dust
		OSHA P0	TWA	5 mg/m3 respirable dust fraction
		ACGIH	TWA	10 mg/m3 Inhalable fraction
		ACGIH	TWA	10 mg/m3 Inhalable fraction
Portland cement	65997-15-1	ACGIH	TWA	1 mg/m3 Respirable fraction
		OSHA Z-1	TWA	15 mg/m3 total dust
		OSHA Z-1	TWA	5 mg/m3 respirable fraction
		OSHA Z-3	TWA	50 Million particles per cubic foot Dust
		OSHA P0	TWA	10 mg/m3 Total dust
		OSHA P0	TWA	5 mg/m3

				respirable dust fraction
Limestone	1317-65-3	OSHA Z-1	TWA	15 mg/m3 total dust
		OSHA Z-1	TWA	5 mg/m3 respirable fraction
		OSHA P0	TWA	15 mg/m3 Total
		OSHA P0	TWA	5 mg/m3 Respirable fraction
		OSHA P0	TWA	15 mg/m3 Total dust
		OSHA P0	TWA	5 mg/m3 respirable dust fraction
Quartz (SiO2) <5µm	14808-60-7	OSHA Z-3	TWA	10 mg/m3 / %SiO2+2 respirable
		OSHA Z-3	TWA	250 mppcf / %SiO2+5 respirable
		OSHA P0	TWA	0.1 mg/m3 Respirable fraction
		ACGIH	TWA	0.025 mg/m3 Respirable fraction
		OSHA Z-1	TWA	0.05 mg/m3 Respirable dust

*The above mentioned values are in accordance with the legislation in effect at the date of the release of this safety data sheet.

****Basis**
ACGIH. Threshold Limit Values (TLV)
OSHA P0. Table Z-1, Limit for Air Contaminat (1989 Vacated Values)
OSHA P1. Permissible Exposure Limits (PEL), Table Z-1, Limit for Air Contaminant
OSHA P2. Permissible Exposure Limits (PEL), Table Z-2
OSHA Z3. Table Z-3, Mineral Dust

Engineering measures : Use of adequate ventilation should be sufficient to control worker exposure to airborne contaminants. If the use of this product generates dust, fumes, gas, vapor or mist, use

process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protective equipment

Respiratory protection	:	Use a properly fitted NIOSH approved air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.
Hand protection Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	:	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Hygiene measures	:	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Wash thoroughly after handling. Avoid breathing dust.

9. Physical and chemical properties

Appearance	:	powder
Color	:	white
Odor	:	odorless
Odor Threshold	:	No data available
Flash point	:	Note: Not applicable
Ignition temperature	:	No data available
Decomposition temperature	:	No data available
Lower explosion limit (Vol%)	:	No data available

Upper explosion limit (Vol%)	:	No data available
Flammability (solid, gas)	:	No data available
Oxidizing properties	:	No data available
pH	:	Note: not determined
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	No data available
Density	:	ca.1.38 g/cm3 at 68 °F (20 °C)
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Note: Not applicable
Relative vapor density	:	No data available
Evaporation rate	:	No data available
Burning rate	:	No data available
Volatile organic compounds (VOC) content	:	Not applicable

10. Stability and reactivity

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	The product is chemically stable.
Possibility of hazardous reactions	:	Stable under recommended storage conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	No data available

11. Toxicological information

Acute toxicity

Not classified based on available information.

Skin corrosion/irritation

Causes severe burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Skin sensitization: Not classified based on available information.
Respiratory sensitization: Not classified based on available information.

Product:

Remarks: Product contains Portland cement which contains a chromate reducing agent. If the storage conditions are not appropriate (exposure to humidity) or the storage period is exceeded, the effectiveness of the reducing agent can be diminished prematurely and the product may become skin sensitizing.

Germ cell mutagenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT-single exposure

May cause respiratory irritation.

STOT-repeated exposure

Causes damage to organs (Lungs) through prolonged or repeated exposure.
Prolonged exposure can cause silicosis.

Aspiration toxicity

Not classified based on available information.

Carcinogenicity

May cause cancer by inhalation.

IARC	Group 1: Carcinogenic to humans	
	Quartz (SiO2)	14808-60-7
	Quartz (SiO2) <5µm	14808-60-7
NTP	Known to be human carcinogen	
	Quartz (SiO2)	14808-60-7
	Quartz (SiO2) <5µm	14808-60-7

12. Ecological information

Other information	Do not empty into drains; dispose of this material and its container in a safe way.

13. Disposal considerations

Disposal methods

Waste from residues	:	Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT
Not dangerous goods
IATA
Not dangerous goods
IMDG
Not dangerous goods

Special precautions for user
No data available

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. Regulatory information

TSCA list : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA304 Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Skin corrosion or irritation
Serious eye damage or eye irritation
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Prop 65 ⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov

16. Other information

HMIS Classification

Health	*	3
Flammability		0
Physical Hazard		0
Personal Protection		X

Caution: HMIS® rating is based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® rating is not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® rating is to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). Please note HMIS® attempts to convey full health warning information to all employees.

Notes to Reader

The information contained in this Safety Data Sheet applies only to the actual Product name identified and described herein ("Product Name"). This information is not intended to address, nor does it address the use or application of the identified Product in combination with any other material, product or process. All of the information set forth herein is based on technical data regarding the identified Product that is believed to be reliable as of the date hereof. Prior to each use of the Product, the user must always read and follow the warnings and instructions on the Product's most current product label, Product Data Sheet, and Safety Data Sheet, which are available at www.schonox.us and/or the telephone number listed in Section 1 of this SDS.

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Revision Date 02/22/2018

Material number: 559606

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	FEICA - Association of the European Adhesive and Sealant Industry
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-FEI-20160017-IBG1-EN
ECO EPD Ref. No.	ECO-00000372
Issue date	23.05.2016
Valid to	22.05.2021

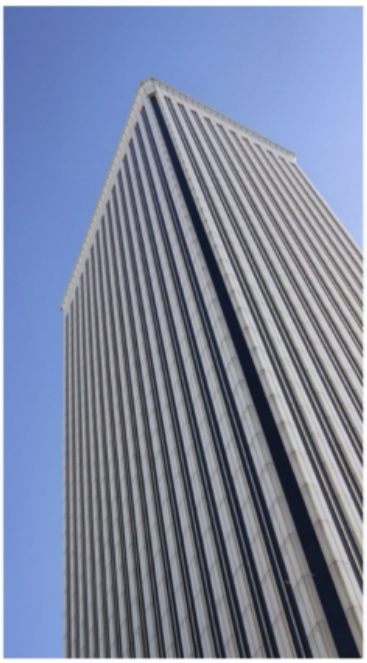
Modified mineral mortars, group 1

FEICA - Association of the European Adhesive and Sealant Industry

Institut Bauen und Umwelt e.V.

www.bau-umwelt.com / https://epd-online.com

ECO PLATFORM EPD EN 15804 VERIFIED



1. General Information

FEICA - Association of the European Adhesive and Sealant Industry

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-FEI-20160017-IBG1-EN

This Declaration is based on the Product Category Rules:
Mineral factory-made mortar, 07.2014
(PCR tested and approved by the SVR)

Issue date
23.05.2016

Valid to
22.05.2021

Prof. Dr.-Ing. Horst J. Bossenmayer
(President of Institut Bauen und Umwelt e.V.)

Dr. Burkhart Lehmann
(Managing Director IBU)

Modified mineral mortars, group 1

Owner of the Declaration
FEICA - Association of the European Adhesive and Sealant Industry
Avenue E. van Nieuwenhuyse 4
1160 Brussels
Belgium

Declared product / Declared unit
1 kg of modified mineral mortar with a density 800 - 1,700 kg/m³

Scope:
This validated Declaration entitles the holder to bear the symbol of the *Institut Bauen und Umwelt e.V.* It exclusively applies for products produced in Europe and for a period of five years from the date of issue. This EPD may be used by FEICA members and their members provided it has been proven that the respective product can be represented by this EPD. For this purpose a guideline is available at the FEICA secretariat. The members of FEICA are listed on its website.The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Verification

The CEN Norm /EN 15804/ serves as the core PCR
Independent verification of the declaration according to /ISO 14025/
☐ internally ☒ externally

Mr Olivier Muller
(Independent verifier appointed by SVR)

2. Product

2.1 Product description

Modified mineral mortars are combinations of one or more inorganic binder, aggregates, water and if necessary additives. They comply with manifold, often specific, tasks in the construction, furnishing and refurbishment of buildings.
The product displaying the highest environmental impacts was used as a representative product for calculating the Life Cycle Assessment results (worst case-approach).

2.2 Application

Modified mineral mortars are used for the following applications:
Module 1: *Modified mineral mortars as repair mortar for the protection and repair of concrete structures*
1.1 Products for structural and non-structural repair which are used to restore the original condition of concrete structures and/or to replace defective concrete
1.2 Products for reinforcement corrosion protection
Module 2: *Adhesives based on modified mineral mortars*
2.1 Products for bonding ceramic tiles as well as natural stone for internal and external installations on walls, floors and ceilings
2.2 Products for bonding thermal insulation composite panels
Module 3: *Modified mineral mortars as joint fillers*
Products for joint filling of wall and floor coverings made of ceramic tiles as well as natural stone for indoor and outdoor applications
Module 4: *Modified mineral mortars as cementitious screed, floor levelling compounds, filler, flowing screed*
Products for manufacturing bonded screed, screeds on separating or insulating layers, for levelling and repairing usual building substrates such as rough, uneven concrete floors, cement, anhydrite and mastic asphalt screed, heated screed and ceramic coverings for indoor and outdoor applications
Module 5: *Modified mineral mortars as levelling compounds for walls and ceilings*
Products for levelling and repairing rough, uneven walls, for repairing grit spots, closing blowholes and modelling broken corners and edges
Module 6: *Modified mineral mortar as grouts*

Products for grouting on holes, recesses, concrete precast columns, foundations and for anchoring machine components indoors and outdoors
Module 7: *Modified mineral mortars for waterproofing slurries*
Products for providing cement-based waterproofing surfaces in structural and civil engineering. For use in new and old buildings as well as beneath tiles (mineral or flexible waterproofing slurries)
Module 8: *Modified mineral mortars as repair mortar*
Products for carrying out repairs (e.g. for repairing minor voids and holes) on horizontal and vertical areas

2.3 Technical Data

Construction products with Declaration of Performance in accordance with /CPR/
Module 1: *Modified mineral mortars as repair mortar for the protection and repair of concrete structures*
The minimum requirements according to /EN 1504/ apply. These are:
1.1
Products for structural and non-structural repair - Requirements on performance characteristics for all intended uses in accordance with /EN 1504-3/, Table 1:
- Compressive strength (/EN 12190/)
- Chloride ion content (/EN 1015-17/)
- Adhesive strength by pull off test (/EN 1542/)
- Restrained shrinkage/expansion (/EN 12617-4/)

1.2 Reinforcement corrosion protection products – Requirements on all intended uses in accordance with /EN 1504-7/, Table 1:
- Corrosion protection (/EN 15183/)

Other performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance
Module 2: *Adhesives based on modified mineral mortar*
2.1 The minimum requirements in accordance with /EN 12004/ apply. These are:
- Tensile adhesion strength after dry storage (/EN 1348/)
- Tensile adhesion strength after water immersion (/EN 1348/)
- Tensile adhesion strength after heat ageing (/EN 1348/
- Tensile adhesion strength after freeze/thaw cycles (/EN 1348/)
- Open time: Tensile strength (/EN 1346/)

Other performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance
2.2 Performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance; /ETAG 004/ apply.
Module 3: *Modified mineral mortars as joint fillers*
The minimum requirements of /EN 13888/ must be maintained.
Module 4: *Modified mineral mortars as cementitious screed, floor levelling compounds, filler, flowing screed:*
The minimum requirements of /EN 13813/ must be maintained. These are:
- Reaction to fire (/EN 13501-1/)
- Release of corrosive substances
- Compressive strength (/EN 13892-2/)
- Flexural strength (/EN 13892-2/)

Other performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance
Module 5: *Modified mineral mortars as levelling compounds for walls and ceilings*
Module 5.1: The minimum requirements of /EN 998-1/ apply. These are:
- Reaction to fire (/EN 13501-1/)
- Compressive strength
- Dry bulk density
- Capillary water absorption
- Water vapour permeability

Other performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance
Module 5.2: The minimum requirements of /EN 13279/ apply.
Performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance
Module 6: *Modified mineral mortars as grouts*
Module 7: *Modified mineral mortar for waterproofing slurries*
The minimum requirements in accordance with /EN 14891/ apply.
Module 8: *Modified mineral mortars as repair mortar*
Performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance

2.4 Placing on the market / Application rules

For the placing on the market in the EU/EFTA (with the exception of Switzerland) products falling under the Regulation (EU) No 305/2011 need a Declaration of Performance taking into consideration either the relevant harmonised European standard as cited in chapter 2.3 or the European Technical Assessment and the CE-marking.
For the application and use of the products the respective national provisions apply.

2.5 Delivery status

Modified mineral mortars are generally manufactured and supplied as factory-made dry mortars. Factory-made dry mortar is a finished mixture of base materials which merely requires the addition of water on the building site. The products can be supplied in 1-5 kg bags, 15-25 kg sacks, Big Bags (1 t), minitainers (1.2 t) or as silo goods (5-15 t).
Paper sacks with polyethylene lining were modelled as packaging (worst-case approach).

2.6 Base materials / Ancillary materials

On average, the products covered by this EPD contain the following ranges of base materials and auxiliaries referred to:
Cement: ~ 2 - 85%
Filler materials: ~ 10 - 90%
Plaster: ~ 0 - 45%
Additives: ~ 0 - 6%
Dispersion powder: ~ 0 - 5%

These ranges are average values and the composition of products complying with the EPD can deviate from these concentration levels in individual cases. More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).
In individual cases, it is possible that substances on the list of materials of particularly high concern for inclusion in Annex XIV of the /REACH/ regulation are contained in concentrations exceeding 0.1%. If this is the case, this information can be found on the respective safety data sheet. Mortar for special

applications can also contain fungicides, whereby the functional group of fungicides is dependent on the chemical specification.

2.7 Manufacture

The raw materials are stored in silos, big bags or sacks in the manufacturing plant and fed gravimetrically in accordance with the respective formula and mixed intensively. The mix is then packaged.
Quality and environmental standards in accordance with /ISO 9001:2008-12/ and the provisions outlined in the relevant regulations such as the Industrial Safety Regulation and Federal Pollution Control Act are adhered to.

2.8 Environment and health during manufacturing

The state-of-the-art involves maximum recirculation of dry waste into production. Wherever dust is incurred during production in the plant, it is directed to a filter system taking consideration of the limit values applicable for the workplace and using the corresponding extraction plants. Sack discharge stations connected to the extraction plant offer employees additional protection from dust. Most of the dust collected in the filter system and any residue incurred during production is returned to the manufacturing process.
Powder residues: Residual product is returned to the production process wherever possible.
Air: Process air is dedusted autonomously, whereby the values are far below legal requirements.
Water: The production process does not involve water. Very low volumes of water are required for laboratory tests and for sanitary facilities.
Noise: Noise level measurements have indicated that all values established within the production facility fall below the hearing protection limit of 85dB(A).
Waste: The main types of waste are powder waste, paper (paper bags) and foil. Low volumes of metal scrap (metal containers), waste oil (maintenance), wood (pallets) and commercial waste are incurred. All waste is separated, stored and redirected to the recycling circuit or disposed of.

2.9 Product processing/Installation

Modified mineral mortars can be processed both automatically and manually. The mortars are either automatically removed from a silo using a dry conveyor or manually taken from the container, mixed with water and installed.
The professional liability association's rules apply as well as the respective safety data sheets pertaining to the construction products.
On account of the various hydrate levels of cement, lime and calcium sulphate binding agents in the mineral mortar, the fresh mortar mixed with water is usually strongly alkaline. In the case of more extensive contact, this alkaline state can cause serious damage to eyes and skin. Therefore, any contact with eyes or skin must be avoided by taking personal protective measures and the information outlined on the safety data sheet must be observed.
Uncontrolled dust emissions should be avoided. Modified mineral mortars may not be discharged into the sewage system, surface water or groundwater. Waste incurred on the building site (packaging, pallets, residual mortar) must be collected separately. Suitable waste disposal companies dispose of packaging materials and mortar sacks and return them to the recycling circuit. Dry mortar residue is taken back by the manufacturing plants and used as a raw material.No dry mortar residue in mortar sacks is incurred. Hard mortar residue can be recycled or disposed of as building site rubble.

2.10 Packaging

A detailed description of packaging is provided in section 2.5. Empty, trickle-free paper containers and clean PE foils can be recycled.

2.11 Condition of use

Modified mineral mortar does not rot and is resistant to ageing when used in accordance with the designated purpose of the respective products.
It is a durable product which, when used as adhesive, screed, waterproofing material or repair product, makes an essential contribution towards improving building function and value.

2.12 Environment and health during use

Owing to the stable crystalline bond and firm structure achieved after curing, emissions are extremely low and harmless to health when used in accordance with the designated purpose of the respective products.
No risks are known for water, air and soil if the products are used as designated.
Natural ionising radiation from mineral mortar is extremely low and negligible in terms of health hazards.
Options for applications in indoor areas with permanent stays by people:
Evidence of the emission performance of construction products in contact with indoor air and depending on the designated use must be submitted for applications in indoor areas with permanent stays by people, e.g. in accordance with the /AgBB/ test scheme or the /GEV/ (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V., Düsseldorf) /EMICODE/® marking system typically applied in Germany.

2.13 Reference service life

Modified mineral mortars decisively improve the usability of building structures and significantly extend their original service lives.
The anticipated reference service life depends on the specific installation situation and the exposure associated with the product. It can be influenced by weathering as well as mechanical or chemical loads.

2.14 Extraordinary effects

Fire
In accordance with Commission Decision 94/611EC, modified mineral binding agents comprising finely-distributed organic components must always be classified in reaction-to-fire class A1 "No contribution to fire" in accordance with /EN 13501-1/.
Where higher percentages of organic components are involved, it can also be assumed that at least the requirements of /EN 13501-1/ are maintained for fire class E and Efl.

Water
No relevant volumes of water-soluble substances hazardous to water are washed out when exposed to water (e.g. flooding). Cement-based mortar is stable in terms of structure and is not subject to any changes in form when exposed to water and drying.

Mechanical destruction
The mechanical destruction of modified mineral mortars does not lead to any decomposition products which are harmful for the environment or health. Dust incurred during de-construction should be avoided by taking the appropriate measures (e.g. humidification).

2.15 Re-use phase
Components manufactured using modified mineral mortars can usually be easily demolished. When removing a building, the materials do not need to be treated as special waste; care should, however, be taken to ensure unmixed residual materials wherever possible. Mineral mortars can usually be redirected to normal building material recycling circuits. Re-use is generally in the form of recycled aggregate in building construction and civil engineering.
No practical experience is currently available for re-using components comprising modified mineral mortar after decommissioning.

2.16 Disposal
The portion of a modified mineral mortar-based product applied at an other construction product is rather low. These low amounts do not play a role when the construction product is disposed. They do not interfere with the disposal/recycling of other components / building materials.
The following European Waste Codes waste (EWC) codes can apply:
Mineral mortar: /EWC 2000/532/EC 170101/ and /EWC 2000/532/EC 101314/
Mineral filler and levelling compound: /EWC 2000/532/EC 170107/
Calcium sulphate-based filler and levelling compound: /EWC 2000/532/EC 170802/

2.17 Further information
More information is available in the manufacturer's product or safety data sheets and is available on the manufacturer's Web sites or on request. Valuable technical information is also available on the associations' Web sites.

3. LCA: Calculation rules

3.1 Declared Unit
This EPD refers to the declared unit of 1 kg modified mineral mortar with a density of 800 - 1,700 kg/m³.
The results of the Life Cycle Assessment provided in this declaration have been calculated from the product with the highest environmental impact (worst-case scenario).
With the information about the consumption per surface area the results can be calculated into a declared unit of kg/m³.

Declared unit

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg	1	-

3.2 System boundary
Modules A1-A3, A4, A5 and D are taken into consideration in the LCA:

- A1 Production of preliminary products
- A2 Transport to plant
- A3 Production incl. provision of energy, production of packaging as well as auxiliaries and consumables, waste treatment)
- A4 Transport to site
- A5 Installation (disposal of packaging & installation losses and emissions during installation)
- D Credits from incineration of packaging materials

The declaration is therefore from "cradle to gate - with options".

3.3 Estimates and assumptions
Where no specific /GaBi/ processes were available, the individual recipe ingredients of formulation were estimated on the basis of information provided by the manufacturer or literary sources.

3.4 Cut-off criteria
All raw materials submitted for the formulations and production data were taken into consideration. The manufacture of machinery, plants and other infrastructure required for production of the products under review was not taken into consideration in the LCA. Transport of packaging materials is also excluded.

3.5 Background data
Data from the /GaBi/ ts database was used as background data. Where no background data was available, it was complemented by manufacturer information and literary research.

3.6 Data quality
Representative products were applied for this EPD and the product in a group displaying the highest environmental impact was selected for calculating the LCA results. The datasets are less than 5 years old. Production data and packaging are based on details provided by the manufacturer. The formulation used for evaluation refers to a specific product.

3.7 Period under review
Representative formulations were accepted by FEICA Ltd and collected in 2011.

3.8 Allocation
No allocations were applied for production. A multiinput allocation with a credit for electricity and thermal energy was used for incineration of packaging materials. The credits achieved through packaging disposal are declared in Module D.

3.9 Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account. In this case, 1 kg modified mineral mortar was selected as the declared unit. Depending on the application, a corresponding conversion factor such as the specific use per surface area must be taken into consideration.

4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.0016	l/100km
Transport distance	1000	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	800 - 1700	kg/m^3
Capacity utilisation volume factor	1	-

Installation into the building (A5)

Name	Value	Unit
Water consumption	0.0003	m^3
Material loss	0.013	kg

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 kg modified mineral mortar, group 1

Parameter	Unit	A1-A3	A4	A5	D
Global warming potential	[kg CO_2-Eq.]	4.02E-1	4.82E-3	9.97E-2	-3.69E-2
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	5.16E-9	2.21E-14	3.60E-13	-1.21E-11
Acidification potential of land and water	[kg SO_2-Eq.]	1.62E-3	1.19E-5	1.24E-5	-5.84E-5
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	1.38E-4	2.75E-6	2.44E-6	-5.91E-6
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	1.52E-4	-3.33E-6	1.13E-6	-6.20E-6
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	1.43E-6	3.21E-10	1.09E-9	-6.27E-9
Abiotic depletion potential for fossil resources	[MJ]	6.29E+0	6.64E-2	2.20E-2	-5.06E-1

RESULTS OF THE LCA - RESOURCE USE: 1 kg modified mineral mortar, group 1

Parameter	Unit	A1-A3	A4	A5	D
Renewable primary energy as energy carrier	[MJ]	1.91E+0	-	-	-
Renewable primary energy resources as material utilization	[MJ]	0.00E+0	-	-	-
Total use of renewable primary energy resources	[MJ]	1.91E+0	3.77E-3	3.16E-3	-8.34E-2
Non-renewable primary energy as energy carrier	[MJ]	6.45E+0	-	-	-
Non-renewable primary energy as material utilization	[MJ]	6.00E-1	-	-	-
Total use of non-renewable primary energy resources	[MJ]	7.05E+0	6.66E-2	2.56E-2	-6.19E-1
Use of secondary material	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m^3]	-	-	-	-

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 kg modified mineral mortar, group 1

Parameter	Unit	A1-A3	A4	A5	D
Hazardous waste disposed	[kg]	-	-	-	-
Non-hazardous waste disposed	[kg]	-	-	-	-
Radioactive waste disposed	[kg]	-	-	-	-
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	1.29E-1	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	2.99E-1	0.00E+0

Not all of the used inventories for the calculation of the LCA support the methodological approach for the declaration of water and waste indicators. The material amounts, displayed with these inventories, contribute significantly to the production. The indicators Use of fresh water, Hazardous waste disposed, Non-hazardous waste disposed and Radioactive waste disposed are therefore not declared (decision of IBU advisory board 2013-01-07).

6. LCA: Interpretation

All impacts are associated with the production phase (A1-A3). The most significant contribution to the production phase impacts is the upstream production of raw materials as main driver. The majority of life cycle energy consumption takes place during the production phase (A1-A3). Besides the cement also the dispersion powder influences the results significantly, although this is only used up to 5%. Significant contributions to Primary Energy Demand – Non-renewable (PENRT) derive from the energy resources used in the production of raw materials. The largest contributor to Primary Energy Demand – Renewable (PERT) is the consumption of renewable energy resources required for the generation and supply of electricity. During manufacturing (A1-A3) some influence also arises due to the wooden pallets and paper used as packaging that need solar energy for photosynthesis. It should be noted that Primary Energy Demand – Renewable (PERT) generally represents a small percentage of the production phase primary energy demand with the bulk of the demand coming from non-renewable energy resources. CO_2 is the most important contributor to Global Warming Potential (GWP). For the Acidification Potential (AP), NO_x and SO_2 contribute to the largest share.

Transportation to the construction site (A4) and the installation process (A5) make a negligible contribution to almost all impacts. The only exception is a relevant influence of carbon dioxide emissions in module A5 to Global Warming Potential (GWP) due to the incineration of the packaging materials paper and pallets.
In module A4, transport to construction site, values for Photochemical Ozone Creation Potential (POCP) are negative due to emission profile modelled for the selected transportation process and of the characterisation method used in CML 2001 for the calculation of the POCP. Transportation processes are responsible for the emission of NOx in the ground layer atmosphere. NO in particular can have an ozone depleting effect that is reflected in CML 2001 by assigning a negative characterisation factor to this substance. However, although these negative values may appear unusual, it should be considered that POCP is only one of the analysed environmental impact categories. All other potential impacts would increase with greater transportation distances, showing that transportation is a process leading to net environmental burdens. Furthermore, even for POCP, transportation processes needed for supply of materials and product distribution only have limited counterbalance effects on the overall LCA results. Energy credit from incineration of packaging material reported in module D show a negligible influence on the overall results.

7. Requisite evidence

VOC
Special tests and evidence have not been carried out or provided within the framework of drawing up this Model EPD. Some member states require special documentation on VOC emissions into indoor air for specific areas of application. This documentation, as well as documentation for voluntary VOC labelling, has to be provided separately and is specific for products in question.

Evidence pertaining to VOC emissions shall show
- either an attestation of compliance with,
- or documentation of test data that are required in,

any of the existing regulations or in any of the existing voluntary labelling programs for low-emitting products, as far as these
(1) include limits for the parameters TVOC, TSVOC, carcinogens, formaldehyde, acetaldehyde, LCI limits for individual substances (including but not limited to the European list of harmonized LCIs), and the R value;
(2) base their test methods on /CEN/TS 16516/ (or /EN 16516/, after the on-going revision of /CEN/TS 16516/);
(3) perform testing and apply the limits after 28 days storage in a ventilated test chamber, under the conditions specified in /CEN/TS 16516/; some regulations and programs also have limits after 3 days, on top of the 28 days limits;
(4) express the test results as air concentrations in the European Reference Room, as specified in /CEN/TS 16516/.

Examples of such regulations are the Belgian /Royal Decree C-2014/24239/, or the German /AgBB/. Examples of such voluntary labelling programs are /EMICODE/, /Blue Angel/ or /Indoor Air Comfort/.

Relevant test results shall be produced either by an /ISO 17025/ accredited commercial test lab, or by a qualified internal test lab of the manufacturer. Examples for the applied limits after 28 days of storage in a ventilated test chamber are:
- TVOC: 1000 µg/m³
- TSVOC: 100 µg/m³
- Each carcinogen: 1 µg/m³
- Formaldehyde: 100 µg/m³
- LCI: different per substance involved
- R value: 1 (meaning that, in total, 100% of the combined LCI values must not be exceeded).

Informative Annexes (2 tables):

Table 1 shows an overview of the most relevant regulations and specifications as of April 2015, as regards requirements after 3 days of storage in a ventilated test chamber.
Table 2 provides an overview of the most relevant regulations and specifications as of April 2015, as regards requirements after 28 days of storage in a ventilated test chamber. Some details may be missing in the table due to lack of space. Values given represent maximum values/limits.

	TVOC [µg/m³]	Sum of carcinogens. C1A,CA2 [µg/m³]	Formal-dehyde [µg/m³]	Acet-aldehyde [µg/m³]	Sum of Form- and Acet-aldehyde
German DIBt/AgBB regulation	10 000	10	-/-	-/-	-/-
draft Lithuanian regulation	10 000	10	-/-	-/-	-/-
EMICODE EC1	1 000	10	50	50	50 ppb
EMICODE EC1 *PLUS*	750	10	50	50	50 ppb

	TVOC [µg/m³]	TSVOC [µg/m³]	Each carcinogen C1A,CA2 [µg/m³]	Formaldehyde [µg/m³]	Acetaldehyde [µg/m³]	LCI	R value	Specials	Sum non-LCI & non-identified [µg/m³]
Belgian regulation	1000	100	1	100	200	Belgian list	1	Toluene 300 µg/m³	-/-
French regulations class A+	1000	-/-	-/-	10	200	-/-	-/-	List of 8 VOCs, 4 CMR	-/-
French regulations class A	1500	-/-	-/-	60	300	-/-	-/-	List of 8 VOCs, 4 CMR	-/-
French regulations class B	2000	-/-	-/-	120	400	-/-	-/-	List of 8 VOCs, 4 CMR	-/-
French regulations class C	>2000	-/-	-/-	>120	>400	-/-	-/-	List of 8 VOCs, 4 CMR	-/-
German DIBt/AgBB regulation	1000	100	1	100	1200	German AgBB list	1	-/-	100
draft Lithuanian regulation	1000	100	1	product type specific	-/-	Lithua-nian list	1	-/-	-/-
EMICODE EC1	100	50	1	(after 3 days)	(after 3 days)	-/-	-/-	-/-	-/-
EMICODE EC1 *PLUS*	60	40	1	(after 3 days)	(after 3 days)	German AgBB list	1	-/-	40
Finnish M1, sealants	20	-/-	1	10	-/-	-/-	-/-	Ammonia, odour	-/-
Finnish M1, adhesives	200 µg/m²h	-/-	5 µg/m²h	50 µg/m²h	-/-	-/-	-/-	Ammonia, odour	-/-

LeachingMeasurement of leaching performance (eluate analysis) indicating the measurement process.

Leaching is only relevant for specific applications. In this case, information can be provided by the manufacturer.

8. References

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PCR 2011, Part B: 2011-06
Product Category Rules for Construction Products, Part B: Requirements on the EPD for mineral trade mortar
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EN 1504-2:2015-03
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EN 12190:1998-12
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EN 1015-17:2005-01
Methods of test for mortar for masonry – Part 17: Determination of water-soluble chloride content of fresh mortars

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EN 1504-7:2015-09
Products and systems for the protection and repair of concrete structures – Definitions, requirements, quality control and evaluation of conformity – Part 7: Reinforcement corrosion protection

EN 15183:2006-11
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EN 12004:2014-02
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EN 1346:2007-11
Adhesives for tiles – Determining the open time

EN 1348:2007-11
Adhesive for tiles – Determination of tensile adhesion strength for cementitious adhesives

ETAG 004:2001-02-20
Guideline for European technical approval of external thermal insulation composite systems with rendering (ETAG 004)

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EN 13813:2003-01
Screed material and floor screeds – Screed materials – Properties and requirements

EN 13501-1:2010-01
Fire classification of construction products and building products – Part 1: Classification using data from reaction to fire tests

EN 13892-2:2003-02
Methods of test for screed materials – Part 2: Determination of flexural and compressive strength

EN 13501-1:2010-01
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EN 13279-1:2008-11
Gypsum binders and gypsum plasters – Part 1: Definitions and requirements

EN 14891:2015-02
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EWC 170101: 2000/532/EC
European Waste Catalogue / Ordinance on European List of Wastes Concrete

EWC 101314: 2000/532/EC
European Waste Catalogue / Ordinance on European List of Wastes Waste concrete and concrete sludge

EWC 170107: 2000/532/EC
European Waste Catalogue / Ordinance on European List of Wastes Mixtures of concrete, bricks, tiles and ceramics

EWC 170802: 2000/532/EC
European Waste Catalogue / Ordinance on European List of Wastes Gypsum based construction metals e.g. for plasterboard

CPR
Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

REACH
Directive (EG) No. 1907/2006 of the European Parliament and of the Council dated 18 December 2006 on the registration, evaluation, approval and restriction of chemical substances (REACH), for establishing a European Agency for chemical substances, for amending Directive 1999/45/EC and for annulment of Directive (EEC) No. 793/93 of the Council, Directive (EC) No. 1488/94 of the Commission, Guideline 76/769/EEC of the Council and Guidelines 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC of the Commission.

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ISO 16000-6:2012-11
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EN ISO 16000-9:2008-04
Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishings – Emission test chamber method

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Indoor Air Comfort
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www.eurofins.com

Institut Bauen und Umwelt
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ISO 14025
DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804
EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.
Association for the Control of Emissions from Products for Flooring Installation, Adhesives and Building Materials

GEV EMICODE®

Awarding of licence for the use of EMICODE

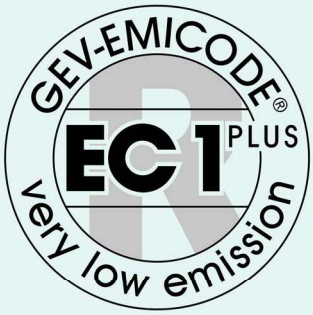
Licence Number: 8978/24.02.97

For the product SCHÖNOX® AP RAPID PLUS

Due to application date March 22, 2018

With reference to the classification in accordance with the directives as stipulated in § 10 of the GEV trademark constitution

on behalf of the GEV for the above mentioned product as per § 5, section 4 of the GEV trademark constitution is awarded the licence for the use of the GEV trademark



This product meets with the guidelines for the criteria of use listed reverse.
The company is ordinary member of the GEV.

OM 008 March 23, 2018
valid until March 23, 2023

The Secretary General
Association for the Control of Emissions from Products for Flooring Installation, Adhesives and Building Materials (GEV)
Völklinger Straße 4 · D-40219 Düsseldorf

Requirement guidelines for the awarding of the EMICODE licence

The product mentioned on the front side of the licence has to fulfil among others the following criteria in accordance with the Constitution and the guidelines of the Technical Advisory Board of the GEV:

- The product meets all the legal requirements, especially the chemical laws and their specifications.
- The product is solvent free as specified in clause 2.4 of the "GEV Classification Criteria", except if it is a surface treatment product. If the product is assigned to a GISCODE product group then this can be labelled.
- A safety data sheet (SDS) according to local law in its respectively valid version is issued for the product.
- Carcinogenic, mutagenic, reprotoxic substances of the categories 1A or 1B are not added during the manufacture of the product.
- The testing of the product is performed in accordance with the GEV Testing Method. VOC determination is performed in a test chamber followed by the Tenax / thermal desorption procedures with subsequent GC/MS analysis.
- The assignment of an EMICODE class is performed according to the following criteria and TVOC/TSVOC concentration levels. The corresponding EMICODE class shall be used to label the product:

1) Installation products, adhesives and construction products

Parameter	EC 1 PLUS	EC 1	EC 2
	max. allowed concentration [µg/m³]		
TVOC after 3 days	≤ 750	≤ 1000	≤ 3000
TVOC after 28 days	≤ 60	≤ 100	≤ 300
TSVOC after 28 days	≤ 40	≤ 50	≤ 100
R value based on German AgBB LCI (NIK) after 28 days	1	-	-
Sum of non-assessable VOC	≤ 40	-	-
Formaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Acetaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Sum of form- and acetaldehyde	≤ 0.05 ppm	≤ 0.05 ppm	≤ 0.05 ppm
Sum of volatile C1A/C1B after 3 days	≤ 10	≤ 10	≤ 10
Any volatile C1A/C1B after 28 days	≤ 1	≤ 1	≤ 1

2) Products for floor surface treatments for parquet, mineral floors and resilient floorings

Parameter	EC 1 PLUS	EC 1	EC 2
	max. allowed concentration [µg/m³]		
Sum TVOC + TSVOC + TVVOC after 28 days	≤ 100 thereof max. 40 SVOC	≤ 150 thereof max. 50 SVOC	≤ 450 thereof max. 100 SVOC
Formaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Acetaldehyde after 3 days	≤ 50	≤ 50	≤ 50
Any volatile C1A/C1B after 3 days	≤ 10	≤ 10	≤ 10
Any volatile C1A/C1B after 28 days	≤ 1	≤ 1	≤ 1