

► Floor and wall systems that meet strict hygiene and safety standards for...

PHARMACEUTICAL ENVIRONMENTS

Welcome to Flowcrete Asia

A critical consideration in the design and construction of pharmaceutical facilities is the flooring used to protect the different operational areas found within. Pharmaceutical brands require floor and wall systems that meet strict hygiene and safety protocols of Good Manufacturing Practice (GMP).

Whether found in production suites, assembly lines or research and development laboratories, flooring materials must offer a wealth of performance characteristics including excellent abrasion, chemical and impact resistance, the ability to withstand extreme temperature swings and provide an easily cleaned, smooth and hygienic finish.

Flowcrete Asia offers a complete package of specialty epoxy, polyurethane, MMA and vinyl ester resin floor and wall systems designed to cater for all areas within pharmaceutical facilities. Some epoxy floor and wall coatings are available that have been qualified as CSM* for their suitability within cleanroom environments. This is due to their low emissions of airborne particles, low outgassing behaviour and good biological resistance.

**CSM (Cleanroom Suitable Materials) is an industry alliance and is a critical qualification for decision-makers selecting materials and equipment in front-end semiconductor manufacturing but also pharmaceutical cleanrooms.*



Application Suitability



Production
Plants



Assembly
Lines



Laboratory
Environments



Chemical
Storage Areas



Packaging
& Warehousing



Corridors
& Stairwells



Maintenance
& Storage



Gowning Rooms
& Airlocks



Administrative
Areas & Rest Rooms



Cleanrooms



Flowcrete's Flowfresh materials contain Polygiene®, a silver ion antimicrobial additive designed to offer enhanced hygiene underfoot.

Polygiene® Antimicrobial Effectiveness

SARS-CoV	✓
Salmonella Typhi	✓
MRSA	✓
Enterococcus Faecalis	✓
E-coli	✓
Staphylococcus Aureus	✓
Listeria	✓
Streptococcus Pyogenes	✓
C.difficile	✓
Pseudomonas Aeruginosa	✓
Proteus Vulgaris	✓
Campila Bacta	✓



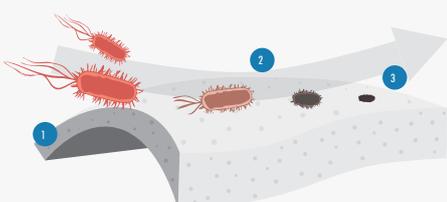
GMP Compliant Epoxy, Polyurethane & MMA Flooring

Pharmaceutical production facilities require smooth floors, walls and ceilings, free from cracks and open joints that reduce the risk of contamination or bacteria build-up while at the same time ensure a safe, non-slip profile underfoot. Some governing bodies state that the internal surfaces should permit an easy and effective cleaning and, if necessary, disinfection.

Resin flooring systems, including epoxy, polyurethane and MMA systems, ensure a non-porous, smooth and seamless surface where there is nowhere for bacteria or mould spores to grow and are appropriate for GMP installations.

Flowcrete Asia's HACCP International certified and ISO 22196 compliant polyurethane floor screed materials offer enhanced protection with the inclusion of Polygiene®, a silver-ion antimicrobial agent, designed to protect the surface from degradation caused by microbial growth.

How Does Polygiene® Work?



- 1 The silver ions are distributed throughout the floor.
- 2 The silver ions migrate to the surface.
- 3 They inhibit bacteria growth by penetrating the cell membrane.

Flowseal EPW Wall (0.2 mm)

A pigmented, water-based, easy-to-clean epoxy wall sealer that is compliant to Cleanroom Suitable Materials requirements.

CLEANROOMS



Solvent free; low odour



Bright, attractive colours available



Hygienic and easy to clean



Cleanroom Suitable Material (IPA)



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

VAPOUR PERMEABILITY

ASTM:E96:90

20 g / m² / mm / 24 hr

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1



Flowseal EPW Wall is qualified as CSM by the Fraunhofer IPA Institute. Please contact your local Flowcrete representative for further information. A full technical profile is available at www.flowcreteasia.com



Flowshield SL (2–3 mm)

A glossy, self-smoothing floor system that delivers a hard-wearing finish for use in areas that require an easy to clean, seamless finish that can withstand foot, trolley and even rubber wheeled forklift traffic.

APPLICATION SUITABILITY AREA



Hygienic and easy to clean



Hard-wearing and abrasion resistant



High chemical resistance



Cleanroom Suitable Material (IPA)

TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry > 40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

COMPRESSIVE STRENGTH

EN 13892-2

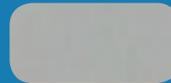
> 50 N/mm²



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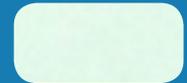
Flowseal EPW Wall Colours



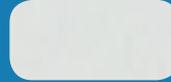
Dolphin Grey



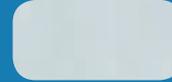
Oyster



Pale Green



Silver Grey



Sky Blue



White

Flowshield SL Colours



Charcoal



Chilli Red



Dark Green



Ivory



Light Green



Light Grey



Mid Blue



Steel Blue



Steel Grey



Yellow

The applied colours may differ from the examples shown. For a full colour chart and samples, contact your local Flowcrete office.

Flowseal EPW Wall and Flowshield SL Cleanroom Suitability





Flowcoat SF41

(Dependent on specification)

A solvent free epoxy resin coating that can deliver an anti-slip profile and protect sustained vehicle traffic, as well as chemical and abrasion resistant.

CHEMICAL, EQUIPMENT STORAGE & WAREHOUSES

Standard Colours



Charcoal



Chilli Red



Dark Green



Ivory



Light Green



Light Grey



Mid Blue



Steel Blue



Steel Grey



Yellow



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry > 40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1

Applied colours may differ from the examples shown. For a full technical profile, colour chart and samples, contact your local Flowcrete office.

Flowshield Quartz (2-3 mm)

A decorative, hard wearing, self smoothing "liquid-vinyl" epoxy resin flooring system that is suitable for dry, light industrial, commercial and institutional floors requiring a decorative but durable industrial floor performance.

LABORATORIES, GOWNING ROOMS & AIRLOCKS

Standard Colours



Cream



Light Blue



Pastel Green



Off White



Goosewing Grey



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry >40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

E_{FL}-s2

Applied colours may differ from the examples shown. For a full technical profile, colour chart and samples, contact your local Flowcrete office.



Flowcrete Asia has coatings that are resistant to aggressive chemicals and temperatures up to 165°C



Flowshield CR (2-3 mm)

A highly chemical resistant, self-smoothing epoxy resin flooring system. Suitable for medium to heavy-duty foot, trolley, pallet truck and rubber wheeled forklift traffic.

LABORATORIES AND CHEMICAL STORAGE

Standard Colours



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry >40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1



Flowshield UCR 1000

An extremely high chemical resistant, hard wearing, attractive, self-smoothing novolac epoxy resin flooring system. Commonly found in dry processing areas.

LABORATORIES, CLEAN ROOMS AND STORAGE AREAS

Standard Colours



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry >40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1

Flowfresh MF (3–4 mm)

A medium duty chemically resistant, antimicrobial treated polyurethane resin finishes. The non-tainting, non-dusting surface provides an easy-to-clean surface with impressive durability under traffic and heavy plant machinery.

PRODUCTION AREAS AND ASSEMBLY LINES

Standard Colours



TEMPERATURE RESISTANCE

From -5°C to 70°C (at 3 mm)
From -15°C to 90°C (at 4 mm)

IMPACT RESISTANCE

EN ISO 6272 15 Nm

COEFFICIENT OF THERMAL EXPANSION

ASTM C531 $5.70 \times 10^{-5} \text{°C}^{-1}$

ABRASION RESISTANCE

Taber Abrader 0.1 g loss per 1000 cycles
(1 kg load using CS17 wheels)

ISO 22196



Flowfresh HF & RT (6–9 mm)

Heavy duty, chemical resistant, antimicrobial polyurethane resin floor screeds, providing a durable textured coloured floor finish which incorporates Polygiene® – a performance based antimicrobial which inhibits the growth of bacteria.

CHEMICAL PROCESSING AND HIGH PERFORMANCE AREAS

Standard Colours



TEMPERATURE RESISTANCE

From -25°C to 100°C (at 6 mm)
From -45°C to 120°C (at 9 mm)

IMPACT RESISTANCE

EN ISO 6272 20 Nm

COEFFICIENT OF THERMAL EXPANSION

ASTM C531 $3.74 \times 10^{-5} \text{°C}^{-1}$

ABRASION RESISTANCE

Taber Abrader 0.12 g loss per 1000 cycles
(1 kg load using CS17 wheels)



Performance Benefits

✓	Exceptional chemical resistance*
✓	Shrinkage compensated to reduce stress
✓	Withstands temperatures up to 165°C
✓	Coatings can be applied to a range of substrates
✓	Vertical systems available for tanks and silos
✓	Abrasion and impact resistant
✓	Withstands thermal shock
✓	Anti static grades available to protect against shock
✓	UV resistant
✓	Fast cure systems minimise downtime

* A detailed chemical resistance chart is available upon request for all Flowchem VE systems. Please contact your local Technical Department for further assistance.

Flowchem VE

Exposure to concentrated acids, alkalis, aggressive solvents and extreme heat can lead to severe degradation of the floor and wall coverings in any chemical processing environment, as well as metal walkways and structures and tank linings.

Flowcrete's unique shrinkage compensated Flowchem VE range has been engineered to support the toughest of environments, offering first class resistance to most corrosive agents and delivering exceptional protection against their potentially irreparable damage. All systems are fast cure systems, providing a thermal shock resistant finish to ensure a reliable and easily maintained finish.

What's more, with insulation, isolation and electrostatic performance benefits, the Flowchem VE range delivers the ultimate in antistatic corrosion protection to take on the chemical processing industries.

- ✓ Aggressive Production Areas
- ✓ Tank Farms
- ✓ Chemical Processing
- ✓ Primary and Secondary Stage
- ✓ Waste Processing
- ✓ Water Treatment



Flowtex TQ

A hard wearing, decorative epoxy resin floor topping made up of colour stable quartz granules encapsulated in a clear resin binder. Ideal where the floor is subject to heavy traffic and chemical spills.

WET AND DRY PROCESS AREAS

Standard Colours



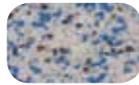
Brown



Dark Grey



Green



Light Blue



Light Grey



Mid Grey



Red



Yellow



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

ABRASION RESISTANCE

Taber Abrader	50mg loss per 1000 cycles (1 kg load using CS17 wheels)
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FIRE RESISTANCE

BS EN13501-1	C _{fi} -s1
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IMPACT RESISTANCE

EN ISO 6272	1 kg weight >1.8m 2 kg weight >1.5m
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Applied colours may differ from the examples shown. For a full technical profile, colour chart and samples, contact your local Flowcrete office.

Flowcrete Asia also manufactures a range of wall coatings and coving mortars to provide a hygienic transition between the floor and wall.



Flowflake Terroso

A fast-cure, decorative floor coating system, available in a range of attractive colour combinations, Flowflake Terroso contains varying sizes of flakes scattered over a pigmented epoxy base coat and is finished with a tough resistant clear sealer.

PUBLIC AREAS, RESTAURANTS AND HOSPITALS

Standard Colours



Black Granite



Freckle



Frosty



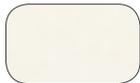
Glacier



Grey Granite



Moonlite



Oyster



Storm



TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry >40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1

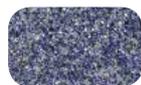


Flowflake Kristalina

A decorative, smooth, sparkling epoxy resin floor finish ideal for a modern contemporary environment.

PUBLIC AREAS AND CAFÉS

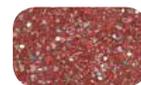
Standard Colours



Azure Blue



Clementine



Cranberry



Dalmation



Ebony



Emerald



Gold



Granite



Pacific Blue



Peacock

TEMPERATURE RESISTANCE

Tolerant of sustained temperatures up to 60°C

SLIP RESISTANCE

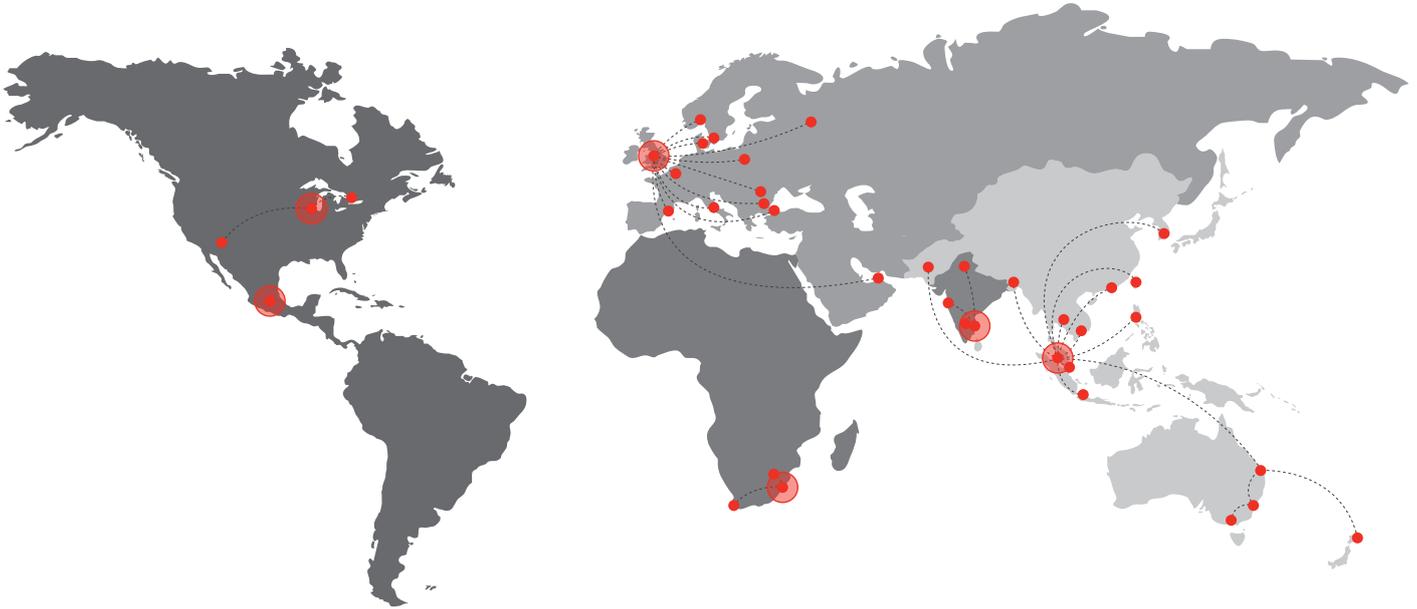
Method described in BS 7976-2 (Typical values for 4-S rubber slider)

Dry >40, Wet depends on specification (In accordance with HSE and UKSRG guidelines)

FIRE RESISTANCE

EN 13501-1

B_{FL}-s1



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