ActiveGel® S1
Technical Specifications

Super-flexible, micro-expanding polymeric adaptive gel (2Gen), Fluidotixo® - C4, with low cement content, total wettability and active transfer of adhesive forces, for the installation of tiles, porcelain stoneware of all types and sizes, and natural stone. Automatically fills micro-voids and dynamically compensates for micro-movements during installation using levelling systems (wedges, tie rods and clips).

Product description

Super-flexible, multi-purpose polymer-modified gel (2nd generation), with the exclusive Fluidotixo® Dinamico formulation, formulated with a low cement content (<29%), for the installation of tiles, porcelain stoneware of all types and sizes, and natural stone, both indoors and outdoors.
Designed to produce an extremely creamy, fluid and thixotropic mixture, it maintains its shape and thickness consistently on both floors and walls.
It offers 100% wetting power, is resistant to vertical slippage and guarantees an open time of over 50 minutes.
ActiveGel® S1 incorporates the exclusive Active Transfer® technology, which enables controlled micro-expansion capable of filling the micro-voids that may form during installation with levelling systems.
It ensures high-performance, super-flexible dynamic adhesion, capable of compensating for micro-movements and micro-voids, making installation very secure.
It delivers high performance when applied as an overlay on existing surfaces, underfloor heating systems, terraces, swimming pools and façades, ensuring active transfer of adhesive forces and flexibility even on difficult substrates and large-format tiles.

Classified as C2TE S1 – EN 12004

Gel formula with a patent application filed

ActiveGel® S1 is a highly innovative Litokol invention featuring
International patent application filed in Italy No. 102025000025369
Hydrophilic cross-linking flexible polymers
Low Portland cement content <29%
Hybrid engineered hydraulic binders
Calcium silicate gel
Latest-generation cellulose under our own licence
High mineral aggregate content

ActiveGel® S1 embodies Litokol's ongoing scientific progress.
It is designed using innovative raw materials to improve the installation experience, enhance safety and reduce environmental impact.

Supplied by

Active Transfer® technology
Adhesion strength – High-performance, super-flexible dynamic

Mix classification

Mix Class	Level of smoothness	Lightness index
C1 – Thick / Paste-like	Requires more force to apply	Standard
C2 – Medium Consistency	It does not run and offers good workability	Standard
C3 - Fluidotixo	Slippery and thixotropic	Light
C4 - Fluidotixo Dinamico	Highly flowable and thixotropic	Light
C5 - Fluidotixo Anti-Fatigue	Ultra-smooth and thixotropic	Ultra Light

Gel Performance Fluidotixo Compound

Class 4 – Fluidotixo® Dynamic Mix

Fluidotixo® Dynamic Compound – Highly flowable, thixotropic and lightweight: its fluid and dynamic consistency makes it easy to apply, whilst maintaining its shape and thickness without sagging.
The Fluidotixo® mixture has gel-like rheological properties, characterised by an initially thixotropic consistency which, under mechanical action (trowelling), reduces its viscosity, becoming temporarily more fluid.
This pseudoplastic behaviour allows for precise and highly fluid application, with superior adhesion to the substrate.
Designed for professional applicators, this product offers exceptional spreadability when laying floor and wall coverings, even with the same batch.
The Fluidotixo® Dinamico mix has a low apparent viscosity, which promotes dynamic flow under the trowel and 100% wettability.
Once applied, its thixotropic formula ensures that the shape and thickness remain unchanged, without sagging, on both floors and walls, guaranteeing precise and controlled application without vertical slippage (T).
The advanced performance characteristics of ActiveGel® S1 allow for corrections even several minutes after application, achieving an extended open time of over 50 minutes (E).

Gel Performance Adhesive Interface

Gel with Active Transfer® Technology

Active Transfer® is an innovative technology applied to new-generation gels that introduces the concept of dynamic controlled micro-expansion, with the aim of optimising the adhesive interface between the installation material and the tile (ITZ).

Active Transfer® – How it works

Active Transfer® is based on the integration of active rheological microsystems within the gel matrix; these microsystems:

1. This triggers controlled micro-expansion immediately after laying, which ensures complete transfer of the gel to the back of the tile through continuous micro-contact pressure between the adhesive, the tile and the substrate.
2. Dynamically fills micro-voids created during installation, the use of levelling systems or post-installation settlement.
3. They increase the contact surface area, achieving total capillary wetting of the back of the tile and the substrate, which guarantees 100% adhesion across the surface and the formation of a continuous structural bond.

Active Transfer® technology, applied to the latest-generation gels, represents an innovation in the management of the ITZ, moving from a static application to a dynamically active one.

Direct Technological Benefits

1. Optimisation of the ITZ (Interfacial Transition Zone):

Active filling dynamics that ensure a continuous, uninterrupted structure with improved mechanical and chemical adhesion and superior durability.

Reduction of weak points associated with voids, micro-bubbles or poorly saturated areas, with improved resistance to thermal cycling, differential movements and operational stresses.

2. Improved force transfer:

The adhesive interface becomes more cohesive and resilient, with no voids and no loss of adhesion, ensuring stable installation even on extra-large formats or deformable surfaces.

The distribution of stresses (shear, tension, compression) is uniform across the entire bonded surface.

3. Compensation for possible micro-movements:

Levelling systems (wedges, clips) exert varying degrees of tension to pull the tiles into position. This mechanical movement may cause the tile to shift slightly relative to the adhesive bed, creating micro-voids underneath.

These micro-shifts are dynamically compensated for thanks to the gel's controlled micro-expansive capacity, which ensures permanent contact between the surfaces.

Active Transfer® technology is particularly effective with extra-wide slabs (>120 cm) and in ultra-thin slab systems, where these critical issues are particularly evident.

Gel Performance Safety

Security – Level 2

Thanks to its larger contact surface and high-performance, super-flexible dynamic adhesion, ActiveGel® S1 ensures the formation of a continuous layer of gel beneath the tile, which reduces micro-voids and improves the effectiveness of the bond, thereby increasing the reliability of the installation.

The presence of a uniform and continuous layer of gel makes ActiveGel® S1 particularly suitable for application on radiant systems or in outdoor environments, where stresses caused by temperature variations require a full bed and a continuous layer of gel in the ITZ to ensure superior adhesive strength.

Chemistry + Smart

Low Portland cement content <29%

Very low emissions of volatile organic compounds (VOCs)

Certifications

EN 12004

EN 12002

ISO 13007

EC1 Plus Gev Emicode

A+ Indoor air emissions

EPD Environmental Product Declaration

ActiveGel® S1 and the environment

LCA results for Global Warming Potential – Greenhouse Gases (GWP-GHG)

Impact category	Unit	A1–A3	C1	C2	C3	C4	D
Climate change GWP-GHG	kg CO_2 eq	4,59 10^{-1}	1,70 10^{-3}	1,63 10^{-2}	5,28 10^{-4}	2,93 10^{-3}	-4,07 10^{-3}

Materials

Porcelain stoneware

Ceramic tiles

Large formats

Laminated stoneware slabs

Marble – Granite – Stone materials

Natural stone

Ceramic and glass mosaics

Terracotta – Klinker

Resin- or cement-based composites

Insulating and sound-absorbing panels for interiors

Substrates

Screeds
Self-levelling compounds
Levelling compounds
Plaster
Plasterboard
Plaster and anhydrite
Existing tiles
Radiant heating systems
Waterproofing products
Decoupling membranes
Aerated concrete
Fibre-cement sheets
Concrete

Uses

Adhesive – levelling compound
Floors – walls
Interior – exterior
Overlay
Radiant heating systems
Indoor wet areas – bathrooms and showers
Pools, swimming pools and fountains
Terraces and balconies
SPA and Hammam
Facades
Industrial flooring
Residential, public, commercial and street furniture

Limitations

Refer to national standards, such as UNI 11493
Ensure a full bed outdoors or under high loads
Protect the tiled surface from heavy rain for at least 24 hours
Temperature, ventilation, substrate absorption and installation material may affect the workability and setting times of the gel
Do not add water to the mix once it has started to set
Do not use on concrete that has not been adequately cured
Do not use on gypsum- or anhydrite-based substrates without first applying X-Prime®
Do not use on timber or wood-based composites
Do not use on metal, rubber, PVC or linoleum surfaces
Do not use where the surface needs to be ready for foot traffic quickly
Do not use on organic reactive waterproofing membranes (type RM according to EN 14891)
Do not use for applications not listed on this Technical Data Sheet
For further information, please contact Litokol's Technical Customer Service on +39-0522-622811 or via customercare@litokol.com

Product specifications

Appearance	Hydrolysed gel powder
Colour	Ultra White – Grey
Responsible Packaging	20 kg recyclable bag
Storage	12 months in original packaging in a dry place
Customs heading	38245090

Technical Specifications

Compliance	EN 12004 – ISO 13007	C2 TE S1
Initial bond strength after 28 days	≥ 1.0 N/mm^2	EN 1348
Adhesion after immersion in water	≥ 1.0 N/mm^2	EN 1348
Adhesion following heat exposure	≥ 1.0 N/mm^2	EN 1348
Adhesion after freeze-thaw cycles	≥ 1.0 N/mm^2	EN 1348
Open time	≥ 0.5 N/mm^2 after 30 minutes	EN 1346
Slip	≤ 0.5 mm	EN 1308
Transverse deformation	> 2.5 mm	EN 12002
Moisture resistance	Excellent	
Alkali resistance	Excellent	
Solvent resistance	Excellent	
Acid resistance	Low	
pH of the mixture	13	
Specific gravity	1.55 kg/dm^3	

Application Specifications

Mix class	Class 4 - Fluidotixo Dynamic
Preparation of grey gel mixture	Water = 29–32% ~ 5.8–6.4 l / 20 kg
Preparation of Ultra White Gel mixture	Water = 31–34% ~ 6.2–6.8 l / 20 kg
Dough proving time	5 minutes
Pot life	6-8 hours
Applicable thicknesses	From 1 to 20 mm
Open time	> 50 minutes
Recording time	> 50 minutes
Application	Notched trowel suitable for the tile size and substrate
Application temperatures	From +5°C to +35°C
Drying time for grouting	Wall: 6–8 hours – Floor: 12 hours
Ready for foot traffic	12 hours
Commissioning	5 days – Swimming pools 14 days
Operating temperature	From -40°C to +90°C
Cleaning of equipment	With water when the product is fresh. Mechanically once the product has hardened.
Coverage	3.5 mm trowel: ~ 1.8 kg/m^2
Coverage	6 mm trowel: ~ 2.5 kg/m^2
Coverage	8 mm trowel: ~ 3 kg/m^2
Coverage	10 mm trowel: ~ 3.5 kg/m^2
Coverage	Double coat: ~ 5 kg/m^2
Notes	Data recorded at a temperature of +23 °C, 50% RH and in the absence of ventilation. These may vary depending on specific site conditions.

Preparation of substrates

In accordance with standard UNI 11493-1, substrates must be mechanically sound and free from crumbly parts, grease, oil, paint, wax and rising damp.
Cement-based plasters must be allowed to cure for at least one week per centimetre of thickness.
Cement-based screeds must have a total curing time of at least 28 days or be laid using the innovative X-Floor and X-Floor Pro crack-resistant screeds.
Create gradients on balconies or pavements using the new-generation crack-resistant levelling compound HydroLevel® 1-30.
Dusty, porous and absorbent substrates must be treated with X-Prime®, an innovative fixative and consolidant.
Smooth, compact substrates, such as trowelled concrete, old ceramic tiles or terrazzo tiles, must be treated with the latest-generation adhesion promoters X-Activator® or X-Activator® Grip after thorough cleaning with the specific detergent X-Cleaner® Scrub.
In the case of anhydrite screeds, ensure that a suitable vapour barrier is in place to prevent any rising damp.
Check using a carbide hygrometer that the residual moisture content is less than 0.5% and 0.3% for underfloor heating screeds.
The surface must be sanded and primed with X-Prime®.
Any cracks or fissures must be sealed with CrackRepair.
In any case, it is essential to consult the relevant technical data sheets to ensure the correct use of the products indicated.

Preparation of the mix

To fully appreciate the superior flow properties and thixotropy of the innovative Fluidotixo® Dinamico gel mixture, we recommend mixing the product using the specified mixing ratio.
Pour the correct amount of water into a container and slowly add the product, mixing with a mechanical mixer until a creamy, homogeneous mixture free from lumps is obtained.
Leave the mixture to rest for about 5 minutes, during which time the polymeric gel develops fully: the hydraulic binders, fillers and cellulose hydrate uniformly, the micro-air bubbles incorporated during mixing are eliminated and the polymers begin the activation process.
Stir briefly to achieve the highly flowing, thixotropic and lightweight Gel Fluidotixo® Dinamica consistency, which is easy to apply to both floors and walls.

Application

To ensure the gel adheres perfectly to the substrate, apply a thin, even coat of the mixture using the smooth side of the trowel and, immediately afterwards, apply the desired thickness using the notched side.
The notching of the trowel must be chosen according to the size of the material to be laid and the substrate.
In accordance with the UNI 11493-1 standard, use the double-coating technique, applying the gel to the back of the tiles as well to ensure complete wetting during installation outdoors, in swimming pools, on façades or in areas subject to particularly high stress.
To ensure complete transfer of the gel to the back of the tiles, they must be laid onto the still-fresh adhesive whilst applying adequate pressure.
The open time under standard temperature and humidity conditions is approximately 50 minutes.

Very hot or windy conditions, or highly absorbent substrates, can drastically reduce this to just a few minutes; it is therefore advisable to check frequently that the adhesive has not formed a surface film.
In accordance with the UNI 11493-1 standard, tiles must be laid with joints of a width appropriate to their size.
Take account of any partition or structural joints and provide suitable expansion, partition and perimeter joints.

Special Applications

Marble, Natural Stone and Recomposed Stone

Materials prone to deformation or staining due to water absorption require a hydro-curing gel with accelerated adhesion and fast setting, such as FastGel® or FastGel® S1+ (C2F – EN 12004), or a reactive gel such as PowerGel® Pro, FastGel® Pro or PowerGel® Pro Max (R2 – EN 12004).
Even marbles and natural stones of the same type can have different characteristics.
If in doubt, we recommend consulting Litokol's Technical Customer Service in advance for detailed information or to carry out a laboratory test.
Natural stone slabs with reinforcing layers applied to the back (resins, reinforcing mesh, etc.) or specific treatments (e.g. anti-rising damp, etc.) require a compatibility test with the adhesive, unless otherwise specified by the manufacturer.
Before installation, check for any traces of dust or debris on the back of the slabs.
If this occurs, they must be removed.

Radiant Heating Systems

At least 4 days after laying the X-Floor® or X-Floor® Pro anti-crack screed, you can start up the heating system with a supply water temperature ranging from +20°C to +25°C, maintaining it at a constant level for at least 3 days.
Next, set the maximum design temperature and maintain it for a further 4 days.
At the end of this cycle, allow the screed to return to room temperature and lay the covering (EN 1264-4).

Swimming pools

In accordance with standard UNI 11493 – 7.13.3, swimming pool tiling must be designed taking into account mechanical, thermo-hygrometric and chemical stresses: continuous contact with chemically treated water (even during the winter season) and frequent sanitisation procedures.
In concrete structures, the correct composition must be ensured (UNI 11104 – EN 206) and the correct curing time observed (minimum 6 months, UNI 11493 - 7.3.1).
It is essential to waterproof the external part of the structure, taking preventive measures to avoid any infiltration that could cause the waterproofing membrane applied inside the tank to detach, such as drainage along the sides of excavations or waterproofing using osmotic mortars.
Grind and level surfaces with HydroLevel®, a quartz-reinforced structural levelling compound with controlled expansion and crack-resistant properties.
Waterproof the pool surfaces using the watertight, crack-resistant SafetyGel® elastic gel membrane with 6-Dimensional Elasticity technology, or the breathable, tripolymer waterproof gels enhanced with quartz microspheres from the HydroPad® range featuring 4-Way Flex technology.
Seal critical areas such as construction joints with HydroStop, and pipes passing through recirculation, filtration, drainage and lighting systems with HydroPixel®.
We recommend carrying out a water-tightness test before laying the wall tiles.
Always apply gel to the back of the material as well (double coating) to

ensure a full bed of adhesive, guaranteeing full force transfer and the durability of the system.

Facades

When installing on external walls (H > 3 m), as these are tiled surfaces subject to high dilatometric stresses due to thermal and hygrometric variations, and given the safety risk associated with potential detachment, it is recommended to consult Litokol's Technical Customer Service in advance in order to accurately identify the safest installation technique.

In accordance with standard UNI 11493 – 7.13.7, the following general guidelines must be followed: the substrate must ensure a cohesive tensile strength of ≥ 1.0 N/mm^2.

In the case of masonry substrates consisting of bricks/clay blocks, lightweight blocks, etc., direct application is not permitted; instead, application onto plaster in accordance with the above instructions is required.

For cladding with a side length > 30 cm, the designer must assess whether it is necessary to specify suitable mechanical safety fixings.

Separation and expansion joints must be provided as specified in sections 7.11.1.2 and 7.11.1.3.

Always apply adhesive to the back of the material as well (double coating) in order to achieve a full bed of adhesive, ensure full force transfer and guarantee the durability of the system.

Grouting, sealing and maintenance

For grouting, X-Color® 0-6 or X-Color® 2-12 decorative grouts can be used.

To create waterproof joints with high colour fastness and superior chemical and mechanical resistance, use the decorative epoxy gels from the Starlike® range.

For the elastic sealing of expansion joints, partition joints and perimeter joints, use sealants from the Pixel 3D range.

For post-construction washing, cleaning, maintenance and surface protection, use the specific Litokol detergents from the X-Cleaner and Starlike® Care ranges.

Warnings

Due to the high adhesion, we recommend washing tools and removing any product residue from surfaces with water before the gel sets.

Once the reaction is complete and the gel has hardened, it can only be removed mechanically.

Safety Information

For the safe use of our products, please refer to the latest version of the Safety Data Sheet, available at www.litokol.com

PRODUCT FOR PROFESSIONAL USE

Legal notices

The information and specifications set out in this technical data sheet are based on our best experience.
However, as we are unable to directly influence site conditions or the execution of the works, these are general guidelines which do not in any way bind our Company.
We therefore recommend carrying out a preliminary test to verify the product's suitability for the intended use; in any case, anyone intending to use it is required to determine whether or not it is suitable for the intended use and, in any event, assumes all liability that may arise from its use.
Always refer to the latest updated version of the Technical Data Sheet, available on the website www.litokol.com

Specification item

The installation, both indoors and outdoors, in accordance with UNI standards 11493-1 and 11714-1, of all types of ceramic floor and wall tiles – porcelain stoneware, single-fired, double-fired, clinker and terracotta – dimensionally stable stone materials that are resistant to staining, and mosaics – will be carried out using a second-generation, super-flexible polymer gel, formulated with a low cement content (<29%), which is fluid and thixotropic, maintaining its shape and thickness on both floors and walls with 100% wetting power, resistant to vertical slippage and with an extended open time of over 50 minutes, classified as C2TE S1 in accordance with standard EN 12004, type ActiveGel® S1 by Litokol Lab SpA.

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