ActiveGel® S2

Technical specifications

Ultra-flexible, micro-expanding, Fluidotixo® - C4 polymer adaptive Gel (2nd Gen) with low cement content, total wettability and active transfer of adhesive forces for the installation of tiles, porcelain stoneware of all types and formats and natural stones. With automatic filling of micro-voids and dynamic compensation of micro-movements during installation with levelling systems (wedges, spacers and clips)

Product description

Multi-purpose ultra-flexible polymer adaptive Gel (2nd generation), with exclusive Dynamic Fluidotixo® mixture, formulated with low cement content (<29%), for the installation of tiles, porcelain stoneware of all types and formats and natural stones, indoors and outdoors.

Designed to develop an extremely creamy, fluid and thixotropic mixture, it can maintain its shape and thickness without changes on both floors and walls.

Offers 100% wetting power, resistant to vertical slip and guarantees an open time of over 50 minutes.

ActiveGel® S2 incorporates the exclusive Active Transfer® technology, which allows controlled micro-expansions capable of filling the micro-voids that could be generated during laying with leveling systems.

Ensures high-performance ultra-flexible dynamic adhesion, capable of compensating for micro-movements and micro-voids, making installation very secure.

It delivers high performance in overlay installation on existing surfaces, heated floors, terraces, swimming pools, and facades, ensuring active transfer of adhesive forces and flexibility even on difficult substrates and large formats.

Classified C2TE S2 - EN 12004

Proprietary Gel formula

Hydrophilic cross-linking flexible polymers
Low Portland cement content <29%
Hybrid engineered hydraulic binders
Calcium silicate Gel
Latest generation cellulose under proprietary licence
High content of mineral aggregates

ActiveGel® S2 embodies Litokol's continuous scientific progress.
It is designed with innovative raw materials to improve the installation experience and safety, and to reduce the environmental impact.

Powered by

Active Transfer® Technology
Adhesion strength - High-performance ultra-flexible dynamic

Mixture classification

Mix class	Smoothness level	Lightness index
C1 - Thick / Paste-like	Requires more force for spreading	Standard
C2 - Medium Consistency	Does not drip, offers good workability	Standard
C3 - Fluid Thixotropic	Smooth and thixotropic	Lightweight
C4 - Dynamic Fluid Thixotropic	Highly fluid and thixotropic	Lightweight
C5 - Anti-Fatigue Fluid Thixotropic	Ultra smooth and thixotropic	Ultra lightweight

Performance Gel fluid thixotropic mixture

Class 4 - Dynamic Fluidotixo® mix

Dynamic Fluidotixo® mixture - Highly smooth, thixotropic and ultra-lightweight: its fluid and dynamic consistency facilitates spreading, while maintaining shape and thickness without dripping.
The Fluidotixo® mixture features a Gel-like rheology, characterised by an initially thixotropic consistency that, under mechanical action (trowelling), reduces its viscosity, becoming temporarily more fluid.
This pseudoplastic behaviour allows for precise and highly smooth application, with greater adhesion to the substrate.
Designed for professional applicators, with the same mix it is possible to achieve exceptional trowelability in the laying of floors and coverings.
The Dynamic Fluidotixo® mixture has a low apparent viscosity that promotes dynamic fluidity under the trowel and 100% wettability.
Once applied, its thixotropic formula maintains its shape and thickness without dripping, both on floors and walls, ensuring a precise and controlled installation without vertical slip (T).
The advanced performance characteristics of ActiveGel® S2 allow for corrections even several minutes after spreading, achieving an extended open time of over 50 minutes (E).

Performance Gel adhesive interface

Gel with Active Transfer® Technology

Active Transfer® is an innovative technology applied to latest-generation Gels that introduces the idea of dynamic controlled micro-expansion to optimise the adhesive interface between the installation material and the tile (ITZ).

Active Transfer® - Operating mechanism

Active Transfer® is based on integrating active rheological microsystems within the Gel matrix; these microsystems:

1. Triggers a controlled micro-expansion immediately after application, which develops a complete transfer of the Gel to the back of the tile though continuous micro-contact pressure between adhesive, tile and substrate.
2. They dynamically fill the micro-voids that form during installation, while using levelling systems or during post-installation settling.
3. Increases the contact surface, achieving total capillary wetting of the back of the tile and of the substrate, which guarantees 100% surface adhesion and the formation of a continuous structural adhesion zone.

The Active Transfer® technology, applied to the latest-generation Gels, represents an innovation in ITZ management, moving from static to dynamically active installation.

Direct Technological Advantages

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

Active filling dynamic that ensures a continuous, uninterrupted structure with improved mechanical and chemical adhesion and greater durability.

Reduction of weak points associated with voids, micro-bubbles or poorly wetted areas, with improved resistance to thermal cycles, 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, for stable installations even on extra-large formats or deformable surfaces.

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

3. Compensations for possible movements:

Levelling systems (wedges, clips) exert differential traction to pull the slabs into position. This mechanical movement can slightly shift the tile with respect to the adhesive bed, creating micro-voids underneath.

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

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

Performance Gel Safety

Safety - Level 2
Thanks to its larger contact surface and high-performance flexible dynamic adhesion, ActiveGel® S2 ensures the formation of a continuous Gel layer under the tile, which allows for the reduction of micro-voids and improves adhesion effectiveness, making installation secure.
The presence of a uniform and continuous Gel layer makes ActiveGel® S2 particularly suitable for application on radiant heating systems or outdoors, where stresses from thermal variations require a full bed and a continuous Gel layer in the ITZ to ensure superior adhesion strengths.

Chemistry + intelligent

Low Portland cement content <29%
Very low emissions of volatile organic compounds - VOC

Certifications

EN 12004
EN 12002
ISO 13007
EC1 Plus Gev Emicode
A+ Emissions dans l'air interieurs
EPD Environmental Product Declaration

ActiveGel® S2 and the Environment

LCA results for Global Warming Potential – Greenhouse Gas GWP-GHG

Impact category	Unit	A1-A3	C1	C2	C3	C4	D
Climate change GWP-GHG	kg CO2 eq	6.73 10^{-1}	4.38 10^{-3}	1.08 10^{-2}	0	4.90 10^{-3}	-5.52 10^{-3}

Materials

Porcelain stoneware
Ceramic and porcelain tiles
Large sizes
Laminated stoneware slabs
Marble – Granite – Stone
Natural stones
Ceramic and vitreous mosaics
Terracotta - Clinker
Recomposed stone made with resin or cement
Indoor insulating and soundproof panels

Substrates

Screeds
Self-levellers
Skim coats
Plasters
Gypsum
Gypsum and anhydrite
Existing tiles
Underfloor heating systems
Waterproofing systems
Separation membrane
Aerated concrete
Fibre cement slabs
Concrete

Uses

Adhesive - skimming plaster
Floors - walls
Interiors - exteriors
Overlaying
Underfloor heating systems
Indoor wet areas - bathrooms and showers
Tanks, swimming pools and fountains
Terraces and balconies
SPA and Hammam
Façades
Industrial floors
Residential, public, commercial and street furniture

Limitations

Refer to national regulations, such as Standard UNI 11493
Ensure full bedding outdoors or in the presence of high loads
Protect the tiled surface against rain for at least 24 hours
Temperature, ventilation, substrate absorption and installation material can change the workability and setting times of the Gel
Do not add water to the mixture when it has already begun to set
Do not use on inadequately cured concrete
Do not use on gypsum or anhydrite-based substrates without first applying X-Prime®
Do not use on wood and wood-based panels
Do not use on metal, rubber, PVC or linoleum surfaces
Do not use on floors that need to quickly set for light foot traffic
Do not use on reactive waterproofing membranes of organic nature (such as RM according EN 14891)
Do not use the product for applications not indicated in this Technical Data Sheet
For further information, contact the Litokol Technical Help Service at +39-0522-622811 or via customercare@litokol.com

Product specifications

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

Technical specifications

Compliance	EN 12004 – ISO 13007	C2 TE S2
Initial adhesion after 28 days	≥ 1.0 N/mm^2	EN 1348
Adhesion after water immersion	≥ 1.0 N/mm^2	EN 1348
Adhesion after heat action	≥ 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	> 5 mm	EN 12002
Resistance to humidity	Excellent	
Resistance to alkalis	Excellent	
Resistance to solvents	Excellent	
Resistance to acids	Low	
pH of mix	13	
Specific gravity	1.45 kg/dm^3	

Specifications for application

Mixture class	Class 4 - Dynamic Fluid Thixotropic
Preparing the Grey Gel mix	Water = 24-26% ~ 4.8-5.2 l / 20 kg
Preparing the Ultra-White Gel mix	Water = 24-26% ~ 4.8-5.2 l / 20 kg
Mix curing time	5 minutes
Duration of mixture	6-8 hours
Applicable thicknesses	From 1 to 20 mm
Open time	> 50 minutes
Bonding time	> 50 minutes
Application	Notched trowel suitable for the format and for the substrate
Application temperatures	From +5°C to +35°C
Waiting time for grouting	Wall: 6-8 hours – Floor: 12 hours
Ready for light foot traffic	12 hours
Ready for use	4-5 days - Swimming pools 14 days
Temperature of use	From -40°C to +90°C
How to clean equipment	With water when product is fresh. Mechanically when product has set.
Consumption	3.5 mm trowel: ~ 1.8 kg/m^2
Consumption	6 mm trowel: ~ 2.5 kg/m^2
Consumption	8 mm trowel: ~ 3 kg/m^2
Consumption	10 mm trowel: ~ 3.5 kg/m^2
Consumption	Back-buttering: ~ 5 kg/m^2
Notes	Data detection at temperature +23 °C, R.H. 50% and with no wind. May vary depending on the specific conditions of the installation site.

Substrate preparation

In accordance with Standard UNI 11493-1, the substrates must be mechanically resistant and free of friable parts, and clear of grease, oils, paints, waxes and rising damp.
Cement plasters must have a curing time of at least one week per cm of thickness.
Cementitious screeds must have a total curing period of at least 28 days or be made with the innovative anti-fracture screeds, X-Floor and X-Floor Pro.
Create slopes on balconies or pavements with the latest-generation anti-fracture levelling compound HydroLevel® 1-30.
Particularly dusty, porous and absorbent substrates must be treated with X-Prime®, an innovative primer and consolidating product.
Smooth and compact substrates such as polished concrete, old ceramic or marble 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 anhydrite screeds, check for the presence of a suitable vapour barrier in order to prevent rising damp.
Use a carbide hygrometer to check that the residual humidity is less than 0.5% and 0.3% for heating screeds.
The surface must be sanded and isolated with X-Prime®.
Any cracks or fissures must be sealed with CrackRepair.
In any case, the respective technical data sheets must be consulted for the correct use of the indicated products.

Preparing the mixture

To fully appreciate the superior smoothness and thixotropy of the innovative Dynamic Fluidotixo® Gel mixture, it is advisable mix the product according to the indicated mixing ratio.
Pour the right quantity of water into a container and slowly add the product, mixing with a mechanical mixer until a creamy, homogeneous, lump-free mixture is obtained.
Let the mixture rest for about 5 minutes, during which the polymeric Gel development is completed: the hydraulic binders, fillers and cellulose hydrate uniformly, air micro-bubbles incorporated during mixing are eliminated, and the polymers begin their activation process.
Briefly remix to obtain the ultra-smooth, thixotropic, ultra-light Dynamic Fluidotixo® Gel consistency, easy to apply on both floors and walls.

Application

To ensure the perfect adhesion of the Gel to the substrate, apply a scratch coat of the mixture using the smooth side of the trowel, and then straight after apply the desired thickness with the notched side.
The trowel notch size must be chosen according to the format of the material to be installed and the substrate.
In accordance with Standard UNI 11493-1, use the back-buttering technique, applying the Gel also on the back of the tiles to ensure complete wetting during installation outdoors, in swimming pools, on façades or in particularly stressed areas.
To ensure the complete transfer of the Gel to the back of the tiles, they must be laid on the still-fresh adhesive with adequate pressure.
The open time in standard temperature and humidity conditions is approximately 50 minutes.

Very warm or windy climates, or particularly absorbent substrates may drastically reduce it to a few minutes. It is therefore recommended to regularly check that the adhesive has not skinned over.
In accordance with Standard UNIT 11493-1, the tiles must be installed with joint widths suitable for their size.
Respect any control or structural joints and create adequate expansion, separation and perimeter joints.

Special Applications

Marble, natural and recomposed stones

Materials subject to deformation or stains due to water absorption require a quick-setting, self-curing Gel such as FastGel® or Fast Gel® S1+ (C2F - EN 12004) or a reactive Gel such as PowerGel® Pro Max (R2 - EN 12004).
Marble and natural stones, even if similar in nature, may have different features.
In case of doubt, contact the Litokol Technical Help Service for detailed information or to perform a laboratory test.
Natural stone slabs with reinforced backing (resin, mesh, etc.) or specific treatments (for example anti-rising damp, etc.), unless otherwise prescribed by the manufacturer must be tested for compatibility with the adhesive.
Before installation, check for any traces of dirt or material deposits on the back of the slabs.
If so, these must be removed.

Underfloor Heating Systems

After at least 4 days from the installation of the X-Floor® o X-Floor® Pro anti-fracture screed, the heating system can be used with a variable supply water temperature between +20°C and +25°C, kept constant for at least 3 days.
Then set the maximum design temperature and hold it for another 4 days.
At the end of this cycle, bring the screed back to ambient temperature and install the covering (EN 1264-4).

Swimming pools

In accordance with Standard UNI 11493 – 7.13.3, swimming pool tiling must be designed considering mechanical, thermo-hygrometric, and chemical stresses: continuous contact with chemically treated water (even in winter) and frequent sanitation interventions.
In concrete structures, adequate composition must be guaranteed (UNI 11104 – EN 206) and the correct curing time must be respected (at least 6 months, UNI 11493 - 7.3.1).
It is essential to waterproof the external part of the structure, adopting preventive measures against possible infiltrations, which could cause the detachment of the waterproofing layer applied inside the tank, for example on drains along the side walls of excavations or waterproofing consisting of osmotic mortars.
Rectify and even out surfaces with HydroLevel®, a quartz-reinforced structural levelling compound with controlled anti-fracture expansion.
Waterproof the surfaces of the tank with the elastic, watertight, and anti-fracture Gel membrane SafetyGel® with 6-Dimensional Elasticity technology, or with the breathable tri-polymeric waterproof Gels enhanced with quartz microspheres from the HydroPad® line with 4-Way Flex technology.
Seal critical points such as construction joints with HydroStop, and through-pipes for recirculation, filtration, drainage and lighting systems with HydroPixel®.
It is advisable to perform a hydraulic seal test before installing the covering.
Always apply Gel to the back of the material as well (back-buttering) to achieve a full adhesive bed, guarantee total force transfer and the durability of the system.

Façades

For exterior wall installations (H>3 m) where tiled surfaces are subject to high levels of tension in expansion joints due to the variations in air temperature and relative humidity and considering the safety risks posed by any eventual detachments, it is recommended to consult Litokol's Technical Help Service in order to precisely define the safest type of installation.
In accordance with Standard UNI 11493 – 7.13.7, follow these general guidelines: the installation substrate must guarantee a cohesive tensile strength of ≥ 1,0 N/mm^2.
In the case of masonry substrates made of bricks/clay blocks, lightweight blocks, etc., direct installation is not allowed; instead, installation on plaster conforming to the specifications mentioned above is required.
For coverings with side > 30 cm the designer must evaluate the potential need to use suitable mechanical fasteners for safety purposes.
Control 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 (back-buttering) to achieve a full adhesive bed, guarantee total force transfer and the durability of the system.

Grouting, sealing and maintenance

For grouting, the decorative grouts X-Color® 0-6 or X-Color® 2-12 and the ready-to-use polymeric mortar FillGood® EVO can be used.
To create waterproof, highly colour-stable joints with greater chemical-mechanical resistance, use the decorative epoxy Gels from the Starlike® line.
For the elastic sealing of expansion, control and perimeter joints, use sealants from the Pixel 3D line.
For end-of-construction washing, cleaning, maintenance and surface protection, use specific Litokol detergents from the X-Cleaner and Starlike® Care lines.

Warnings

Due to its high adhesion, it is advisable to wash tools and any product residues from the surfaces with water before the Gel sets.
Once the reaction is complete and the Gel has hardened, it can only be removed mechanically.

Information regarding safety

For the safe use of our products, refer to the latest version of the Safety Data Sheet, available on the website www.litokol.com
PRODUCT FOR PROFESSIONAL USE

Legal notes

The information and provisions contained in this technical data sheet reflect our best experience.
Given the impossibility of directly intervening on the conditions of the work site and execution of the works, they represent indications of a general nature, which are in no way binding for our Company.
It is therefore recommended to perform a spot test in order to check the suitability of the product for the intended use. In any case, those who intend to use the product must establish whether or not it is suitable for the intended use, and in any case assume all liability for any consequences resulting from such use.

Always refer to the latest updated version of the Technical Data Sheet, available on the website www.litokol.com

Item specification

The installation, both indoors and outdoors, in accordance with Standards UNI 11493-1 and 11714-1, of floors and wall coverings made from all types of ceramics—porcelain stoneware, single-fired, double-fired, clinker, and terracotta—dimensionally stable and non-staining stone material and mosaics, will be carried out using an ultra-flexible, second-generation polymeric Gel, formulated with low cement content (<29%), which is fluid and thixotropic and maintains its shape and thickness unchanged on floors and walls with 100% wetting power, which is resistant to vertical slip, has an extended open time of over 50 minutes and is classified as C2TE S2 according to Standard EN 12004: ActiveGel® S2 by Litokol Lab SpA.

Data sheet **n. 043**
Revision **n. 0**
Date: **03 25**

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