



Packaging

- 50 lb. (22.7 kg) bag
- Supersack 2500 lbs

LS-4000 (Low Prep) is a hybrid cement for levelling and sloping underlayment. Designed for time sensitive projects, where compromised substrates make shrinkage undesirable. LS-4000 offers no-shrink, low prep technology to fast-track jobs, without sacrificing performance.

FlatFloors LS-4000 is designed using revolutionary hybrid-cement technology, combining the best elements of anhydrite, and portland, self-levelling underlayments to create an engineered, premium product. FlatFloors LS-4000 offers flowability, excellent heal, and a robust character granting the installer peace of mind while providing a smooth, flat surface for demanding finished flooring. Unlike other fast-track technologies, FlatFloors LS-4000 eliminates shrinkage (Dimensionally Stable) removing the need to mechanically profile the floor prior to installation (if floor will be exposed to high rolling loads or high point load traffic concrete substrate must be shot blasted). The robustness of LS-4000 offers a unique ability for use over numerous surfaces, without the need for costly preparation, including: concrete, wood, adhesive residue, well bonded tile, VCT, etc. Keeps time sensitive projects on schedule.

Applications: On or above grade, well bonded, clean, dry, sound and stable

Features and Benefits

- No mechanical preparation of concrete substrates is required on most applications (if floor will be exposed to high rolling loads or high point load traffic concrete substrate must be shot blasted)
- Will not degrade if temporarily exposed to water (designed for dry environments)
- Compatible with some sound attenuation systems
- Drying: walkable in 2-3 hours in optimal conditions
- Will not support mold growth
- Suitable for finished flooring such as vinyl, LVT, carpet, engineered wood, ceramic and more.
- Hard surface withstands light trade traffic within 2-3 hours and regular trade traffic in 16 hours
- Suitable for under-floor heating systems, electrical and hydronic floor systems (great heat conductor)
- Excellent self-levelling properties
- Suitable for installation over a wide variety of substrates.
- Can be sloped to achieve ramping with reduced water content

Suitable Substrates

- Concrete, concrete plank
- Cement or epoxy terrazzo
- Existing patching and levelling materials
- Well-bonded existing flooring such as VCT, Ceramic tile
- Sound gypsum
- Non-compressible and non-soluble adhesive residue
- Steel pan

Characteristics and Specifications

Approx. 22 sq ft @ 1/4"		
Compressive (ASTM C109):	24 hours	1200 psi / 8.3 MPa
	7 days	2500 psi / 17 MPa
	28 days	4000 psi / 27 MPa
Placement Time:	20 min	
Time to foot traffic:	180 mins	
Time to flooring:	Breathable 12 hrs per 1/4"	
	Non-breathable 16 hrs to first 1/4	
	and 16 hrs for each additional 1/4 temperature for application (material & ambient)	
Yield:	22.7 kg (50 lbs)	0.47 cu ft
Coverage:	22.7 kg (50 lbs)	Approx. 22 sq ft @ 1/4
Water per 22.7 kg (50 lbs) unit:	3.55 litres (3.75 quarts) for sloping 4.5 litres (4.75 quarts) for levelling	
Temperature for application (material & ambient):	Adjust temperature of material by use warm or cold water for mixing	
Flammability:	10 Celsius to 32 Celsius (50°F to 90°F)	
	Flame Spread 0, Smoke Development 0	
Shelf life:	12 months when unopened & stored per instructions	

Leed Certifications

LS-4000 may contribute to LEED certification of projects as follows:

- Indoor Environmental Quality EQ 4.2
Low Emitting Materials
VOC content 0g/l (calculated)
- Materials & Resources Building Reuse - Maintain MR 1.1, MR 1.2
Provides new, pristine subfloor
- MR 5.1, 5.2
Regional Manufactured Calgary, AB
Regional Materials >50%

General Guidelines

- For interior use only
- Install between 10 celsius and 32 Celsius (50°F – 90°F)
- For installation in enclosed, climate controlled buildings
- Keep dry for 24 hours after installation
- Avoid exposure to regular trade traffic for 16-36 hours after

Application

- Not for use as a permanent wear surface, or as a substrate for an epoxy coating wear surface.
- Installation must conform to applicable local, provincial and federal building codes.

Preparation and Application *(For professional use only)*

REFERENCES

- ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Suboor Using Anhydrous Calcium Chloride
- ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
- ASTM F-710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
- ASTM C1708 Standard Test Methods for Self-levelling Mortars Containing Hydraulic Cements

Reference the floor covering and adhesive manufacturers documentation to verify suitability of LS-4000 as a subfloor for the flooring system (any adhesive used for concrete is generally suitable for LS-4000). Follow the directions of the flooring and adhesive manufacturer to determine the maximum allowable moisture content (RH) or transmission of the substrate. If the moisture content (ASTM F-2170) or moisture vapor transmission rate (ASTM F-1869) of the substrate exceeds the requirements of the flooring system, utilize moisture control prior to installation of the LS-4000.

Honor all moving joints. Complete crack and substrate repairs prior to installation. Consult an engineer for required joints and crack repairs prior to installation. Contact Technical Services for required surface preparation on installations that will be exposed to high rolling loads or high point loads (shot blast).

Maintain a minimum of 10 Celsius during the pour and for 72 hours after the pour. Acclimate the material to a minimum of 10 Celsius prior to mixing. To maximize flowability and working time, utilize cool water when temperatures exceed 30 Celsius.

For installation over hydronic heating systems utilize a minimum of 1.5" of material, with 3/4" of material above the hydronic system. LS-4000 is compatible with and accepts the direct application of, urethane, moisture cure and other typical floor covering adhesives (always test compatibility for guaranteed results).

LS-4000 can be applied in two lifts to a maximum depth of 3". Contact Technical Services for 2 lift application methodology.

SURFACE PREPARATION

All Substrates must be sound, clean, dry and free of contaminants (oil, dirt, laitance etc.) that may interfere with adhesion. Areas of the floor that do not exhibit a tensile pull strength greater than 100 psi are not suitable and must be mechanically removed to a sound, stable base and subsequently repaired prior to application of LS-4000. Do not use solvents, acids, chemical adhesive removers to prepare the substrate. All bond breaking substances (cure residues, excess salts from silicates etc.) must be removed prior to priming. Completely vacuum all dust and debris from the substrate prior to priming with FlatFloors Primer 1.

Gypsum substrates must exhibit a sound surface, be free from dust and surface weakness prior to application of the primer.

Non-soluble adhesives must be scraped to a well-bonded residue. Water-soluble adhesives must be removed mechanically to the substrate. Verify type of adhesive prior to mechanical removal to ensure adhesive containing asbestos is not introduced into the environment. Follow all local, Provincial and federal laws for removal and disposal of adhesive or flooring materials containing asbestos. LS-4000 is not for use as a suitable means to encapsulate residue of hazardous materials.

Wood floors must satisfy local building codes, utilize exterior grade plywood, suitable OSB or other resistant to water, and be free from deflection. The wood must be free of contaminants (oils, wax, dirt etc.) that could function as bond breaker prior to application of the primer. Wood floors that exhibit extreme deflection require the use of reinforcing lath, contact technical support for details.

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SUBSTRATE PRIMING

Prime porous, absorbent substrates with PRIMER. Prime non-porous substrates (adhesive residue, epoxy terrazzo, ceramic tile etc) with ACRYLIC EMBOSSED ADDITIVE prior to application of LS-4000. Reference instructions on the respective data sheets.

Following priming and prior to material mixing and application, seal all voids around pipe or conduit intrusion (plumbing and electrical penetrations), walls and otherwise with rapid setting patch or foam insulation. LS-4000 is very flowable and will flow through any open voids and (end up on car hood in parkade below or worse). LS-4000 has tremendous bonding properties, place tape or bond breaker on vertical surfaces that will contact the LS-4000. Provide a barrier between LS-4000 and metallic construction (e.g. heating pipes), which can lead to corrosion.

When applying LS-4000 on Wood substrates, a reinforcing lath may be required depending on the deflection on the substrate.

Shut HVAC units off for installation and first 16-24 hours of material cure. Maintain air circulation to assist in drying, however avoid direct air flow across the surface of the material for 16-24 hours. Avoid direct exposure to direct sun or wind during the application.

MIXING

Water:

levelling: 4.25 to 4.5 litres (4.5 to 4.75 quarts) per 22.7 kg (50lbs) unit
Mix Time: 2.5 minutes with 850 – 1200 rpm drill or through pump.

Ramping: 3.55 litres (3.75 quarts) per 22.7 kg (50lbs) unit
Mix Time: 2.5 minutes with 850 – 1200 rpm drill or through pump.

Over watering and/or under mixing (failing to generate adequate shear) will result in lower ultimate compressive strengths. For applications beyond 3/4" utilize the low water range. Segregation of sand during placement indicates over watering.

Add designated clean, potable water to a clean mixing barrel, add the powder and mix at the designated speed for 2.5 minutes. Ensure all material is homogenous, and no dry lumps or unmixed

material is at the bottom of the mix. During mixing, keep the paddle below the surface of the material to reduce introduction of excess air into the mix. Once mixed, pour onto the substrate immediately to maximize material flow and placement time.

PUMPING

LS-4000 may be mixed and/or pumped with most standard batch or inline mixing/pumping equipment. Contact FlatFloors technical services for pump questions.

APPLICATION

Immediately after mixing is complete pour the mix on the substrate, rake to the required depth and smooth using appropriate tools (smoother or porcupine roller). When placing mixed material, maintain a wet edge, always pouring back into the leading edge of the previous placement.

Drying Time

Do not use forced air to assist in drying LS-4000, but do provide for adequate ventilation and circulation of air. LS-4000 generally hardens to accept light foot traffic 2-2.5 hours after placement. Avoid construction traffic for a minimum of 16 -26 hours (temperature dependent).

LS-4000 is self-drying, do not wet cure or use curing or sealing compounds. To facilitate drying, ensure rooms where LS-4000 is installed have air circulation. Do not introduce heavy air flow to the surface of LS-4000. Overhead fans, forced air heating or air conditioning, in floor heating, hydronic heating should be turned off until after 16-24 hours of drying. Temperature, humidity and air flow will impact drying time. The use of a moisture meter is recommended to verify readiness for flooring. Multiple areas should be surveyed to ensure dryness throughout. Use of a Delmhorst G-79 and a reading of 5% moisture content or lower, or a GE® Protimeter moisture meter such as the Surveymaster or Aquant. In the RF (Radio Frequency) mode a reading of 180 or lower indicates suitable dryness for any floor covering.



LS-4000

Self-levelling Flooring Underlay

Preparation and Application *(For professional use only)*

APPLICATION (CNTD)

General drying guidelines assuming ambient temps of 21 Celsius with air circulation;

- Breathable Flooring Systems: For applications up to 1/4", install breathable flooring systems after 16 hours. Add an additional 24 hours of dry time for EACH additional 1/4 inch of material.
- Non-Breathable Flooring Systems: For applications up to 1/4", install non-breathable flooring systems after 36 hours. Add an additional 24 hours of dry time for EACH additional 1/4 inch of material.

Wash hands and tools with water before the material hardens, or within 10 minutes of material contact to ensure easiest removal. Cured material must be removed mechanically. Dispose waste or excess material in accordance with all local, provincial and federal regulations. Hardened material is generally considered construction waste.

CLEAN UP AND DISPOSAL

Storage

Store in cool and dry conditions, out of direct sunlight with pallets wrapped in original shrink-wrap.

Limited Warranty

FlatFloors Inc. warrants to the initial purchaser only that the goods sold hereunder will be free from defects in material and workmanship and, except as otherwise set forth herein, will conform to the specifications provided. If any failure to meet this warranty appears within one year from the date of shipment of the goods, on the condition that FlatFloors Inc. will correct any such failure by either replacing or repairing any defective goods, at FlatFloors Inc. option.

The preceding paragraph sets forth the exclusive remedy for all claims based on failure of or defect in the goods sold hereunder, whether such failure or defect arises before or during the warranty period and whether a claim, however instituted, is based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise. The forgoing warranty is exclusive and is in lieu of all other warranties whether written, oral, implied or statutory.

24 HOUR EMERGENCY: CHEMTREC® 1-800-424-9300 NON-TOXIC and NON-FLAMMABLE

Keep container closed and keep away from children. May cause slight eye abrasion or irritation if spilled or rubbed in eyes. Flush thoroughly with water.

If taken internally, call a physician. Technical Assistance: Visit our website: flatfloors.ca