



The S3 Type IL System: From Spec to Pour to Flooring

October 2026

Type IL slabs fail under flooring when the surface is closed and the pores stay wet and alkaline. The S3 system reopens or keeps open that surface, then seals moisture and pH inside the slab. The rule is simple: **apply MoistureShield™ only to a porous surface**. If the slab is porous at the pour, MoistureShield goes on as the cure. If it is not, make it porous first: Surface Prep EXT™ for a tight trowel finish, mechanical grinding for densified surfaces, and UnGlu'd™ then Surface Prep EXT™ for old adhesive in renovation. Under 10 lb MVER, MoistureShield; from 10 to 19 lb, MRP is the barrier (one coat to 14 lb, two coats to 19 lb).

This guide applies the three S3 Type IL white papers (for general contractors, architects and flooring contractors) to the S3 product line. Every rate and limit below comes from the product's TDS.

How each product counters the Type IL problem

Type IL's risk is a dense, slow-drying top layer that holds high pH and moisture under the floor. Each S3 product attacks one part of that.

Product	What it does to a Type IL slab	When it is used	Key TDS limits and rates
MoistureShield™	In-situ moisture barrier 2–4 mm inside the slab. Its polymer fills the capillaries; as vapor moves up carrying salts, the polymer absorbs them, so the salts never reach the surface to drive pH at the bond line. It is also an ASTM C1315 cure and seal.	At the pour as the cure, or on any existing slab once it is porous	Reduces MVER from 10 to under 3 lb/1,000 ft²/24 h (F1869; 13 years of field data); RH up to 99% (F2170); surface pH up to 14 (F710). Time of pour: 150–187 SF/gal, never over 750 SF per pail. Existing: 225 SF/gal. Sweating slab: 200 SF/gal. Must pass the F3191 water-drop test. Never over a separate cure and seal.
Surface Prep EXT™	Purges insoluble salts and contaminants from the top 4 mm paste layer; buffers high pH down; creates CSP 1–4 without mechanical damage	Steel-troweled or tight finish (green or cured); sweating slabs; after adhesive removal	200–225 SF/gal (800–900 SF per pail). Dwell 15 min (clean) to ~2 h (CSP 2–3) to 4 h (CSP 3–4). Does not remove densifiers or film-forming cure and seals. Must be fully rinsed and removed.
UnGlu'd™	Chemically de-bonds PSAs, mastics and glues so they scrape off without grinding	Renovation, before any surface prep	80–100 SF/gal (320–400 SF per kit); 400–600 SF per kit over a single PSA layer. Dwell 2 hours to overnight; add a second light coat for multiple layers of



Product	What it does to a Type IL slab	When it is used	Key TDS limits and rates
			adhesive.
MRP	Two-part water-based epoxy barrier primer; isolates the slab	MVER from 10 to 19 lb (two coats above 14 lb); over secured old adhesive, cutback or VCT; as a primer for leveler or coatings	Reduces MVER to under 3 lb/1,000 ft ² /24 h (F1869): from 14 lb in one coat, from 19 lb in two. RH up to 99%. pH up to 14. 150 SF/gal (600 SF per kit), do not stretch. Not for hydrostatic pressure.

New construction: spec to pour to flooring

The finish decides the path. Find out before the pour what finish, cure and surface treatments the slab will get, then follow the first rule that applies.

Rule 1. IF MoistureShield is specified before the pour AND the finished surface passes the F3191 water drop, THEN apply MoistureShield at the time of pour as the cure.

1. Specify a soft steel-trowel finish without burnishing in flooring areas (broom or wood float leaves it even more open). Check it with the F3191 water drop before applying: if the drops bead, follow Rule 2.
2. Apply from the time a person can walk on the slab without marking it, up to 24 hours after final finish. No standing water.
3. Apply at 150–187 SF/gal. **Never stretch past 750 SF per pail:** the full rate is what makes it work as a cure and seal.
4. MoistureShield is the cure and seal. Never apply a separate cure and seal as well: if one has been applied, do not apply MoistureShield over it. MoistureShield satisfies the curing requirement on its own (ACI 308's 7 days, and the 10 or more S3 recommends for Type IL). If the project also calls for a wet cure, apply MoistureShield first, let it dry, then start the wet cure.
5. Keep moisture-vapor-reducing, integral waterproofing and latex admixtures out of the mix. If the batch tickets show an accelerator, test a 9–10 sq ft patch first.
6. Why it works on Type IL: it goes on while the pores are still open, so moisture and pH are controlled inside the slab before the surface can close or a cure film can form.

Rule 2. IF the water drop beads (a hard steel-trowel, tight or burnished finish) AND no densifier or film-forming cure and seal was applied, THEN Surface Prep EXT first, then MoistureShield once porosity is established.

1. Surface Prep EXT can go on green concrete. Run a sample area: about 1 hour dwell, then remove, to set the dwell time.
2. Typical dwell is about 2 hours for CSP 2–3. Do not let it dry out during dwell.
3. Remove it completely: pressure wash to drains, or pre-wet, scrub and wet-vac. Residue looks like slow-drying shiny patches and will block MoistureShield.
4. Confirm porosity with the ASTM F3191 water-drop test. If drops bead, repeat Surface Prep EXT.
5. Apply MoistureShield at the existing-concrete rate, 225 SF/gal.



6. Why it works on Type IL: Surface Prep EXT strips the salts and dense paste from the top 4 mm and brings the pH down, so MoistureShield can penetrate.

Rule 3. IF a densifier, or a non-dissipating, film-forming cure and seal, was applied, THEN grind to open the surface before MoistureShield.

1. Mechanical grinding to remove the densified or sealed layer and open porosity. Surface Prep EXT does not remove densifiers or film-forming cure and seals.
2. Confirm porosity with the F3191 water-drop test.
3. IF MVER is under 10 lb/1,000 ft²/24 h, THEN MoistureShield at 225 SF/gal. Its polymer fills the capillaries and absorbs the salts that vapor carries upward, so they never reach the surface to raise pH at the bond line.
4. IF MVER is 10 to 14 lb, THEN one coat of MRP at 150 SF/gal.
5. IF MVER is 14 to 19 lb, THEN two coats of MRP. Above 19 lb, call S3 before proceeding.

If a dissipating curing compound was used: let it dissipate fully, confirm porosity with the water drop, then follow Rule 2. A film-forming cure and seal that does not dissipate follows Rule 3.

Then the flooring. Install flooring 12 hours after MoistureShield appears dry (cementitious patch and leveler once dry to the touch). Test before installing (see "Limits and tests"), and get the adhesive manufacturer's written approval of the system. In the S3 line, 4151 adhesive (rated to 99% RH) is the match over Surface Prep EXT and MoistureShield.

Renovation: existing Type IL slabs

Same principle: get to clean, porous concrete, then seal moisture and pH inside the slab. Old adhesive and remover residue are what close the surface on a renovation.

1. **Remove the flooring completely** so the adhesive is fully exposed. Test old cutback and mastic for asbestos before scraping and follow abatement rules.
2. **IF old adhesive is present, THEN UnGlu'd.** Roll on a heavy, even coat at 80–100 SF/gal (400–600 SF per kit over a single PSA layer), dwell 2 hours to overnight (add a second light coat for multiple layers of adhesive), then scrape with a long-handled razor scraper. Clean the residue with water and a black pad or auto scrubber.
3. **Then Surface Prep EXT** to profile (CSP 1–4), purge salts and buffer pH. Remove it fully and confirm porosity with the F3191 water drop.
4. **IF the slab is sweating, THEN** Surface Prep EXT, remove fully, then MoistureShield at 200 SF/gal.
5. **IF MVER is under 10 lb, THEN MoistureShield** at 225 SF/gal.
6. **IF MVER is 10 to 19 lb, or the old adhesive must stay in place, THEN MRP.** MRP is a barrier primer over secured cutback, old adhesive and VCT, reducing MVER to under 3 lb from 14 lb in one coat, or from 19 lb in two. Not for hydrostatic pressure. In the S3 line, 2075 adhesive is the match over MRP.
7. **Test pH again once the surface is dry.** Rinse water and wet scraping can bring high pH back to a surface that tested fine before prep.
8. **Remove old patch and leveler.** Patch bonded today can let go once it is covered and conditions under the floor change.



Limits and tests that decide the path

Five tests choose the branch. Run HVAC at service conditions for 48 hours first, and judge every reading against the adhesive manufacturer's limits, not a generic 75% RH.

Test	Method	What it decides	S3 limit (per TDS)
Porosity	ASTM F3191 water drop	Whether MoistureShield can go on, or the surface must be opened first (Surface Prep EXT or grinding)	Drop must soak in, not bead
Moisture emission	ASTM F1869 (MVER)	MoistureShield or MRP	MoistureShield: under 10 lb/1,000 ft ² /24 h. MRP: one coat 10 to 14 lb, two coats 14 to 19 lb. Above 19 lb: call S3
Relative humidity	ASTM F2170, 3 tests in first 1,000 sf + 1 per additional 1,000 sf	Confirms the slab is within barrier ratings	MoistureShield and MRP: up to 99% RH
Surface pH	ASTM F710, mapped at the RH test density	Whether pH must be buffered (Surface Prep EXT) before treatment	MoistureShield and MRP: up to pH 14
Hardness and bond	Mohs scratch; ASTM D4541 pull-off	Whether to grind to sound concrete first	Mohs 5 or above; 250 psi minimum tensile bond for all S3 treatments

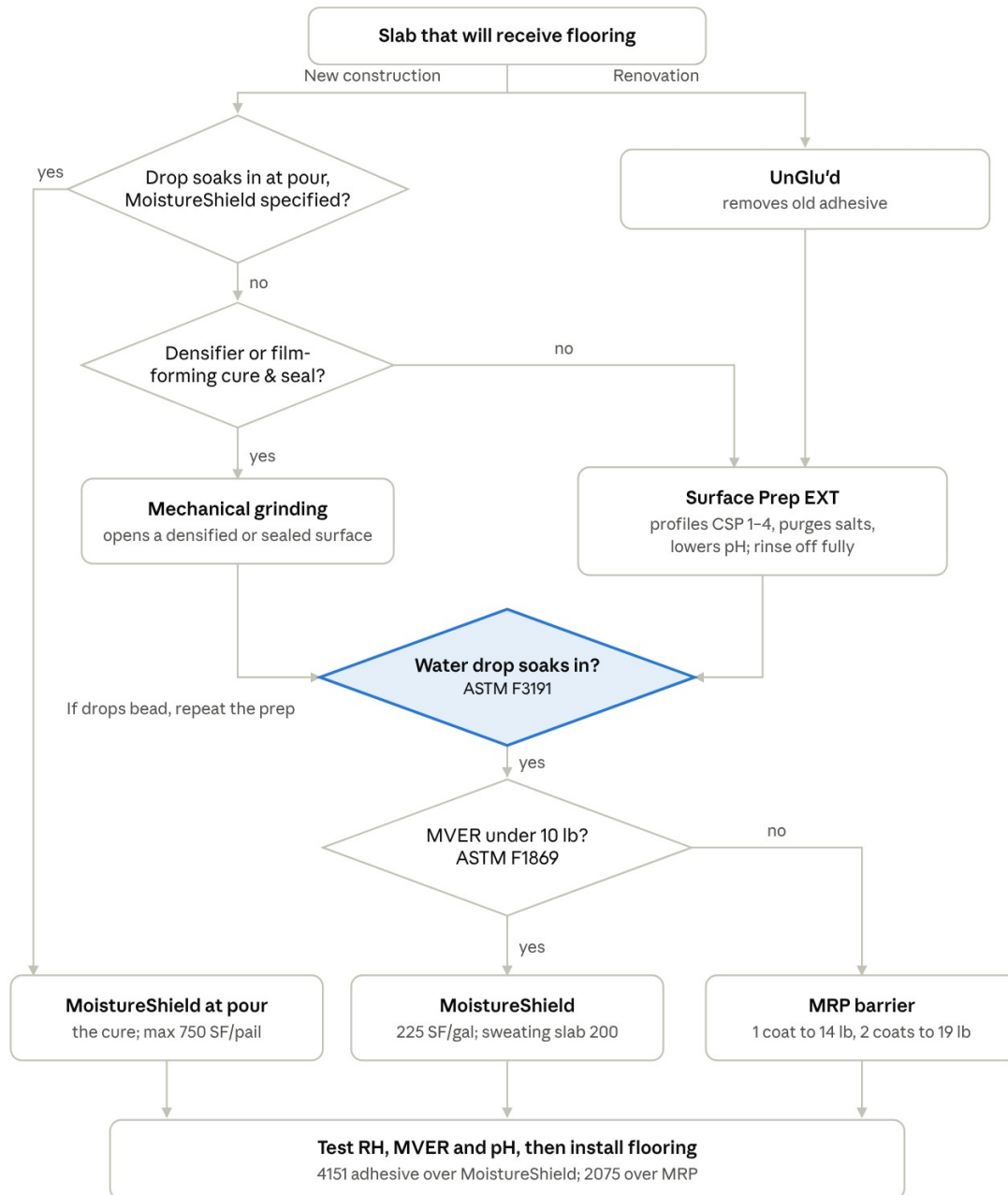
MRP is never used where there is hydrostatic pressure.



Decision path at a glance

Every Type IL slab ends with MoistureShield or MRP on a porous surface

S3 decision path, spec to pour to flooring



S3 Type IL decision path • new construction and renovation

Every path passes the same gate: the water drop must soak in before MoistureShield goes on. From 10 to 19 lb MVER, MRP is the barrier instead.



Spec language

The S3 path works only if Division 03 and Division 09 agree. Starting language, adapted from the architects' white paper; confirm limits with the flooring and adhesive manufacturers.

Division 03 (03 35 00 Concrete Finishing, 03 39 00 Concrete Curing)

- Finish: "In areas scheduled to receive adhered flooring, provide a soft steel-trowel finish without burnishing; the finished surface shall absorb water per ASTM F3191. Do not apply densifiers, hardeners or sealers in these areas."
- Curing: "In areas scheduled to receive adhered flooring, cure with a spray-applied, non-silicate, film-free moisture and pH treatment complying with ASTM C1315, applied from the time the slab can be walked on without marking, up to 24 hours after final finish, at the manufacturer's full rate (S3 MoistureShield™ or approved equal). This treatment satisfies the curing requirement; where wet curing is also specified, begin it after the treatment has dried. No other curing compound shall be applied to these areas."
- Admixtures: "Do not use moisture-vapor-reducing, integral waterproofing or latex admixtures in slabs receiving the specified treatment."
- Where a steel-troweled finish is required: "Prepare to ASTM F3191 porosity with a non-acid surface profiler (S3 Surface Prep EXT™ or approved equal) before the moisture and pH treatment."

Division 09 (09 05 61 Flooring Preparation)

- Testing: "Test RH per ASTM F2170, MVER per ASTM F1869 and surface pH per ASTM F710 after the building has operated at service conditions for 48 hours."
- Mitigation: "Where results exceed the adhesive manufacturer's limits, apply a moisture and pH barrier rated to 99% RH and pH 14 (S3 MRP or approved equal). Carry an allowance or unit price per square foot."
- Renovation: "Remove existing adhesive with a chemical de-bonding remover that rinses clean (S3 UnGlu'd™ or approved equal), then profile and confirm porosity before treatment."
- System approval: "Submit the flooring and adhesive manufacturers' written acceptance of the complete substrate treatment system."

Sources

- [Type IL Cement: What General Contractors Need to Know About Finishing, Curing and Flooring](#), S3 white paper, October 2026
- [Type IL Cement: What Architects and Specifiers Need to Know About Slabs That Receive Flooring](#), S3 white paper, October 2026
- [Type IL Cement: What Flooring Contractors Need to Know Before They Bid and Install](#), S3 white paper, October 2026
- [MoistureShield™ TDS](#)
- [Surface Prep EXT™ TDS](#)
- [UnGlu'd™ TDS](#)
- [MRP TDS](#)

Education only. The project specifications and the flooring and adhesive manufacturers' written requirements govern.