



ANTI-CRACK THICK CEMENTITIOUS SELF-LEVELING COMPOUND

Code SL | Type I 5–25 mm and Type II 25–150 mm | Grade R rapid / H high-strength | Compression C25–C90 | Flexure F4–F12 | Anti-crack | Abrasion resistant | Standard Q/TBJX 37-2025

PRODUCT DEFINITION AND COMPOSITION

Anti-crack Thick Cementitious Self-leveling Compound is a factory pre-mixed flooring material made from anti-cracking rapid-hardening high-belite calcium sulphoaluminate cement and/or white anti-cracking rapid-hardening high-belite (or white anti-cracking GGBFS) sulphoaluminate cement, together with aggregate, filler and additives. When mixed with the specified amount of water it self-levels, or flows level with light assisted spreading, and is designed for crack resistance, high strength, abrasion resistance and corrosion resistance.

Product form: uniform, lump-free dry powder, supplied in bags or in bulk. Grade and performance must not be judged by appearance alone.

Technical approach: built on the high-belite sulphoaluminate binder series, it combines the binder, functional regulating components and multi-graded aggregate to control volume change while remaining flowable, and is offered as a series by thickness, early-opening need and design strength. Grade R emphasizes early strength and faster opening (tight schedules); Grade H emphasizes high ultimate strength and load capacity (higher design strength); Type I is for 5–25 mm floors and Type II for 25–150 mm thick-layer floors.

Component	Supply / use rule	Compliance
Pre-mixed mortar	Use by grade, full bag or bulk	Do not mix different types, grades or unidentified batches
Mixing water	Comply with JGJ 63	No oil, salt, acid/alkali or harmful impurities
Bonding primer	Select to suit substrate	Compatibility, dosage and recoat interval per instructions
Optional surface system	Densify, grind, polish, topcoat or decorate	Trial panel first: compatibility, appearance, skid

CLASSIFICATION, GRADE, DESIGNATION AND SELECTION

Dimension	Class	Range / grade	Selection note
Thickness	Type I	5–25 mm	Thin-to-medium leveling, wearing course or approved decorative floor
Thickness	Type II	25–150 mm	Thick leveling / monolithic thick floor; verify structural load and substrate
Strength	Grade R	Rapid	Watch working time, plant continuity and joint timing
Strength	Grade H	High-strength	Watch curing, opening time and follow-on trades

Series	Compressive grades	Flexural grades
Type I, Grade R	C25, C30, C40, C50, C60, C70	F4, F6, F7, F8, F10, F12
Type I, Grade H	C40, C50, C60, C70	F6, F7, F8, F10, F12
Type II, Grade R/H	C50, C60, C70, C80, C90	Per contract / design / approved document

Designation: SL – type – strength grade – compressive grade – flexural grade (Type II may omit the flexural grade per the standard). Examples: SL-I-R-C25-F4 (Type I, Grade R, C25, F4); SL-I-H-C40-F7; SL-II-R-C50; SL-II-H-C50.

Selection rule: do not order by "C grade" alone. Confirm at least the type, R/H grade, compressive grade, Type-I flexural grade, colour, thickness, pumping method, opening time, surface treatment and any special environment.

FEATURES AND FIELD OF APPLICATION

- Thickness range: Type I and Type II cover the 5–150 mm standard range.
- Graded strength: compression C25–C90 and flexure F4–F12, combined by use.
- Dimensional stability: Type I dimensional change -0.10% to +0.10%; Type II 28 d shrinkage $\leq 0.04\%$.
- Bond and impact: meets the specified tensile bond; no cracking or debonding after impact test.
- Abrasion: standard requires $\leq 400 \text{ mm}^3$; project suitability verified with surface system, media and curing.
- Flexible placement: mechanical mixing and pumping, continuous mixing/conveying, or controlled-batch mixing for small areas.

Application	Recommended approach	Key verification
Industrial, warehouse, garage	Wear-resistant leveling; use as-is or grind/topcoat	Load, forklift tyre pressure, skid, joints, stain resistance
Commercial / public buildings	High-flatness base, white/colour or terrazzo effect	Sample colour, gloss, skid, decorative aggregate
Old floor renovation	Mill/shot-blast then relevel or patch	Substrate strength, hollowing, contamination, crack activity
Underfloor heating / thick leveling	Type II or specially designed system	Thermal cycling, insulation load, pipe protection, bays
Monolithic mineral floor	Thick pour then grind and polish	Aggregate, grind depth, colour, pinhole repair, curing
Bridge deck / special works	Only after design and special verification	Structure, waterproofing, durability, interface, traffic, regulation



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Not directly suitable / requires special review: active cracks, unstabilized settlement, hollow or under-strength substrate; prolonged immersion, strong acid/alkali, solvent, high temperature or special media (unless tested or specially protected); use as a structural load-bearing member, strengthening layer or statutory waterproofing layer (unless designed, verified and approved); direct outdoor exposure, freeze-thaw, rain/snow or strong UV (verify per project and add surface protection).

TECHNICAL REQUIREMENTS (Q/TBJX 37-2025)

Data note: this section summarizes the technical requirements of Q/TBJX 37-2025. "—" means the standard sets no requirement at that age; 20-min flow/spread is agreed and tested only when required by the user.

Property	SL-R- I	SL-H- I
Initial mortar flow	130	130
20-min mortar flow	130 (if required)	130 (if required)
Dimensional change	-0.10~+0.10	-0.10~+0.10
Tensile bond	1.5	1.5
Abrasion	400	400
Impact	No crack / debonding	No crack / debonding

Property	SL-R- II / SL-H- II
Initial concrete slump-flow	700
20-min slump-flow	700 (if required)
28 d concrete shrinkage	0.04
Abrasion	400
Tensile bond	1.5
Impact	No crack / debonding

Age	C25	C30	C40	C50	C60	C70
4 h	—	—	12.5	15.0	17.5	20.0
1 d	10.0	15.0	25.0	30.0	32.5	35.0
3 d	15.0	20.0	30.0	40.0	42.5	45.0
28 d	25.0	30.0	40.0	50.0	60.0	70.0

Age	C40	C50	C60	C70
1 d	10.0	15.0	17.5	20.0
3 d	25.0	30.0	35.0	40.0
28 d	40.0	50.0	60.0	70.0

Age	F4	F6	F7	F8	F10	F12
4 h	—	3.0	3.5	4.0	4.5	5.0
1 d	2.5	5.0	5.5	6.0	6.5	7.0
3 d	3.0	5.0	6.5	7.0	7.5	8.0
28 d	4.0	6.0	7.0	8.0	10.0	12.0

Age	F6	F7	F8	F10	F12
1 d	3.0	3.5	4.5	5.0	5.5
3 d	5.0	6.5	7.0	7.5	8.0
28 d	6.0	7.0	8.0	10.0	12.0

Grade / Age	2 h	4 h	6 h	1 d	3 d	28 d
SL-R- II C50	—	—	20.0	35.0	40.0	50.0
SL-R- II C60	—	20.0	—	40.0	45.0	60.0
SL-R- II C70	—	20.0	—	45.0	50.0	70.0



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SL-R- II C80	20.0	20.0	—	50.0	55.0	80.0
SL-R- II C90	20.0	20.0	—	55.0	60.0	90.0
SL-H- II C50	—	—	—	20.0	30.0	50.0
SL-H- II C60	—	—	—	22.5	32.5	60.0
SL-H- II C70	—	—	—	25.0	35.0	70.0
SL-H- II C80	—	—	—	27.5	37.5	80.0
SL-H- II C90	—	—	—	30.0	40.0	90.0

Test item	Method
Mortar flow, compression, flexure, dimensional change, abrasion, bond, impact	JC/T 985
Concrete slump-flow, concrete compression	JGJ/T 283
Concrete shrinkage	GB/T 50082-2009
Mixing water	JGJ 63

TYPICAL PERFORMANCE AND DATA-USE RULE

Typical values are not guaranteed values: the table below is from the company's R&D/application data and illustrates achievable levels for some mixes. Raw materials, environment, specimen size, curing and batch all affect results; it does not replace the Q/TBJX 37-2025 grade requirements or the batch test report.

Mix	W/P	Flow	Typical strength (flex/comp)
C25	0.16	Initial 140; 30 min 135 mm	1 d 3.0/9.0; 28 d 6.5/28.9 MPa
C40	0.16	Initial 136; 20 min 134 mm	6 h 3.7/12.5; 28 d 9.6/48.9 MPa
C50	0.16	Initial 142; 20 min 140 mm	4 h 5.7/19.7; 28 d 7.5/53.2 MPa

Other typical data (C25 ref.): 28 d tensile bond 1.58 MPa; 28 d dimensional change dry -0.004%, wet +0.040%; abrasion 158.3 mm³.

Note: "flex/comp" is the source wording; the actual grade follows its designation, the works test report and the contract. Where typical data conflict with the standard grade or the test report, the standard and the test report govern.

SYSTEM BUILD-UP AND CONSUMPTION

Layer	Function	Key requirement
Substrate	Carry and restrain the floor system	Sound, stable, clean; defects/cracks assessed and treated
Primer	Seal absorption, improve wetting and bond	Matched primer; even, continuous, no ponding
Self-leveling layer	Level, carry or form a grindable surface	Control grade, thickness, water, mixing and window
Optional topping	Stain/skid, decoration, grind-polish or protection	Compatible with moisture state and the compound

Water and consumption: set water from the bag label, works test report or the project method statement. Typical W/P is 0.15–0.16 as a starting point for the first site trial, but does not override the value specified for a given grade. Do not add water to chase flow.

Item	Method
Water per bag	Water (kg) = net bag mass (kg) × specified W/P
Theoretical powder	Powder (kg/m ²) = bulk demand (kg/m ³) × thickness (m)
Quick estimate	Type I ≈17–19.5 kg/m ² per 10 mm; confirm by trial panel and grade data
Wastage	Estimate from flatness, transport, plant residue and logistics; no fixed factor

SUBSTRATE REQUIREMENTS

Substrate quality is the primary factor for hollowing, cracking and flatness. The contractor shall inspect and record the substrate before work; where load, structural movement or waterproofing requirements are unclear, the designer or responsible party shall confirm.

- Adequate strength, stiffness and stability; no active cracks, settlement, dusting, hollows or weak layers.
- Remove laitance, dust, oil, release agent, paint, old adhesive, wax and bond-affecting contaminants.
- Mill, grind or shot-blast to an even open surface; treat edges, column/pipe roots and equipment bases too.
- Treat holes, honeycomb, cracks, movement/construction joints and level steps by type; do not simply cover active cracks.
- Check substrate moisture, ambient T/RH and dew-point risk; limits per primer, surface system and project documents.
- Provide reliable stop-ends, level control and isolation at walls, doors, openings, drains and equipment.



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Interface: choose the matched primer by absorption, porosity and surface condition, with a compatibility trial first; usually 1–2 coats — the first to seal absorption, a second if needed for an even continuous film; the primer must be free of misses, ponding, bubbles and contamination, with drying/recoat times per its data sheet; if the waiting time is exceeded or the surface is re-contaminated, reassess and re-treat before placing.

APPLICATION PROCEDURE

Sequence: set levels → prepare substrate (mill/shot-blast) → treat cracks → apply primer → mix and pump → place, consolidate and roller-level → finish → harden, grind/polish.

Item	Minimum control
Material	Grade, batch, quantity, shelf life, intact packaging, COA/test report
Equipment	Mixer, pump, water, power, screed, level, de-airing and cleaning ready for continuous run
Crew	Assign mixing, feeding, pumping, spreading, de-airing, edging, QC and contingency
Environment	Avoid rain, ice, direct strong wind, strong sun and rapid-drying heat
Trial panel	Confirm flow, appearance, thickness, usage, window, joints and finish

Batching and mixing: verify water metering; add about 90% of the specified water first, then the full bag of powder — never estimate water by eye; mix thoroughly with a forced mixer, typically ≈3 min; fine-tune to the specified flow with the remaining metered water, without exceeding the W/P or retempering; keep batch sequence, feed rate and pump flow steady to avoid cold joints from long gaps.

Placing, leveling and de-airing: start continuous pouring away from the exit, following the planned bays, levels and direction; use a screed or gauge to assist, without over-disturbing material that has begun to set; within the working window, de-air and blend laps with a spiked roller or suitable tool, hand-finishing edges; continuously check thickness, flow, segregation, bleeding, surface bubbles and laps; isolate abnormal batches from finished areas.

Continuity and stoppages: pre-calculate material, plant capacity and crew tempo per bay to avoid stopping mid-bay; plan stops at construction joints, bay edges or approved positions, cleaning plant promptly to prevent set-blockage; on plant failure, loss of water/power or abnormal flow, stop feeding at once, protect the placed edge, and let the technical lead decide to cut back, leave a joint or continue.

CURING, CUTTING, GRINDING AND FINISHING

After placing, protect from early moisture loss, vibration, impact, contamination, ponding and foot traffic. Opening time depends on grade, thickness, environment and curing, and must be confirmed by companion panels/specimens on site — not by "surface hardness" alone.

Stage	Control
Early protection	Close off area; avoid strong wind, sun, condensation, rain and thermal shock
Joint cutting	After final set and cuttable; align with structural/substrate joints and bays
Grinding	Some systems ≈24 h; govern by actual strength, moisture and trial grinding
Polish / densify	Set steps by gloss, skid, stain and décor targets; trial panel with records
Overlay / coating	Proceed after moisture, surface strength, flatness, cleanliness and compatibility
Opening	Confirm by design load and site strength; light early opening ≠ heavy load/impact

Joint rule: existing expansion, settlement and other movement joints must be carried through to the surface and detailed per design; do not rigidly bridge them with the compound.

SPECIAL EXTENDED APPLICATIONS

Special boundary: adding sand, aggregate, coloured aggregate, stone-filled grouting, bridge-deck substitution etc. change proportions, flow, strength, shrinkage, bond and window — these are not free site adjustments. They require an agreed grade with trial mix, panel and written parameters.

- **Coloured self-leveling & mineral terrazzo:** white systems, pigments, coloured/glass aggregate and grind-polish give decorative floors; effect governed by the physical panel — colour, aggregate distribution, joints, pinhole repair, gloss, skid and stain.
- **Aggregate-filled monolithic thick floor:** compound with 5–10 mm aggregate; manage as Type II or a designed system, verifying spread, segregation, pumping, strength, shrinkage, bond, grind depth and true bulk demand.
- **Stone-fill grouting:** pre-lay a single-graded stone bed slightly below design thickness, then pour matched compound to fill voids; depends on grading, voids, fill completeness, flow retention and substrate — no fixed ratio.
- **Bridge deck, heating & special works:** substituting bridge-deck concrete, heating thick-leveling and similar involve structure, durability, waterproofing, thermal cycling, dynamic load or regulation — use only after design confirmation, special verification, method approval and a passing site trial; general data do not replace project design targets.

QUALITY CONTROL, INSPECTION AND ACCEPTANCE

Item	Requirement
Batch	Number bagged and bulk separately; same process/type/grade, 100 t = one lot (or less)
Sampling	Per GB/T 12573; continuous or ≥20 points, total ≥50 kg



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Specimen	Mix well, split into two equal parts
Retained	One for works test, one sealed from dispatch for arbitration

Inspection types: works inspection covers all requirements of clauses 5.2 and 5.3; type inspection covers all of clause 5 and is done for new/first production, major raw-material/formula change, at least yearly in normal production, when works results differ markedly from the last type test, or when resuming after ≥6 months. The producer provides all results except 28 d strength and 28 d shrinkage within 12 d of dispatch, and the 28 d values within 32 d.

Stage	Record	Disposition
Incoming	Grade, batch, qty, pack, date, COA	Isolate non-conforming or damp/caked
Trial mix	W/P, mix time, flow, temperature, appearance	Bulk work only after reaching agreed values
Placing	Bay, times, thickness, usage, plant, anomalies	Reject over-time, segregated, bleeding or non-flowing batches
Hardened	Appearance, cracks, hollows, flatness, joints, curing	Accept per design/contract and panel
Performance	Companion/standard specimens or third-party test	Define frequency/method in contract when required

Arbitration: if quality is questioned, use the sealed retained sample of the same number and submit it to a designated provincial-or-above quality inspection body; where site sampling is needed, agree it in the contract beforehand and sample jointly.

TROUBLESHOOTING

Symptom	Likely cause	Action
Low flow	Low water, poor mixing, over-standing, temperature/absorption	Check metering/batch; re-trial; no retempering
Bleeding/segregation	Excess water, altered grading, wrong additions, mixing/pumping fault	Stop; restore mix/plant settings; re-qualify special systems
Pinholes/bubbles	Substrate outgassing, weak sealing, entrained air, late de-airing	Improve sealing; steady mixing; de-air within window
Cracking	Substrate movement, thickness jumps, early drying, poor jointing, over-thick or additions	Identify crack type; treat substrate; improve bays, curing, design
Hollow/delamination	Contaminated/weak base, primer incompatibility, ponding, gaps	Remove to sound base and redo; verify primer and timing
Colour variation	Batch, water, drying, aggregate, grind depth or topcoat variation	Same batch per area; use panels and one procedure
Low strength	Excess water, wrong batching, cold/drying, early opening, poor specimens	Close area; review records; test and plan remediation

PACKAGING, MARKING, TRANSPORT, STORAGE AND SAFETY

Packaging & marking: bagged or bulk. Bags comply with GB 9774 (moisture-resistant) with net content per JJF 1070; other forms by agreement. The bag or bulk delivery card clearly states: product name, type, trademark, standard number, production number, net content, producer, address and "Keep dry".

- Transport and store types and grades separately; do not mix.
- Protect from rain, damp, bag damage and dust; avoid impact and weather.
- Store bulk in sealed weatherproof silos; keep bags dry, off the floor and away from walls.
- Shelf life from production date per the label/COA; do not use expired product directly — retest, confirm, then decide.

Risk	Control
Dust inhalation	Local extraction; suitable dust mask; no dry sweeping
Eye contact	Goggles; flush eyes with plenty of water and seek care
Skin contact	Alkali gloves, boots, coveralls; wash and change after wet contact
Machinery/electrical	Earthing and RCD; power off and lock out before cleaning/repair
Site management	Ventilate, keep access clear; collect slurry and wash water per site rules

Safety documents: before large-area, confined-space or special-environment work, obtain the product SDS, the primer/topcoat safety data and the project safety briefing.

REFERENCE DOCUMENTS AND CLAIM BOUNDARIES (ANNEX A)

Normative references: GB 9774 (cement bags); GB/T 12573 (cement sampling); GB/T 50082-2009 (concrete long-term/durability test methods); JGJ 63 (concrete mixing water); JGJ/T 283 (self-compacting concrete practice); JC/T 985 (cementitious self-leveling for floors); JJF 1070 (net-content verification); Q/TBJX 25 (high-belite sulphoaluminate cement); Q/TBJX 35 (white anti-crack GGBFS sulphoaluminate cement); T/CECS 10107-2020 (UHPC technical requirements).

- "Anti-crack" does not mean zero cracking on any substrate, thickness or environment; movement, active cracks and poor workmanship can still crack.
- "Corrosion/abrasion resistant" and "high strength" refer to specific standard values, grades and reports; not a claim on untested media, fire rating, VOC, service life or structural safety.
- Case histories and typical values illustrate possibilities and do not guarantee other projects.
- Added aggregate, changed proportions, beyond-standard thickness, special environments or structural use require a separate technical agreement.
- Where the standard, contract, label, test report and this manual differ, the applicable mandatory rules and the valid contract govern.



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COMPANY INFORMATION

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