

Technical Data Sheet (TDS)

Soundless Cracking Agent (SCA / Static Cracking Agent)

Standard Reference: JC/T 506-2008Important Reminder: This product is only for filling pre-drilled holes to split rock & concrete. DO NOT mix into fresh concrete / UHPC as expansion admixture. Not interchangeable with MgO expansion agent.

1. Product Identification

- Product Name: Soundless Cracking Agent (SCA)
- Alias: Static Cracking Agent, Non-explosive Rock Splitting Agent
- Appearance: Off-white fine inorganic powder
- Main Active Component: Calcium Oxide (CaO, quicklime) plus functional set-control additives
- Reaction Principle: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$ Hydration generates huge volume expansion with significant heat release.
- pH value of mixed slurry: >13.5 (Strongly alkaline)
- Hazard Classification: Non-explosive building material; risk of material ejection from boreholes during hydration.

2. Product Grades & Temperature Models

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Grade Model	Applicable Ambient Temperature	Recommended Season
SCA-I High-temperature type	25~40 °C	Summer
SCA-II Medium-temperature type	10~25 °C	Spring & Autumn
SCA-III Low-temperature type	5~15 °C	Early Winter / Shaded area
SCA-IV Freezing type	-5~8 °C	Cold Winter

3. Core Technical Properties (Premium Grade, JC/T 506-2008)

Test condition: Standard temperature, powder/water ratio = 1 : 0.28~0.30

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Item	Specification
Initial Setting Time	≥ 10 min
Final Setting Time	≤ 150 min
Expansion Pressure - SCA-I	≥ 30 MPa @8h; ≥ 55 MPa @24h
Expansion Pressure - SCA-II	≥ 20 MPa @8h; ≥ 45 MPa @24h
Expansion Pressure - SCA-III	≥ 10 MPa @8h; ≥ 30 MPa @24h
Mixing Water Ratio (mass)	Powder : Water = 1 : 0.28 ~ 0.32 Coarse grade: 0.24~0.27; Fine powder: 0.28~0.32
Usable Working Time	Pour into boreholes within 10 minutes after mixing
Typical Cracking Time	6~24 h at 20~30 °C; faster under higher temperature
Maximum Expansion Pressure	60~90 MPa

4. Construction Technical Parameters

1. Borehole Diameter: 32~40 mm. DO NOT exceed 42 mm (high risk of ejection)
2. Hole Depth: $\geq 70\%$ of target splitting thickness; vertical holes preferred. Inclined / horizontal holes require denser slurry compaction.
3. Hole Spacing:
 - Natural rock: 200~350 mm
 - Reinforced concrete: 150~250 mm
1. Operation Guidance
 - Completely remove dust & standing water inside boreholes
 - Mix thoroughly without dry agglomerates; fill holes densely, no sealing required generally
 - Keep personnel away from hole openings after filling; wear safety goggles & alkali-resistant gloves

5. Packing, Storage & Shelf Life

- Package: 20kg/bag, woven bag with inner plastic liner
- Storage: Dry & ventilated warehouse; protect from moisture & rain. Moistened powder loses activity.
- Shelf Life: 18 months under original sealed dry storage. Use quickly once opened.

6. Critical Safety Warnings

1. Slurry is strongly alkaline. Avoid direct contact with skin and eyes. In case of contact, flush continuously with plenty of clean water and seek medical aid if necessary.
2. Strong exothermic hydration reaction. Risk of jet ejection from boreholes. Never stand directly facing holes after pouring.
3. FORBIDDEN to blend into fresh concrete or UHPC mixture. Internal mixing will cause sudden cracking or bursting of structural members.
4. Minimize outdoor operation during heavy rain. Select corresponding low-temperature model under freezing conditions.

7. Disclaimer

All data is obtained under standard laboratory conditions. Actual cracking performance is affected by borehole layout, free surface, raw material property and site temperature. Small-scale field trial is recommended before formal construction. This material is exclusively for static fragmentation via borehole filling; cannot substitute for MgO expansion admixture for concrete shrinkage compensation.