ALVERTEX® FASTONE I

TECHNOLOGIST Q&A | 20 KEY QUESTIONS

Ready technical answers for Technical Directors, R&D and laboratories

Purpose: provide ALVENTUS technical and commercial representatives with professional, ready-to-use answers to typical questions from a technologist before laboratory testing. Answers are based on the FASTONE I PDS/SDS; where the source data are insufficient, this is stated explicitly.

Key message: FASTONE I is a highly reactive amorphous calcium aluminate accelerator for very fast setting, high early strength and shrinkage control; the working window can be adjusted with a retarder.

1. What exactly is FASTONE I?

ALVENTUS: It is a special amorphous calcium aluminate-based accelerator for hydraulic binders. Its purpose is to accelerate setting and early strength development in cementitious mortars and concrete.

Technical basis: *PDS: special amorphous calcium aluminate based accelerator; very fast setting and very high early strength.*

2. How fast does it set?

ALVENTUS: According to the PDS, when blended with OPC without retarder, setting is finished within 1 minute. The formulation and production process therefore need to be designed for high reactivity.

Technical basis: *PDS: setting finished within 1 minute without retarder blended with OPC.*

3. Can the working time be controlled?

ALVENTUS: Yes. The PDS states that setting time can be controlled with a retarding agent up to one hour. The exact working window must be determined in the target formulation.

Technical basis: *PDS: setting time can be controlled by retarding agent up to one hour.*

4. What dosage is recommended?

ALVENTUS: The PDS gives a basic range of 5–25% by cement weight. The optimum point depends on cement, sulfate balance, water, temperature and required working time.

Technical basis: *PDS: additive amount 5–25% by weight of cement.*

5. What early strength can be expected?

ALVENTUS: The PDS states 10–30 MPa after 6 hours of agent aging. This should be treated as a product reference, not as a guaranteed result for every formulation.

Technical basis: *PDS: 10 to 30 MPa strength after 6 hours of agent aging.*

6. What creates the early strength?

ALVENTUS: The PDS describes ettringite formation from hydration of amorphous calcium aluminates before the main cement hydration. Ettringite fills voids and contributes to early strength and chemical pre-stress.

Technical basis: *PDS theoretical reaction: early strength by void filling with ettringite formed before cement hydration.*

7. What happens to shrinkage?

ALVENTUS: The PDS states that, due to its expansion characteristics, FASTONE I can reduce self-shrinkage and drying shrinkage. Linear deformation testing should confirm the effect in the customer's system.

Technical basis: *PDS: self-shrinkage and drying shrinkage can be reduced due to expansion characteristics.*

8. Does the product really improve crack resistance?

ALVENTUS: Excellent crack resistance is stated as an advantage. ALVENTUS nevertheless recommends confirming it in the specific system because the final result depends on the full formulation and curing conditions.

Technical basis: *PDS: excellent crack resistance; laboratory confirmation recommended.*

9. Is FASTONE I suitable for non-shrink grout?

ALVENTUS: Yes. Non-shrink grout is explicitly listed among the applications. The degree of shrinkage compensation should be optimized for the target formulation.

Technical basis: *PDS applications include non-shrink grout.*

10. Is it suitable for shotcrete?

ALVENTUS: Yes. Dry-process shotcrete is explicitly listed, and the PDS describes the product as a must for spray concrete. Industrial trials should verify transport time and working window.

Technical basis: *PDS: dry process shotcrete; must for spray concrete.*

11. Can it be used in tile adhesive mortar?

ALVENTUS: Yes. Tile adhesive mortar is explicitly listed. Dosage and retarder should be selected to preserve the required workability and open time.

Technical basis: *PDS applications include tile adhesive mortar.*

12. Is FASTONE I suitable for self-leveling mortar?

ALVENTUS: Yes. Self-leveling mortar is listed in the PDS. Working time, flow and early strength are particularly important for this application.

Technical basis: *PDS applications include self-leveling mortar.*

13. What is the specific surface area?

ALVENTUS: Blaine is 6,000 cm^2/g. This confirms high fineness and is consistent with the product's high reactivity.

Technical basis: *PDS general properties: Blaine specific surface area 6000 cm^2/g.*

14. What is the density?

ALVENTUS: Specific weight is stated as 2.92. This is a useful parameter for incoming raw-material control.

Technical basis: *PDS: specific weight 2.92.*

15. How is the material supplied?

ALVENTUS: It is a greyish white powder. Packaging is 25 kg bags and 1,000–1,200 kg jumbo bags.

Technical basis: *PDS general properties.*

16. Does the PDS contain a full chemical analysis?

ALVENTUS: No. The current PDS does not provide a full oxide composition. ALVENTUS therefore does not recommend quoting specific Al_2O_3, CaO or SO_3 values without a supporting CoA or batch analysis.

Technical basis: *PDS provides functional and physical data but not a full oxide analysis.*

17. Is FASTONE I compatible with any cement?

ALVENTUS: Universal compatibility should not be promised without testing. The PDS demonstrates use with OPC, but the optimum reaction depends on the specific cement and formulation. ALVENTUS recommends testing with the customer's cement.

Technical basis: *PDS explicitly demonstrates use with OPC; formulation-specific qualification is recommended.*

18. Does the retarder need to be selected separately?

ALVENTUS: Yes, if a working window longer than the natural ultra-fast setting is required. The PDS explicitly provides for a retarding agent. Retarder dosage should be determined experimentally.

Technical basis: *PDS: setting time controlled by retarding agent up to one hour.*

19. How should the first laboratory trial be performed?

ALVENTUS: Start with the customer's base formulation, test several FASTONE I dosages within 5–25% and several retarder levels. Measure setting, flow, water demand, strength at 1–2–3–6–24 h and linear deformation.

Technical basis: *ALVENTUS qualification program: setting, early strength, flow, water demand, deformation, crack resistance, watertightness and retarder compatibility.*

20. What does ALVENTUS guarantee, and what must be confirmed by the customer?

ALVENTUS: ALVENTUS can rely on the stated PDS parameters: accelerator class, Blaine 6,000 cm^2/g, dosage 5–25%, setting within 1 minute without retarder with OPC and 10–30 MPa after 6 hours. Finished-product performance—working time, final strength, shrinkage and watertightness—must be confirmed in the customer's formulation.

Technical basis: *PDS + ALVENTUS qualification approach.*

How to answer the hardest question: “Why should we test FASTONE I?”

“Because FASTONE I is not simply about accelerating setting. It combines ultra-fast setting, early strength, an adjustable working window through retarder and shrinkage compensation. We do not ask you to accept the claim on words alone. We propose a controlled test in your own formulation and measurement of the parameters that are critical to your production.”

Recommended laboratory test package

- Setting time at several FASTONE I and retarder dosages
- Flow / workability and water demand
- Strength at 1–2–3–6–24 hours
- Linear deformation / shrinkage compensation
- Crack resistance
- Watertightness
- Low-temperature testing where relevant
- Confirmation of the working window in the real production process

Note: this document is intended for technical customer communication. It does not replace the PDS, SDS, CoA or laboratory test reports.