We create chemistry

HyCon® S 3200 F for SLUs

Hardening accelerator based on calcium-silicate-hydrate seeding technology for Portland cement based self-levelling underlayments (SLUs)

What is HyCon® S 3200 F?

The leaflet describes a new formulation concept for cementitious self-levelling underlayments by the use of **HyCon® S 3200 F** and **HyCon® R 3100 F** (see table):

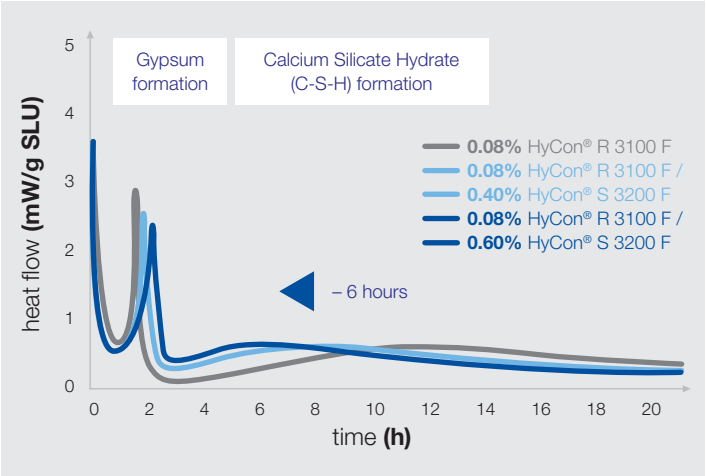
- **Binary binder system** (Portland cement rich with small amounts of alpha- or beta-hemihydrate)
- **HyCon® S 3200 F** is a hardening accelerator in powder form based on calcium silicate hydrate (C-S-H) seeding crystals; it is especially optimized for acceleration of high early strength development of cementitious flowable dry mortar products.
- **HyCon® R 3100 F** is a setting retarder to adjust the time-dependent flowability and setting. The setting of the hemihydrate (i.e. the formation of gypsum) will be retarded selectively, without affecting the subsequent hardening of Portland cement.

Dos. (%)	Raw Material	Supplier
28.50	Ordinary Portland cement	various suppliers
8.00	Alpha- or beta-hemihydrate	
40.73	Quartz sand (0.1 – 0.3 mm)	
20.00	Limestone powder (10 – 20 µm)	
2.00	Redispersible latex powder	
0.14	**Melflux® 5581 F**	**BASF**
0.10	**Starvis® 3040 F**	
0.05	**Vinapor® DF 9010 F**	
0.40	**HyCon® S 3200 F**	
0.08	**HyCon® R 3100 F**	
100.00	**DRY MORTAR (TOTAL)**	
	Mixing water: 19 – 21%	

What are the benefits of HyCon® S 3200 F for SLU applications?

New. **Formulations**	Fast. **Hydration**	Simple. **Solution**	Robust. **Setup**
▸ Binary concept (OPC + HH) without use of HAC ▸ Locally available binders can be used (reduced costs)	▸ Fast hardening ▸ Fast readiness for foot traffic	▸ No calcium aluminate cement needed ▸ Less complex formulation	▸ Robust formulation (tolerates changing binder qualities) ▸ Good flow properties even at high temperatures

How does HyCon® S 3200 F work?



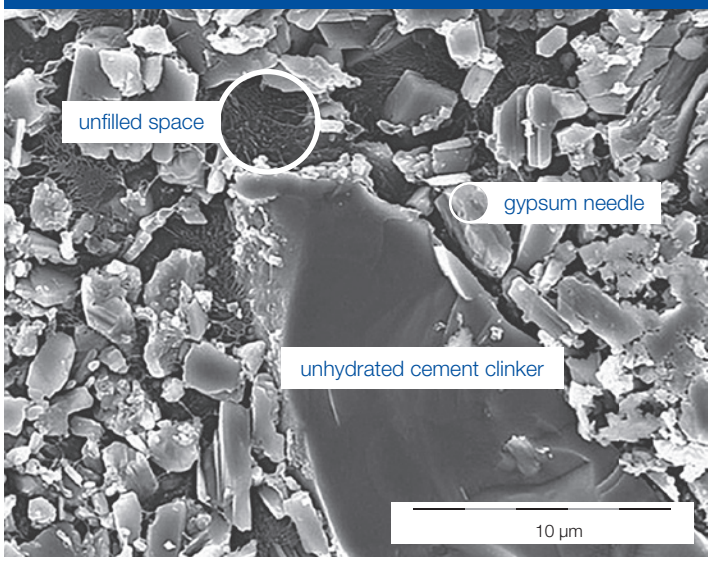
Hydration kinetics of the binary binder SLU

(isothermal heat flow calorimetry at 20 °C)

- First peak (after ≈ 2 h) is resulting from gypsum formation (can be adjusted by **HyCon® R 3100 F**).
- For the reference mix (grey line) it is followed by a period of low thermal activity. Afterwards, the heat flow is increasing again, indicating a C-S-H formation and is reaching a second peak (after 12 h) before decreasing.
- Second peak (C-S-H formation) is strongly accelerated (– 6 h) by increasing the **HyCon® S 3200 F** dosage from 0 – 0.60 %.

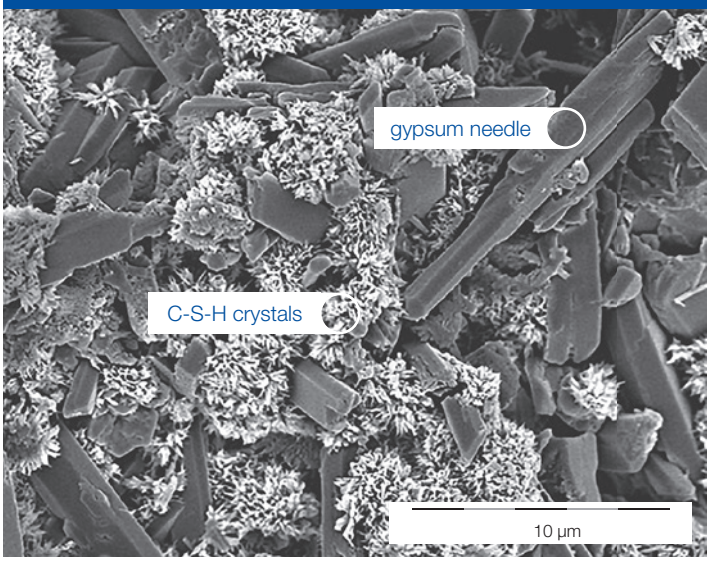
Hydration products of the new formulation concept (investigated by Cryo-SEM)

After 2 h



- Some first gypsum needles can be observed
- Gypsum needles are forming a structure network responsible for setting and shrinkage

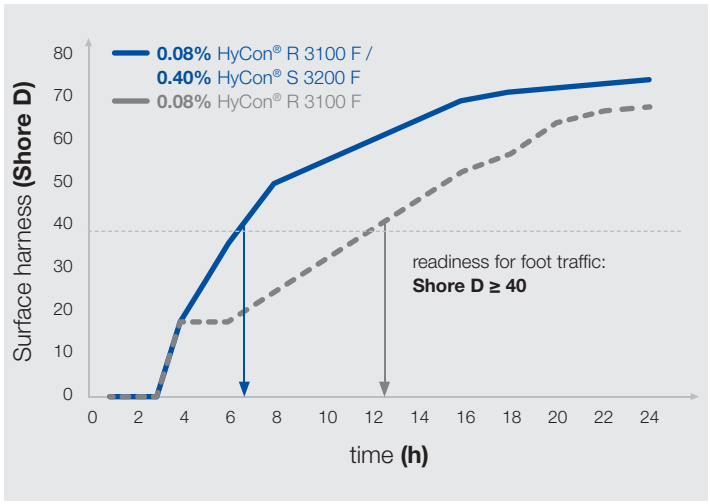
After 8 h

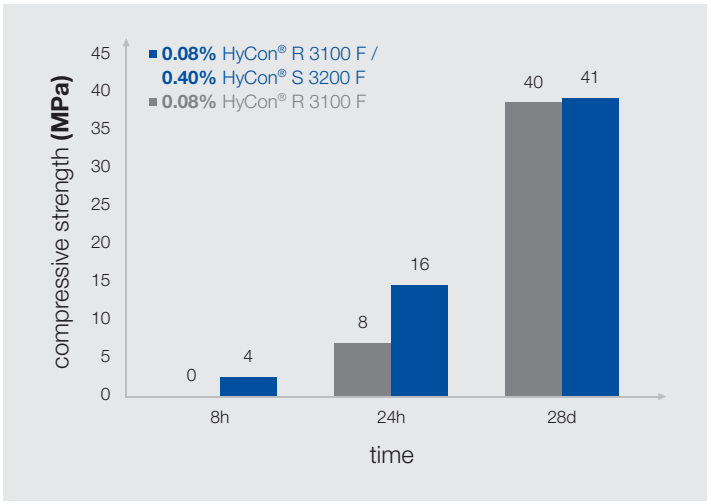


- Space between the gypsum needles is filled with C-S-H crystals which are responsible for strength

Fast readiness for foot traffic and faster strength development

HyCon® S 3200 F provides a faster readiness for foot traffic (after 6 h instead of 12 h without **HyCon® S 3200 F**) and a faster strength development of the binary SLU.





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