

Table F.1 — Recommended limiting values for composition and properties of concrete

| | Exposure classes | | | | | | | | | | | | | | | | | |
|--|--------------------------------|-------------------------------|--------|--------|--------|----------------------------|--------|--------|------------------------------------|--------|--------|--|------------------|------------------|------------------|----------------------------------|---------------------------------------|--------|
| | No risk of corrosion or attack | Carbonation-induced corrosion | | | | Chloride-induced corrosion | | | | | | Freeze/thaw attack | | | | Aggressive chemical environments | | |
| | | | | | | Sea water | | | Chloride other than from sea water | | | | | | | | | |
| | | X0 | XC 1 | XC 2 | XC 3 | XC 4 | XS 1 | XS 2 | XS 3 | XD 1 | XD 2 | XD 3 | XF 1 | XF 2 | XF 3 | XF 4 | XA 1 | XA 2 |
| Maximum w/c^c | – | 0,65 | 0,60 | 0,55 | 0,50 | 0,50 | 0,45 | 0,45 | 0,55 | 0,55 | 0,45 | 0,55 | 0,55 | 0,50 | 0,45 | 0,55 | 0,50 | 0,45 |
| Minimum strength class | C12/15 | C20/25 | C25/30 | C30/37 | C30/37 | C30/37 | C35/45 | C35/45 | C30/37 | C30/37 | C35/45 | C30/37 | C25/30 | C30/37 | C30/37 | C30/37 | C30/37 | C35/45 |
| Minimum cement content ^c (kg/m ³) | – | 260 | 280 | 280 | 300 | 300 | 320 | 340 | 300 | 300 | 320 | 300 | 300 | 320 | 340 | 300 | 320 | 360 |
| Minimum air content (%) | – | – | – | – | – | – | – | – | – | – | – | – | 4,0 ^a | 4,0 ^a | 4,0 ^a | – | – | – |
| Other requirements | – | – | – | – | – | – | – | – | – | – | – | Aggregate in accordance with EN 12620 with sufficient freeze/thaw resistance | | | | – | Sulfate-resisting cement ^b | |

^a Where the concrete is not air entrained, the performance of concrete should be tested according to an appropriate test method in comparison with a concrete for which freeze/thaw resistance for the relevant exposure class is proven.

^b Where sulfate in the environment leads to exposure classes XA2 and XA3, it is essential to use sulfate-resisting cement conforming to EN 197-1 or complementary national standards.

^c Where the *k*-value concept is applied the maximum *w/c* ratio and the minimum cement content are modified in accordance with 5.2.5.2.