

Table 2
Requirements for C, F, N, A, and S classes of exposure
 (See Clauses 4.1.1.1.1, 4.1.1.1.3, 4.1.1.3, 4.1.1.4, 4.1.1.5, 4.1.1.6.2, 4.1.1.8.1, 4.1.1.10.1, 4.1.2.1, 4.3.1, 4.3.5.2.2, 4.3.7.2, 4.3.7.3, 7.4.1.1, 8.7.5.1, 8.12.1, 9.4, 9.5, L.1, L.3, and R.3 and Table 1.)

Class of exposure*	Maximum water-to-cementing materials ratio†	Minimum specified compressive strength (MPa) and age (d) at test†, **	Air content category as per Table 4	Curing type (see Table 19)		Chloride on penetrability requirements and age at test‡
				Normal concrete	HVSCM-1 HVSCM-2	
C-XL or A-XL	0.40	50 within 56 d	1 or 2§	3	3	< 1000 coulombs within 91 d
C-1 or A-1	0.40	35 within 56 d	1 or 2§	2	3	< 1500 coulombs within 91 d
C-2 or A-2	0.45§§	32 at 28 d	1	2	2	—
C-3 or A-3	0.50	30 at 28 d	2	1	2	—
C-4** or A-4	0.55	25 at 28 d	2	1	2	—
F-1	0.50	30 at 28 d	1	2	3	—
F-2 or R-1 or R-2	0.55	25 at 28 d	2††	1	2	—
N	As per the mix design for the strength required	For structural design	None	1	2	—
N-CF or R-3	0.55	25 at 28 d	None	1	2	—
S-1	0.40	35 within 56 d	1 or 2§	2	3	—
S-2	0.45†††	32 within 56 d	1 or 2§	2	3	—
S-3	0.50†††	30 within 56 d	1 or 2§	1	2	—

*See Table 1 for a description of classes of exposure.

†The minimum specified compressive strength may be adjusted to reflect proven relationships between strength and the water-to-cementing materials ratio provided that freezing and thawing and de-icer scaling resistance have been demonstrated to be satisfactory. The water-to-cementing materials ratio shall not be exceeded for a given class of exposure.

(Continued)

Table 2 (Concluded)

‡In accordance with CSA A23.2-23C, an age different from that indicated may be specified by the owner. Accelerated moist curing in accordance with CSA A23.2-23C may be specified by the owner; in such cases, the age at test shall be 28 d. Where calcium nitrite corrosion inhibitor is to be used, the same concrete mixture, without calcium nitrite, shall be prequalified to meet the requirements for the permeability index in this Table. For field testing, the owner shall specify the type of specimen and location from which it is taken. If cores are required, the concrete cores shall be taken in accordance with CSA A23.2-23C.

§Air content category 1 shall be used for concrete exposed to freezing and thawing. Air content category 2 shall be used for concrete not exposed to freezing and thawing.

**For class of exposure C-4, S-1, S-2, and S-3, the requirement for air-entrainment should be waived when a steel trowelled finish is required. The addition of supplementary cementing materials may be used to provide reduced permeability in the long term, if required.

††Interior ice rink slabs and freezer slabs with a steel trowelled finish have been found to perform satisfactorily without entrained air.

‡‡See Clause 8.12 for concrete mixes for concrete floors.

§§The maximum water-to-cementing material ratio for HVSCM-1 concrete in a C-2 exposure shall not exceed 0.40.

***A different age at test may be specified by the owner to meet structural or other requirements.

†††For concretes made with MSLb or HSLb blended cements or combinations of portland-limestone cement and supplementary cementing materials, the water to cementing materials ratio for S-2 and S-3 classes of exposure shall be no greater than 0.40. This maximum water to cementing materials ratio for all sulphate exposures, in addition to the high levels of SCMs required, will help ensure high resistance to sulphate penetration. This provides an additional safeguard until sufficient data on field performance of concrete with these binders can be generated.