

# Multibeton® XD

**Concretes with a guaranteed performance**  
**Exposure class XD: Corrosion caused by chlorides other than from seawater**

**Multibeton® XD** is a durable concrete for the construction of works exposed to the corrosive action of chlorides from sources other than seawater, including de-icing salts.

**Multibeton® XD** concretes comply with the provisions of UNI EN 206 and UNI 11104 standards as laid down in the current "Technical Standards for Construction" issued by the Italian Ministry of Infrastructure and Transport and have characteristics that may vary within a wide range depending on the mechanical

resistance required, the environment in which the construction takes place and the complexity of the pour.

For the risk of corrosion induced by non-seawater chlorides, the UNI EN 206 and UNI 11104 standards provide for exposure classes XD1, XD2 and XD3 depending on the environmental humidity conditions. The correct exposure class must be specified at the time of order in accordance with the design requirements.

TYPES OF ENVIRONMENT		EXAMPLES OF USAGE	MAXIMUM W/C	MINIMUM RCK
<b>XD1</b>	Moderately humid air	Concrete exposed to the corrosive action of airborne chlorides, for example from the use of de-icing salts. For example, bridge decks, viaducts or road barriers.	<b>0,55</b>	<b>C30/37</b>
<b>XD2</b>	Predominantly wet or saturated with water, rarely dry	Concrete for water treatment plants or those exposed to water containing chlorides, for example industrial or swimming pool water.	<b>0,50</b>	<b>C32/40</b>
<b>XD3</b>	Cycles of dry and wet or saturated with water	Concrete exposed to splashes of chloride solutions, e.g. from de-icing salts. For example, on bridge decks, viaducts or road barriers, concrete used for ancillary road works (retaining walls), parts of bridges, road or industrial surfaces or car parks.	<b>0,45</b>	<b>C35/45</b>

**Multibeton® XD** is available in four versions with differing consistencies: S3, S4, S5 and SCC (self-compacting concrete) and with a minimum strength class dependent on the exposure class.

The consistency class and the strength class must be specified at the time of order in accordance with the design requirements. The choice of consistency class is of fundamental importance to avoid internal/external cavities and depends on the difficulty of execution and the reliability of the workforce on site.



**MULTIBETON®  
XD-S3**



**MULTIBETON®  
XD-S4**



**MULTIBETON®  
XD-S5**



**SCC-MULTIBETON®  
XD-SCC**

**Table 1:**

The development over time of the compressive strength of **Multibeton® XD** under laboratory conditions (20°C) and in a cold (5-10°C) or hot (30-35°C) climate.

TIME (DAYS)		COMPRESSIVE STRENGTH (MPA)		
		20°C	5-10°C	30-35°C
3	XD1 C30/37	20	7	21
	XD2 C32/40	25	8	27
	XD3 C35/45	25	8	27
7	XD1 C30/37	32	20	32
	XD2 C32/40	35	21	35
	XD3 C35/45	40	24	40
28	XD1 C30/37	42	40	39
	XD2 C32/40	45	43	42
	XD3 C35/45	50	48	48

**Note:**

The values were obtained with wet curing (R.H. = 95%) in the laboratory and on specimens compacted to minimise trapped air content. The values actually obtainable on site depend on the temperature and relative humidity conditions to which the structure is exposed, as well as the degree of compaction of the structure.

**Attention:** do not rely on these data alone to establish the formwork striking time.

**Table 2:**

Main physical and mechanical characteristics of **Multibeton® XD**

EXPOSURE CLASS	STRENGTH CLASS	CONSISTENCY CLASS	STANDARD HYGROMETRIC SHRINKAGE AFTER 6 MONTHS (R.H.=50%)	DYNAMIC ELASTIC MODULUS AT 28 DAYS	WATER PENETRATION IN ACCORD WITH UNI 12390-8	HEATING UNDER ADIABATIC CONDITIONS
			µm/m	MPa	mm	°C
<b>XD1</b>	<b>C30/37</b>	S3, S4, S5	400	33000	15	32
		SCC	420	32000	15	36
<b>XD2</b>	<b>C32/40</b>	S3, S4, S5	300	36000	10	33
		SCC	320	35000	10	38
<b>XD3</b>	<b>C35/45</b>	S3, S4, S5	400	38000	5	38
		SCC	430	37000	5	40