Application examples for selection of material and durability under consideration of DIN EN 1993-1-4:2015-10 / Eurocode 3 – Annex A for load-bearing parts

Selection of the correct steel grade by determining the respective Corrosion Resistance Factor CRF (F1 + F2 + F3) and the Corrosion Resistance Class (CRC).

Example:	**Facade/Building < 0.25 km near the sea**		
			Factor
F_1:	High risk of exposure **F_1** = Risk of exposure to chlorides from salt water or de-icing salts		**-7**
F_2:	Low risk of exposure (European coastal area, low concentration) **F_2** = Risk of exposure to sulfur dioxide		**0**
F_3:	Fully exposed to washing by rain **F_3** = Cleaning concept or exposure to washing by rain, if F1 + F2 ≥ 0, then F3 = 0 *(Note: Cleaning for all parts of the construction should be guaranteed!)*		**0**
CRF:	**Corrosion Resistance Factor CRF (F1 + F2 + F3)**	**Total**	**-7**
	Corrosion Resistance Class CRC: III →	**steel grade e.g. 1.4401**	

Example:	**Facade/Building ≤ 0.25 km near the North Sea Coast, hidden construction, no washing by rain or no specified cleaning**		
			Factor
F_1:	Very high risk of exposure **F_1** = Risk of exposure to chlorides from salt water or de-icing salts		**-10**
F_2:	Low risk of exposure (European coastal area, low concentration) **F_2** = Risk of exposure to sulfur dioxide		**0**
F_3:	No washing by rain or no specified cleaning **F_3** = Cleaning concept or exposure to washing by rain, if F1 + F2 ≥ 0, then F3 = 0 *(Note: If cleaning cannot be guaranteed or a specific cleaning is unavailable.)*		**-7**
CRF:	**Corrosion Resistance Class CRF (F1 + F2 + F3)**	**Total**	**-17**
	Corrosion Resistance Class CRC: IV →	**steel grade e.g. 1.4462**	

NOTE: According to the CEN-CENELEC Internal Regulations, the national standard organizations of the following countries are bound to implement the European Standard DIN EN 1993-1-4:2015-10: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

* More detailed information about the exact application method can be found in the DIN EN 1993-1-4:2015-10. Those application examples should only help to make the optimal decision.

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Application examples for selection of material and durability under consideration of DIN EN 1993-1-4:2015-10 / Eurocode 3 – Annex A for load-bearing parts

Selection of the correct steel grade by determining the respective Corrosion Resistance Factor CRF (F1 + F2 + F3) and the Corrosion Resistance Class (CRC).

Example:	**Road Tunnels**		
			Factor
F_1:	Very high risk of exposure because of de-icing salt in the tunnel **F_1** = Risk of exposure to chlorides from salt water or de-icing salts		**-10**
F_2:	High risk of exposure at sulfur gas concentration of 90 µg/m³ to 250 µg/m³ **F_2** = Risk of exposure to sulfur dioxide		**-10**
F_3:	No washing by rain and no specified cleaning guaranteed **F_3** = Cleaning regime or exposure to washing by rain, if F1 + F2 ≥ 0, then F3 = 0		**-7**
CRF:	**Corrosion Resistance Factor CRF (F1 + F2 + F3)**	**TOTAL**	**-27**
	Corrosion Resistance Class CRC: V	➡	**steel grade e.g. 1.4529**

Example:	**Constructions in striking distance to the sea (≤ 0.25 k) AND Constructions in the area Atlantic coast line of Portugal, Spain and France, English Channel and North Sea Coastline of UK, France, Belgium, Netherlands and Southern Sweden. All other coastal areas of UK, Norway, Denmark and Ireland. The construction is cleaned and inspected regularly for any signs of corrosion.**		
			Factor
F_1:	Very high risk of exposure **F_1** = Risk of exposure to chlorides from salt water or de-icing salts		**-15**
F_2:	Low risk of exposure at sulfur gas concentration of < 10 µg/m³ **F_2** = Risk of exposure to sulfur dioxide		**0**
F_3:	Specified cleaning concept *(The frequency should not exceed 3 months and apply for all parts of the structure.)* **F_3** = Cleaning concept or exposure to washing by rain, if F1 + F2 ≥ 0, then F3 = 0		**-2**
CRF:	**Corrosion Resistance Factor CRF (F1 + F2 + F3)**	**TOTAL**	**-17**
	Corrosion Resistance Class CRC: IV	➡	**steel grade e.g. 1.4462**

Example:	**Load-bearing parts in swimming pool atmosphere**		
			CRC
Table A.4	All fixings, fasteners and threaded parts * excluding 1.4410, 1.4501 und 1.4507 To consider the risk of stress corrosion cracking (SCC) in pool atmospheres, only the steel grades given in Table A.4 shall be used for load bearing parts exposed to the swimming pool atmosphere.		**V***
	Corrosion Resistance Class CRC: V	➡	**steel grade e.g. 1.4529**

* More detailed information about the exact application method can be found in the DIN EN 1993-1-4:2015-10. Those application examples should only help to make the optimal decision.

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