ITW *Construction Products Canada*

120 Travail Road, Markham
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RE: Substitution Letter for ITW Red Head C6+ replacing Epcon C6+ and Epcon G5

To Whom It May Concern:

The new Red Head C6+ epoxy adhesive is now available as a direct replacement to Epcon C6+ and Epcon G5 anchoring systems for concrete and masonry applications. Both Epcon C6+ and G5 will begin their phase-out stage making way for Red Head C6+, our strongest adhesive to date. Red Head C6+ is a high strength, slow cure, epoxy with higher performance than its predecessors. The following tables compare these three adhesives and are meant to serve as a reference when transitioning from Epcon C6+ and G5 to our newer technology, Red Head C6+.

Table 1 – Adhesive's general information

RED HEAD	Red Head C6+	Epcon C6+	Epcon G5
Base material temperature range (^{0}C)	4 to 43	4 to 43	5 - 32
Shelf life	24 months	24 months	18 months
Mix ratio	2:1	1:1	1:1
Setting time @ 21^{0}C (minutes)	16	11	15
Cure time @ 21^{0}C (hours)	6.5	7	24
Installation conditions	All weather conditions (incl. submerged)	Dry, saturated, and water filled conditions	All weather conditions (incl. submerged)
Masonry approved	**YES**	**NO**	**NO**
Cracked concrete approved	**YES**	**YES**	**YES**
All seismic zones approved	**YES**	**YES**	**YES**
Diamond core-drilled approved (bond strength values available)	**YES***	**NO**	**NO**
Overhead installation approved	**YES**	**NO**	**NO**

*Bond strength values for Red Head C6+ installed in core-drilled holes can be found in our technical literature or in the ICC-ES Report 4046

The following characteristic bond strength values, for Red Head C6+ and Epcon C6+ adhesives, were extracted from their respective ICC-ES reports, 4046 and 3577. For additional technical information or general inquiries, please refer to our technical guides or contact us at (905) 471-7403.

Table 2 - Bond strength values for Red Head C6+ and Epcon C6+ with threaded rod

			Nominal threaded rod diameter (inch)						
	Epcon C6+	**Unit**	**3/8**	**1/2**	**5/8**	**3/4**	**7/8**	**1**	**1-1/4**
Temperature range A	**Characteristic bond strength for uncracked concrete**	psi	1350	1350	1350	1350	1350	1350	1350
		(MPa)	(9.3)	(9.3)	(9.3)	(9.3)	(9.3)	(9.3)	(9.3)
	Characteristic bond strength for cracked concrete	psi	1150	1090	1025	965	900	840	715
		(MPa)	(7.9)	(7.5)	(7.1)	(6.7)	(6.2)	(5.8)	(4.9)

			Nominal threaded rod diameter (inch)						
	Red Head C6+	**Unit**	**3/8**	**1/2**	**5/8**	**3/4**	**7/8**	**1**	**1-1/4**
Temperature range A	**Characteristic bond strength for uncracked concrete**	psi	2470	2390	2315	2240	2160	2085	1930
		(MPa)	(17.0)	(16.5)	(16.0)	(15.4)	(14.9)	(14.4)	(13.3)
	Characteristic bond strength for cracked concrete	psi	1125	1125	1125	1255	1255	1255	1370
		(MPa)	(7.8)	(7.8)	(7.8)	(8.7)	(8.7)	(8.7)	(9.4)

Table 3 - Bond strength values for Red Head C6+ and Epcon C6+ with fractional reinforcing bar

			Nominal rebar diameter					
	Epcon C6+	**Unit**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Temperature range A	**Characteristic bond strength for uncracked concrete**	psi	1350	1350	1350	1350	1350	1350
		(MPa)	(9.3)	(9.3)	(9.3)	(9.3)	(9.3)	(9.3)
	Characteristic bond strength for cracked concrete	psi	1150	1090	1025	965	900	840
		(MPa)	(7.9)	(7.5)	(7.1)	(6.7)	(6.2)	(5.8)

			Nominal rebar diameter					
	Red Head C6+	**Unit**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Temperature range A	**Characteristic bond strength for uncracked concrete**	psi	2365	2275	2180	2085	1990	1895
		(MPa)	(16.3)	(15.7)	(15.0)	(14.4)	(13.7)	(13.1)
	Characteristic bond strength for cracked concrete	psi	1125	1125	1110	1190	1140	1090
		(MPa)	(7.8)	(7.8)	(7.7)	(8.2)	(7.9)	(7.5)

Bond strength values correspond to dry concrete with compressive strengths ranging from 2,500 psi (17.2 MPa) to 8,500 psi (58.6 MPa).
Temperature range A for Red Head C6+: Maximum short-term temp. of 142°F (61°C) and maximum long-term temp. of 110°F (43°C).
Temperature range A for Epcon C6+: Maximum short-term temp. of 130°F (55°C) and maximum long-term temp. of 110°F (43°C).
For structures assigned to IBC Seismic Design Category C, D, E, or F, bond strength values must be multiplied by respective $\alpha_{N,seis}$
Bond strength values are limited to the anchor's minimum and maximum embedment depths.
In sustained load conditions, bond strength values for Epcon C6+ must be multiplied by 0.73
Epcon G5 data was not included in the bond strength comparison with Red Head C6+ since its performance is below that of Epcon C6+.

ITW Construction Products Canada
Red Head - Concrete Anchoring Systems
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