Concrete Sustainability Council

CO2-Module: Annex

The Concrete Sustainability Council (CSC)

Rue de la Cité 1
1204 Geneva
Switzerland

https://www.concretesustainabilitycouncil.com/

05.05.2022

Glossary

EPD	Environmental Product Declaration
LCA	Life Cycle Assessment

L4.01 Quality management System

Applicable to region (s)	Criteria	Applicable sections		Evidence
Global		CO2-Module	x	Accepted standards are: ISO 9001 Procedures specified in: EN 206, and the related national application documents ASTM C94 Procedures built in line with EN 206 or ASTM C94
Australia		CO2-Module	x	Procedures specified in: AS 1379
India		CO2-Module	x	Procedures specified in: IS 4926

L5.01 Minimum CO2 reduction vs. baseline

Applicable to region (s)	Criteria	Applicable sections		Evidence
Baseline Determination				
Global		CO2-Module	x	Baseline The baseline is defined on country level (see below)
Reduction Levels				

Global		CO2-Module	x	Minimum CO2 reduction for all strength classes vs. the baseline of the respective strength class: Level 1 - 1 Star: - 30 % Level 2 - 2 Stars: - 40 % Level 3 - 3 Stars: - 50 % Level 4 - 4 Stars: - 60 %
CO2 Calculation Methods				
Global		CO2-Module	x	Accepted calculation methods are: ● 3rd party verified, valid EPDs ● CO2-calculation incl. background calculations (e.g. transport distances) generated by a CSC-accepted LCA-Tool using a CSC-accepted LCI-Database A simplified Scope 1 CO2-calculation is permitted for CO2-Module 1 Star level and where a Regional System Operator (RSO) is providing the baselines. The calculation has to follow the GCCA Sustainability Guidelines for the monitoring and reporting of CO2 emissions from cement manufacturing. In this case the below requirements for Database and Calculation Tools do not apply.
LCI-Database				
Global		CO2-Module	x	Accepted LCI databases are: ● GaBi ● Ecoinvent
CSC accepted LCA-Tools				
Global		CO2-Module		Accepted calculation tools are: ● see E1.02 Annex
Data Upload				
Global		CO2-Module	x	The following information of each mix-designs covered by the CO2-module needs to be uploaded in the CSC Toolbox: ● Distinctive identification number ● CO2 emission value ● Number of stars claimed

				In case of first time certification: ● CO2 calculation for at least one individual low CO2 concrete mix design to to be potentially delivered from the concrete plant that is targeting to obtain a CSC CO2 module (see Data Validation / Verification)
Labelling				
Global		CO2-Module	x	CO2 reduction class to be confirmed by the delivery slip or a producer confirmation with reference to the delivery slip
Data Validation / Verification				
Global			x	**First time certification** ● The correct CO2 calculation must be proven for at least one individual low CO2 concrete mix design to be potentially delivered from the concrete plant that is targeting to obtain a CSC CO2 module. This can be done by means of a valid EPD or by providing the CO2 calculation for a specific low CO2 concrete mix design with distinctive identification number - including background calculations (e.g. transport distances) - generated by a CSC accepted EPD tool. ● The CB must name the sample which has been assessed. ● The number of "stars" granted with the CSC CO2 module corresponds to the reduction level as proven by the distinctive mix design. **Upgrade** ● Higher achievement levels claimed at a later point in time need to be proven by an upgrade certification which follows the same rules as the first time certification. **Annual assurance** ● Management confirms by means of an annual compliance declaration by the management that

				○ the CO2-module has been issued only for the declared mix designs ○ all calculations are in line with the CSC CO2-criteria ● The annual compliance declaration must come with a list of all CO2-module deliveries of the previous year containing and include ○ Identification number ○ Concrete strength class ○ Volume supplied (per strength class or per mix design) ○ kg CO2/m3 (per strength class or per mix design) ○ CO2-module performance (1-4 stars) ● Upload of the annual compliance declaration and CO2-module delivery list to the CSC toolbox (per document upload, or per tool entry) **Re-certification** ● Full check by the CB upon plant recertification (max. after 3 years), checking representative samples ○ n = 0.7*SQRT(number of identification numbers delivered as low CO2 concrete); with a cap at n_{max}=15 ○ n to be mathematically rounded, but at least = 1 ○ The CB must list and name the samples which have been assessed

Germany						
CO2-\Strength-Classes	C20/25	C25/30	C30/37	C35/45	C45/55	C50/60
Maximum Greenhouse Gas Emissions per reduction level [net kg CO2eq. / m^3]*)						
Reference values	**213**	**237**	**261**	**286**	**312**	**325**
Level 1 ($\downarrow \geq 30\%$)	149	166	183	200	218	228
Level 2 ($\downarrow \geq 40\%$)	128	142	157	172	187	195
Level 3 ($\downarrow \geq 50\%$)	107	119	131	143	156	163
Level 4 ($\downarrow \geq 60\%$)	85	95	104	114	125	130

*) As the GCCA tool uses Ecoinvent background data sets for aggregates and transports, which are more conservative than the corresponding data sets for Germany in the GaBi database, the reference values of the average OPC/CEM I concrete in the above table can be increased by 14 kg CO2eq / m^3 in the calculation of the global warming potential if standard values (default values) for aggregates and transport are calculated with the GCCA-Tool. This also applies to other software tools that use the same Ecoinvent background data sets as the GCCA tool. If, in deviation, the standard values for the parameters aggregate and transport are not used for the calculation, but rather individual values, the above table applies.

A background report to the reference values and composition can be found here: https://www.csc-zertifizierung.de/downloads/

Belgium							
CO2-Classes	**C12/15**	**C16/20**	**C20/25**	**C25/30**	**C30/37**	**C35/45**	**C40/50**
Maximum Greenhouse Gas Emissions per reduction level [net kg CO2eq. / m^3]							
Reference values	**228**	**244**	**269**	**294**	**319**	**344**	**361**
Level 1 (↓ ≥ 30%)	160	171	188	206	226	241	253
Level 2 (↓ ≥ 40%)	137	146	161	176	194	206	217
Level 3 (↓ ≥ 50%)	114	122	135	147	162	172	181
Level 4 (↓ ≥ 60%)	91	98	108	118	129	138	144

Belgium REFERENCE CONCRETE COMPOSITIONS*							
Kg/m^3	**C12/15 (E0)**	**C16/20 (E0)**	**C20/25 (EI)**	**C25/30 (EE2)**	**C30/37 (EE3)**	**C35/45 (EE4)**	**C40/50 (EE4)**
CEM I	250	270	300	330	360	390	410
Limestone	975	1010	1025	1030	1025	1020	1020
Sand	900	860	820	810	800	795	790
Superplasticizer	0	0	0,5	1,5	2,0	2,5	3,0
Water	195	190	190	180	175	170	165

(*) cement content based on average values of external samples for Benor-certification in Belgium (year 2020)

Country name						
CO2-Classes	C20/25	C25/30	C30/37	C35/45	C45/55	C50/60
Maximum Greenhouse Gas Emissions per reduction level [net kg CO2eq. / m^3]						
Reference values						
Level 1 ($\downarrow \geq 30\%$)						
Level 2 ($\downarrow \geq 40\%$)						
Level 3 ($\downarrow \geq 50\%$)						
Level 4 ($\downarrow \geq 60\%$)						