



British Precast Drainage Association

Publications from the British Precast Drainage Association (BPDA):

BPDA was formed in 2017 from the integration of the Concrete Pipeline Systems Association (CPSA) and the Box Culvert Association (BCA).

Information published by both CPSA and BCA will be rebranded and replaced as BPDA in due course. New material will be branded BPDA.

All CPSA and BCA web traffic will be redirected to the new BPDA web site at www.precastdrainage.co.uk



Carbonation (Part 2) – Comparing the carbon footprint of concrete and plastic pipes

CO₂ absorbed due to carbonation can reduce the effective carbon footprint of concrete pipes . This additional reduction can be used to show how concrete pipes compare against plastic pipes.

The table below shows how concrete pipes compare against equivalent sizes of plastic pipes when the impact of carbonation is added to the cradle-to-site carbon footprints of concrete pipes. Data on cradle-to-site carbon footprints for concrete and plastic pipes was sourced from the CPSA Carbon Clear (2010)+Pipeline Systems Comparison Report+and the impact of carbonation was sourced from CPSA Information Sheet %Carbonation (Part 1) . How it reduces the carbon footprint of concrete+.

Size of pipe (mm in diameter)	Plastic Pipes (kg CO ₂ e/ m)				Concrete Pipes (kg CO ₂ e/ m)			
	PP Structured wall	PP Structured wall	HDPE (4kN/ m ²)	uPVC Structured wall	Bedding Class S	Bedding Class B	Bedding Class F	Bedding Class N
DN225	24.79	N/A	N/A	30.96	26.39	21.55	21.18	20.75
DN300	37.48	N/A	N/A	47.37	37.00	31.19	31.71	30.15
DN450	N/A	61.07	79.82	N/A	60.87	50.57	49.55	48.40
DN600	N/A	83.23	125.37	N/A	97.60	83.13	81.59	79.89
DN750	N/A	153.07	170.86	N/A	138.76	120.11	118.00	115.71
DN900	N/A	171.04	224.47	N/A	171.30	147.98	145.23	142.28
DN1050	N/A	N/A	270.59	N/A	223.04	195.96	192.51	188.86
DN1200	N/A	N/A	409.48	N/A	279.48	248.49	244.26	239.88
DN1350	N/A	N/A	438.55	N/A	341.44	304.67	299.32	293.79
DN1500	N/A	N/A	637.27	N/A	422.63	379.75	373.14	366.33
DN1800	N/A	N/A	760.96	N/A	551.68	503.75	495.69	487.76
DN2100	N/A	N/A	1,071.57	N/A	665.41	611.58	602.55	593.95

When the design of a concrete pipeline can use a Class B, F or N Bedding (rather than a Class S - Full granular surround) the embodied carbon savings over plastic pipes are overwhelming. Even when both concrete and plastic pipes are installed in Class S full granular surround, concrete pipes are the preferred option with a 38% lower carbon footprint for DN2100 concrete pipes compared with DN2100 HDPE pipes.

References

- CPSA Information Sheet (2011) Carbonation (Part1): How it reduces the carbon footprint of concrete.
- CPSA, Carbon Clear (2010) CPSA Pipeline Systems Comparison Report.

For further information please contact your usual supplier

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