ArborRaft Technical Guarantee

Technical Specification/ Physical Properties:
In terms of the physical properties of the ArborRaft system please use the technical specification attached. The vertical and lateral compressive strengths for the ArborRaft cells are included in the table within the technical specification. Upon confirmation of design parameters we can offer project specifications calculations to support ArborRaft proposals if required. (note that the ArborRaft system is not installed within the rootzone like other systems and as such it may not be subjected to the same lateral forces)

Structural Performance:
• The Structural load bearing capacity of the ArborRaft system has been tested in accordance with the following European standard: BS EN124: 1994. All calculations for ArborRaft within pavement designs are based upon site-specific load cases, pavement construction types and thicknesses, soil cover and ground conditions and the suitability must therefore be approved for each project.

• The ArborRaft System meets the requirements of British Standard for Permeable Pavements BS 7533-13: 2009, ArborRaft is the only system available that complies with the performance specification and physical properties set out in Annex B of BS 7533-13: 2009.

• The structural performance of the ArborRaft system has been proven by independent testing over the last decade. The tests range from laboratory compression tests, including creep and cyclic loading, through to full scale trial areas that have been subject to HGV loading. The results generated from these tests have shown that ArborRaft is suitable for use below paved areas under all types of traffic. Test details are summarised in the table at the end of this document.

Material Life expectancy of ArborRaft - Structural design life:
The design life is based on the scale and frequency of loadings and extrapolation of creep test data. Currently, creep test data allows a maximum 25 year design life at the highest loadings before maintenance of the surface will be required. For lower loadings, a life span up to 50 years is expected.

Polypropylene is a thermoplastic material characterised by a stable and highly ordered stereo-regular molecular chain. This structure produces a rigid material with good strength and ageing properties. The saturated olefinic chains yield resistance to most oils and solvents. In terms of Material life expectancy, Polypropylene is a chemically static thermoplastic polymer (C3 H6) and does not lose plasticisers like some other plastics, so it does not leach chemicals into the environment. It is non-toxic, will not biodegrade and does not react with most chemicals with which it is likely to come into contact. *It is widely accepted in the chemical industry for pipework, tanks and corrosion resistant parts and is used in parts for cars. It has been used in drainage systems in the US since 1963.

ArborRaft typically offers the following properties that provide an extended life expectancy:
• High resistance to weathering and UV exposure when stabilised
• Very low water moisture absorption
• Heat resistant when compared to other plastics

Rabbit Hill Business Park, Great North Road, Arkendale, Knaresborough HG5 0FF
T: 01423 332100 **E:** info@gtspecifier.co.uk **W:** www.gtspecifier.co.uk **Facebook:** @greentechuk **Twitter:** @greentechltd

- It is resistant to most automotive products such as motor oil, petrol, diesel, brake fluid, antifreeze, battery acid, grease and washer fluid at the concentrations and temperatures likely to be encountered within a typical water drainage application. (Note contact with some chemicals that are components of automotive fluids can cause surface crazing and material swelling, but it has no known solvent at room temperature. The adverse effects are reported for pure solutions and/or elevated temperature conditions, which do not reflect the exposure conditions that ArborRaft will be subjected to).

Product Guarantee:

ArborRaft Product Warranty / Guarantee

The manufacturer warrants that products which are defective at delivery as a result of faulty design, workmanship or materials (other than free-issue materials), shall either be repaired or replaced or that, at the Company's option, a credit or refund for the price thereof shall be given provided that:

- The company receives written notice of the defect within 12 months of delivery;
- The customer does not alter or interfere with the products before the company is given an opportunity to inspect and test them.
- The defect does not arise by reason of a design specification or instruction given by the customer;
- The Customer has not defaulted in its obligation to make payment for the products
- The defect is not a result of incorrect storage or use of the products by the customer

In terms of maintenance requirements, the ArborRaft system forms part of the pavement sub base construction and as such does not require to be maintained. Maintenance will normally be limited to the maintenance of the hard landscaping, for example when ArborRaft is used in conjunction with a Permeable or Porous surface, the surface will need to be cleaned periodically in line with the surfacing providers requirements.

Maintenance:

In terms of maintenance requirements, the ArborRaft system forms part of the pavement sub base construction and as such does not require to be maintained. Maintenance will normally be limited to the maintenance of the hard landscaping, for example when ArborRaft is used in conjunction with a Permeable or Porous surface, the surface will need to be cleaned periodically in line with the surfacing providers requirements.

Rabbit Hill Business Park, Great North Road, Arkendale, Knaresborough HG5 0FF
T: 01423 332100 **E:** info@gtspecifier.co.uk **W:** www.gtspecifier.co.uk **Facebook:** @greentechuk **Twitter:** @greentechltd

gt specifier
Landscape Solutions

Test result table:

Date / Details:	Testing	Research Organisation
Initial properties		
Dec 2001	Compression testing on top and side with 300mm diameter and full size steel plates	Salford University
Jan 2002	Tension tests of butterfly joints and bending resistance of units and joints	
Initial laboratory full scale tests		
Jan 2002	Compression testing of below permeable concrete block paving in laboratory	Salford University
Full scale construction trial		
2002	Construction and monitoring of a trial area of concrete block permeable paving and porous asphalt	Coventry University
	Plate bearing tests on the different layers of construction in a trial car park	Coventry University
2003	Bending tests on double layers and tests to determine deflection profile of a concrete block surface. Creep tests for 90 days	
Cyclic load tests		
2004	Cyclic loading tests on a large scale area of concrete block permeable paving.	Newcastle University
Full scale traffic trials		
2005 to 2008	Construction of concrete block permeable paving area subject to HGV traffic	Hulland Ward
	Laboratory compression tests on units removed from the area at Hulland Ward at the end of the trial	TRL
Compression tests		
2007	Compression and creep tests to confirm properties of ArborRaft.	TRL
Environmental tests		
2008	Compression tests on units at low temperature	TRL
Full scale trials under HGV traffic		
2008 to 2009	Construction of various surfaces with motorway standard pavement. Trafficked by HGVs	TRL/Highways Agency/Hulland Ward

Rabbit Hill Business Park, Great North Road, Arkendale, Knaresborough HG5 0FF
T: 01423 332100 **E:** info@gtspecifier.co.uk **W:** www.gtspecifier.co.uk **Facebook:** @greentechuk **Twitter:** @greentechltd