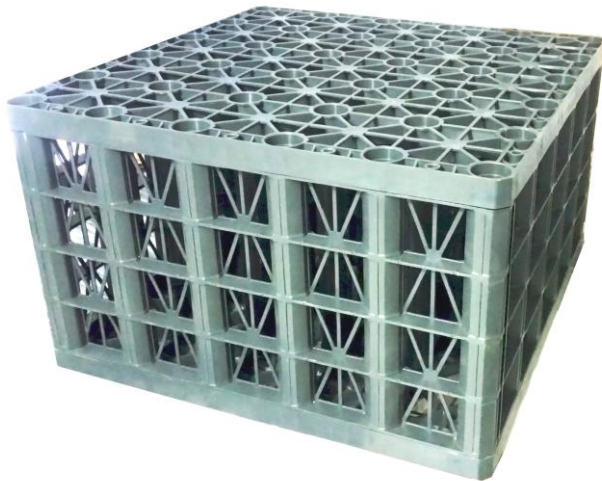


Product Insight: STM-01



Based on the Principles of Nature Rainsmart Solutions has designed and developed its environmentally friendly STM-01 Modular Tanking range. Its high load carrying ability makes the system ideal for use in load applications in new housing development, commercial and infrastructure projects.

STM-01 has been designed to add extra design scope to any stormwater system installation. Its Modular Kit form nature and ability to use strength with strategy, makes it only product worldwide, which offers multiple options in load ability, linear inspection and flush out system in a single flexible form.

Made from Prime Virgin material using the techniques of precise injection moulding core technology the STM-01 System supersedes all others in performance and quality.

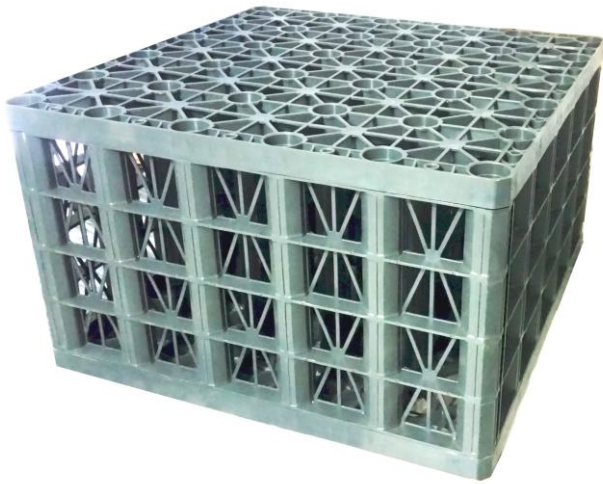
STM-01 Tanking system is a stackable system and distributes loads uniformly across the surface, resulting in excess of H-25 load ability whilst providing 95 % underground void volume for maximum water storage, providing developers more usable space.

Item	Description	Value	Unit
Void Area	Area available for water storage vs. that made up of plastic	>95	%
Surface Void Area	Open area where water may percolate in or out of the units	>95	%
Service Temperature	Operating temperature where the units can be expected to perform adequately	07 to 60°C (-44 to 140°F)	°C (°F)
Material Content	90% Virgin Polypropylene + 10% proprietary mix Virgin in Nature (100% virgin)	100%	%
Biological & Chemical Resistance	Unaffected by moulds, algae, Soil borne Chemical, bacteria and bitumen, polypropylene is very inert	**	**
Short Term Compressive Strength	Short Term Vertical Compressive Strength*	85 (120.89)	tons/sqm (PSI)
	Short Term Lateral Compressive Strength*	8.00 (11.38)	tons/sqm (PSI)
Short Term Deflection	Vertical Deflection	65. kN/ m²	Per mm
	Lateral Deflection	4.3 kN/m²	Per mm
Long Term Deflection	Estimated long term deflection (vertical creep) projected 50 yrs ** <i>applied test load of 172 kN / m²</i>	1.08% (3.88mm)	172 kN/m ²
	Estimated long term deflection (lateral creep) projected 50 yrs ** <i>applied test load of 32kN/m²</i>	1.41% (8.46 mm)	32 kN/m ²

* All compressive strength at yield, maximum recommended safe design value, safety factors to be incorporated.

**Derived from long term Extrapolated Creep testing data, 180 day minimum

Product Insight: STM-01



Physical Parameters	Value.
Length	600mm
Width	600mm
Height	360mm
Module Volume	0.13 m ³
Module Storage Volume	0.123 m ³ (123 litres)
Void Ratio	95%
Unit Weight	9.8 Kgs (approx.)

Note: STM-01 system is suitable to be used in trafficable areas and green spaces. Please contact nearest Rainsmart Solutions distributor or office for structural calculations and installation condition check.

Product Performance Guarantee.

Prime quality polymer is used to manufacture STM-01 modular system. The system is unaffected by chemicals and bacteria commonly found in uncontaminated soils and stormwater runoff.

Rainsmart STM-01 has been smartly designed for full length viewing channels in both directions— allowing for CCTV inspection if required. These are created in the bottom layer of a Rainsmart STM-01 tank installation.

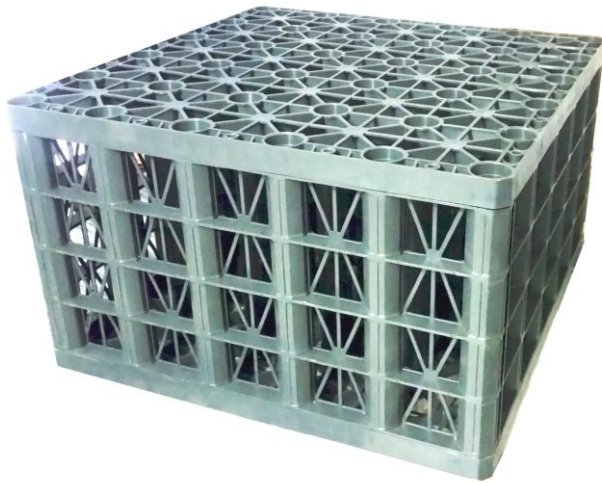
When installed as per Rainsmart Installation guidelines, and within the stipulated design parameters, the system has a design life of 50 years +.

✓ **The Smarter Way to Manage Stormwater.**

Key Advantages.

- ✓ **Modular Structure** provides design Flexibility. Create any shape any size based on site limitations and conditions.
- ✓ **Quick and light weight** easy to install. The modules are light weight and can be installed by unskilled labourer without any heavy machinery.
- ✓ **95% void ratio** providing maximum water storage. Meaning more water storage in less space, minimising excavation and haulage costs and reducing site disruption.
- ✓ **Available in Kit form** for easy delivery and handling and reduces transport costs.
- ✓ **High void surface ratio** ensures larger surface contact area for quick infiltration and NO traditional clogging problems unlike gravel based systems.
- ✓ **Made from prime virgin material**, guaranteed product quality and performance
- ✓ **Environmentally friendly WSUDS** for water management.
- ✓ **Proven High Load bearing Capacity** of 85 t/m² + for various applications.
- ✓ **Complete multi – directional linear access** for inspection and maintenance only one of its kind in the world. Inbuilt inlet/ out for quick easy connections.
- ✓ **Complete 3 D flow** throughout the hollow structure. Unlike gravel based uni-directional systems which can clog up over time and cause surface flooding.
- ✓ **50 years + Design Life** based on long term creep testing.
- ✓ **Backed by stringent testing regime** and constant QA/ QC.
- ✓ **Safety and Human benefits**, subsurface underground storage on site eliminates traditional problems like downstream flooding, mosquito and vermin breeding grounds.

Product Insight STM-01



Typical Minimum Cover Depths over the system (m)	
Landscaped/non-trafficked areas	0.50
Car parks, vehicle up to 3000 kg gross mass	0.50 **
Car parks, vehicle up to 9000 kg gross mass	0.85 **

** 0.85m is minimum depth for STM-01 system in trafficked area, although 1.0 m cover is recommended to prevent accidental damage. During construction activity on site, extra protection may be needed.

*For specific advice on cover depths for heavier loadings/HGV applications, please contact Rainsmart.

*Structural design requires careful consideration of loading factors specific to each project – see CIRIA C680 and CIRIA C737 for further details.

*Assumed ultimate limit state (ULS) partial factor of safety applied to: Material = 2.75 | Lateral pressure =1.35 | Live load = 1.6 | Dead load = 1.4

Maximum Installation Depth (to base of the Units)

Typical soil type	Typical angle of shearing resistance	Maximum depth of installation – to base of units (m)			
		With groundwater at 1m below ground level and units wrapped in geomembrane & underdrain system.		Without groundwater below base of units (normal case)	
		Trafficked areas (cars only <3000 kg GVW)	Green Space areas	Trafficked areas(cars only <3000 kg GVW)	Green space areas
Stiff Clay Over consolidated clay	24°	1.60	1.90	2.00	2.40
Normally consolidated silty, sandy clay	26°	1.75	2.00	2.20	2.60
Loose sand and gravel	30°	2.00	2.20	2.75	3.00
Medium dense sand and gravel	34°	2.10	2.20	3.00	3.30
Dense sand and gravel	38°	2.20	2.25	3.50	3.75

Notes:

- ❖ Assumed ultimate limit state (ULS) partial factor of safety applied to: Material = 2.75 | Lateral pressure =1.35 | Live load = 1.6 | Dead load = 1.4
- ❖ Depth Stated are based on the calculation methodology based in CIRIA C680
- ❖ The design is very sensitive to small changes in the assumed value of ϕ , therefore, it should be confirmed by a chartered geotechnical engineer.
- ❖ Applicable for car parks or other areas trafficked only by cars or occasional refuse collection trucks or similar vehicles (typically one per week).
- ❖ Assumptions made are: ground surface is horizontal shear planes or other weaknesses are not present within the structure of the soil

Design & Technical Assistance:

Rainsmart Technical team provides full assistance with CAD drawings, specific project based Load safety calculations, installation assistance. For further support please contact us on +61 2 9678 9667 or email: info@rainsmartsolutions.com

NOTE: All Rainsmart Products and Systems are Design Registered or Design Registration Pending.

Safety Factors: Engineers, designers and geotechnical engineers should design and calculate safety factors to a serviceable limited state to suit specific project. In case of doubt, consult your nearest distributor or representative.

Disclaimer: All information provided in this publication is correct to the best knowledge of the company and is given out in good faith. This information is intended only as a general guide, no responsibility can be accepted for any errors, omissions or incorrect assumption. As each project is unique, and as Rainsmart Solutions Pty :td. and its distributors and agents worldwide have no direct control over the methods employed by the user in specifying, installing or supervising of its products hence no responsibility is accepted by Rainsmart Solutions Pty Ltd. and its distributors and agents worldwide. Users should satisfy themselves as to the suitability of the product for their purpose.

Rainsmart Solutions Pty Ltd.

25 Lidco Street, Arnell Park, NSW-2148

E: info@rainsmartsolutions.com | T: + 61 2 9678 9667 | F: + 61 2 9678 9670

www.RAINSMARTSOLUTIONS.COM

