

Wastewater Treatment Systems fixed-bed - 1 to 20 PE

tricel[®]



For a serene environment



**Agréments
ministériels**
6-9-11-14-17-20 EH
n° 2011-006 – 2012-003
2011-006-ext.1 à 9

SIMPLE - ROBUST - RELIABLE

www.tricel.fr

Why choose Tricel®:

Markings and Certifications:

- French “Agrément ministériel” approval for Tricel® 1 to 20 PE (population equivalent) as published in the *Journal Officiel* on the 22nd April 2011, 17th March 2012 and 3rd January 2013
- Conforms to the ministerial order “technical specifications” of 7th September 2009 and as modified by the 7th March 2012 order
- Tricel is CE marked from 1 to 50PE after undergoing 38 weeks of stringent testing to conform to EN 12566-3, carried out in PIA in Aachen in Germany. This demonstrates constant high quality treatment from the Tricel system

Installation:

- Ideal for new builds, especially in cases of limited space as well as for renovations: Tricel is a compact system with a footprint (site coverage) of less than 5m² for 6 PE and less than 11m² for 20 PE (to be compared with the 40 to 200m² of a traditional installation).
- Lightweight, single tank easy to transport and handle
- The Tricel system is delivered ready to install for an easy and fast installation, with minimal site adjustment reducing the risk of on-site error
- Extremely robust GRP tank moulded by heat compression: backfilled with sand or gravel (crushed 4/10 or rounded 4/16), 75cm backfill allowed above the crown of the tank, resistant to ground water
- Small excavation depth, high-level inlet and outlet to avoid deep trenches, with a height difference of 7.5cm only between the inlet and outlet
- A secondary vent is integrated directly into the de-sludge manhole cover
- Manhole risers available in 25cm, 50cm and 75cm
- Tricel systems are also available with an integrated submerged pump which removes the need for a pump station

The Result:

- Underground installation is carried out for minimal interference with the surrounding landscape
- Electro-mechanical equipment installed on the tank (as standard) or remote-located if required
- Extremely quiet whilst in operation with no odour
- Low running costs (electrical consumption < 50 €/year)
- Exceptional feature: in applications of restricted access or limited space it may be possible to assemble a Tricel system directly on location

Maintenance:

- Extremely reliable, with a strong simple design and high-quality components (ceramic quartz diffusers without membranes which do not get clogged, Medo air blowers without diaphragms etc.)
- We have designed our systems with few electro-mechanical components and no electronic components which ensures little or no breakdown risk as demonstrated by our 13 years experience
- No electro-mechanical part inside the tank avoiding the risk of corrosion
- Naturally forming and continually multiplying biomass on a fixed film, utilises a trickling filter and sludge return process to maintain performance during periods of under loading and non-use
- Excellent performance in overloading conditions
- No system adjustment regardless of influent levels
- Low maintenance for customer peace of mind and minimal maintenance costs
- Annual maintenance contracts available from Tricel’s network of exclusive Partners
- Permanent and lifelong solution: the PVC “honeycomb” bacteria bed does not block or deteriorate over time
- Visual and acoustic alarm as standard
- All components visible, accessible and easy to remove if needed
- Easy de-sludging of the primary settlement chamber through the de-sludge manhole
- De-sludging frequency of 1 to 5 years (depending on model type) observed in real use conditions at full loading. De-sludging, which only concerns the primary settlement chamber, is less frequent when the wastewater treatment system functions at reduced load; e.g., an FR6/4000 (sized for 1 to 6 PE) with 3 permanent users requires an average de-sludge rate of 4 to 6 years

Quality Assurance:

- Tricel wastewater treatment system traceability and tracking ensured by Tricel France and its network of exclusive Partners
- Manufactured in France for greater proximity to our customers, ensuring a localised customer service
- 20 years guarantee on the GRP structure and 2 years on the electro-mechanical components

The wastewater treatment process

The Tricel® unit is a complete domestic wastewater treatment system based on submerged aerated filter processes. This technology, based upon Tricel's expertise in wastewater treatment systems, guarantees a high-quality product and exceptional performance.

The fixed bed aeration process is based on 3 phases, which takes part in 3 distinct compartments of the wastewater treatment system:

Stage 1: Primary Settlement

Anaerobic breakdown occurs in the primary settlement chamber where the wastewater is introduced into the system. Heavy sludge and solids separate from the liquid and settle at the bottom of the tank. A scum, mainly made of grease, is formed at the surface of this liquid. Anaerobic breakdown begins to occur here and improve the water quality.

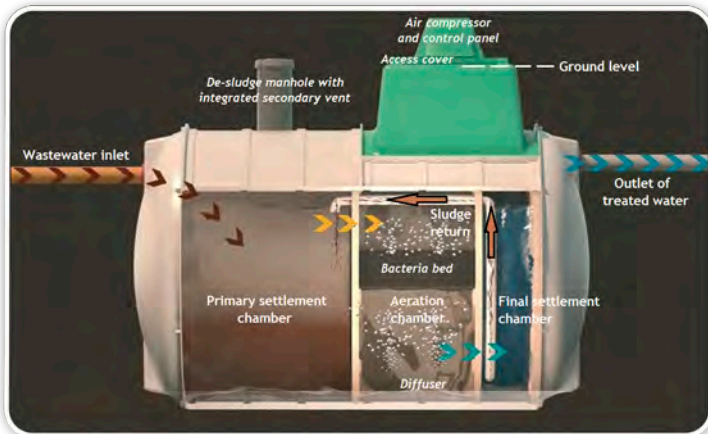
Stage 2: Aeration / Oxygenation

Stage 2 takes place in the aeration chamber where masses of naturally forming bacteria inhabit a specially designed honeycomb bed and aerobic breakdown occurs. These bacteria are sustained with air, which is continuously supplied from a purpose built air compressor in the top section of the unit.

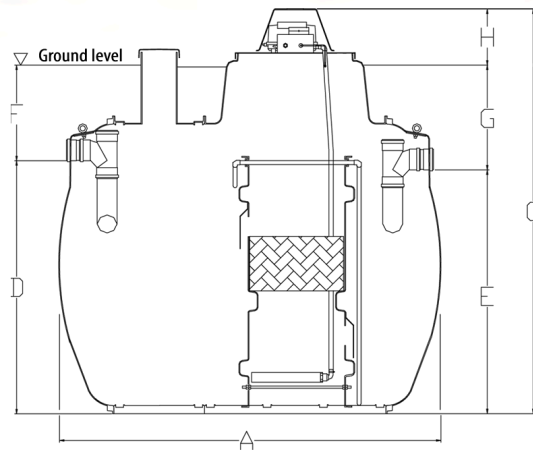
As the liquid flows slowly through the honeycomb bed, the bacteria feed on the impurities, consume them, thus removing them from the liquid.

Stage 3: Final Settlement / Clarification

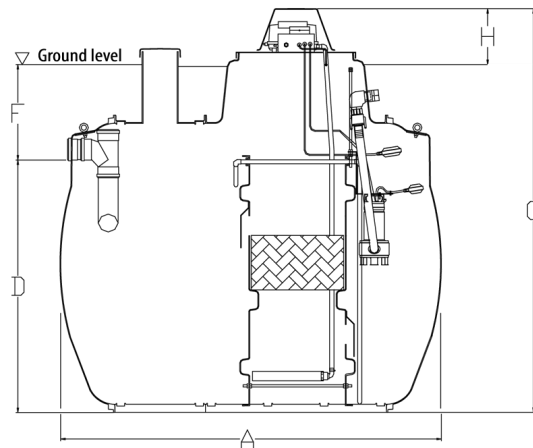
The liquid then flows from the aeration chamber into the final settlement chamber. Small quantities of bacteria called residual sludge are carried through with the liquid. This residual sludge settles to the bottom of the final settlement chamber from where a sludge return system, based on an airlift principal, returns them to the primary settlement chamber. The remaining treated liquid now meets the required standard and can be safely passed out of the Tricel system.



▶ **Tricel® with gravity discharge**



▶ **Tricel® with integrated pump discharge**



| Volume/type of Tricel® system ⁽¹⁾ | FR6/3000 | FR6/4000 | FR9/5000 | FR9/6000 | FR11/6000 | FR11/7000 | FR14/8000 | FR14/9000 | FR17/9000 | FR17/10000 | FR20/10000 |
|---|-------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| French ministerial decree number | 2011-006 | 2012-003 | 2011-006-ext1 | 2011-006-ext2 | 2011-006-ext3 | 2011-006-ext4 | 2011-006-ext5 | 2011-006-ext6 | 2011-006-ext7 | 2011-006-ext8 | 2011-006-ext9 |
| Treatment capacity and number of inhabitants ⁽²⁾ Number of main rooms according to ministerial decree order 07/03/12 | up to 6 PE | up to 6 PE | 7 - 9 PE | 7 - 9 PE | 10 - 11 PE | 10 - 11 PE | 12 - 14 PE | 12 - 14 PE | 15 - 17 PE | 15 - 17 PE | 18 - 20 PE |
| Hydraulic load ⁽²⁾ | 150 - 900 | 150 - 900 | 1050 - 1350 | 1050 - 1350 | 1500 - 1650 | 1500 - 1650 | 1800 - 2100 | 1800 - 2100 | 2250 - 2550 | 2250 - 2550 | 2700 - 3000 |
| Organic load ⁽²⁾ | 0,06 - 0,36 | 0,06 - 0,36 | 0,42 - 0,54 | 0,42 - 0,54 | 0,60 - 0,66 | 0,60 - 0,66 | 0,72 - 0,84 | 0,72 - 0,84 | 0,90 - 1,02 | 0,90 - 1,02 | 1,08 - 1,20 |
| Total volume | 3000 | 4000 | 4731 | 5546 | 5546 | 7176 | 7176 | 8806 | 8806 | 10436 | 10436 |
| Primary chamber capacity | 1400 | 2400 | 2408 | 3223 | 2488 | 4118 | 3311 | 4941 | 4183 | 5813 | 5250 |
| Aeration chamber capacity | 900 | 900 | 1377 | 1377 | 1695 | 1695 | 2249 | 2249 | 2755 | 2755 | 3081 |
| Final settlement chamber capacity | 700 | 700 | 946 | 946 | 1363 | 1363 | 1616 | 1616 | 1868 | 1868 | 2105 |
| Total length (A) | 210 | 260 | 310 | 360 | 360 | 460 | 460 | 560 | 560 | 660 | 660 |
| Total width (B) | 164 | 164 | 164 | 164 | 164 | 164 | 164 | 164 | 164 | 164 | 164 |
| Total height (C) | 224 | 224 | 224 | 224 | 227 | 227 | 227 | 227 | 227 | 227 | 227 |
| Inlet invert to base (D) | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 137,5 | 135 |
| Outlet invert to base (E) | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| Inlet invert to ground level (F) | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 53,5 | 56 |
| Outlet invert to ground level (G) | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| Height difference between inlet/outlet | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 5 |
| Height above ground level (H) | 33 | 33 | 33 | 33 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| Inlet/outlet diameter | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 160 |
| Number of access covers/risers | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 4 |
| Weight empty ⁽³⁾ | 275 | 300 | 375 | 400 | 400 | 500 | 500 | 600 | 600 | 700 | 700 |
| Air compressor rating (actual) | 64 (46) | 64 (46) | 74 | 74 | 120 | 120 | 148 | 148 | 215 | 215 | 215 |
| Min. retention time (based on max PE) | 80 | 106 | 84 | 99 | 81 | 104 | 82 | 101 | 83 | 98 | 83 |

(1) Above 21 PE ("light commercial" or "grouped" wastewater treatment system range), contact us.

(2) It should be noted that a system designed for x to y PE will work perfectly with an actual number of users lower than this PE number (e.g. an FR14/8000, designed for 12 to 14 PE, will work effectively too for 7 or 10 actual users).

(3) Add 100 kg for lifting purposes.



A factory with dedicated technical services and a head office based near Poitiers, for greater **proximity to our customers** and a **reactive customer service**.

A quality-orientated philosophy, offering what is probably the **best value for money** to our customers: all of our equipment is **robust** and of **high quality**, the water tightness of every single tank (not based on random samplings) is tested at the end of the production process, **traceability** is ensured on all of our wastewater treatment systems...

... for flawless **reliability** and **absolute peace of mind**.

A **network of exclusive distribution Partners**, that are **specialists in wastewater treatment systems** (see list on our website), who ensure specifications and sales as well as the start-up, maintenance and after-sales service on each Tricel wastewater treatment system installed.

Networks of installers selected by our Partners in their respective sectors to ensure the perfect installation of your wastewater treatment system.

Extensive **experience** in wastewater treatment systems: >15,000 Tricel wastewater treatment systems installed across the world in all types of and under all climates.

The support of a **strong Irish industrial group**, specialists in GRP, building and public works applications since 1973: **KMG – Killarney Manufacturing Group**.



Prüfinstitut für Abwassertechnik GmbH
 Prüfentwicklung des Prüf- und Entwicklungsinstituts für Abwassertechnik an der RWTH Aachen
PIA
 Institut für Abwassertechnik
 52074 Aachen
 DIN EN ISO 9001:2008

Report on the treatment efficiency according to EN 12566-3 of the wastewater treatment plant
Tri-Cel
 of
KMG Killarney Plastics Ltd.
 Test report - No. PIA2008-103B18
 Aachen, December 2008
 Dipl.-Ing. Elmar Lenz

Ministère de l'Énergie, du Développement durable et de l'Énergie
 Ministère des affaires sociales et de la santé
 Direction générale de la santé
 Sous-direction de la protection des lieux de travail et de l'hygiène
 Bureau de la qualité des lieux de travail
 DDES/1-1
 Paris, le 21 DEC 2011
 A
 KMG KILLARNEY PLASTICS
 Division TRICEL
 17 Avenue de la Naurais-Bachaud
 86530 NAINTRÉ
 Objet: validation et agrément de la gamme de dispositifs de traitement « TRICEL »
 Ministère, Monsieur:

3 janvier 2012 JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE Texte 63 sur 77
Avis et communications
AVIS DIVERS
 MINISTÈRE DES AFFAIRES SOCIALES ET DE LA SANTÉ
 Avis relatif à l'agrément de dispositifs de traitement des eaux usées domestiques et fiches techniques correspondantes.
 NOR: AFSP120100
 En application de l'article 7 de l'arrêté du 7 septembre 2009 modifié fixant les prescriptions techniques applicables aux installations d'assainissement non collectif recevant une charge brute de pollution organique inférieure ou égale à 1,2 kg/d de DBO₅ et après évaluation par des organismes agréés, la ministre de l'Énergie, du Développement durable et de l'Énergie et la ministre des affaires sociales et de la santé agréent les dispositifs suivants:
 - « TRICEL FR 4000 » (1 E3); KMG KILLARNEY PLASTICS-TRICEL;
 - « TRICEL FR 6000 » (0E1); KMG KILLARNEY PLASTICS-TRICEL;
 - gamme « TRICEL », modèles FR 4000 et FR 6000 (1 E3), FR 11000 (11 E3), FR 14000 et FR 14000 (14 E3), FR 17000 et FR 17000 (17 E3) et FR 205000 (20 E3); KMG KILLARNEY PLASTICS - TRICEL.
 L'agrément de ces dispositifs de traitement porte uniquement sur le traitement des eaux usées.
 L'installation de ces unités doit respecter les prescriptions techniques en vigueur.
 La fiche technique correspondante est présentée en annexe.
 Cet avis annule et remplace l'avis (NOR: AFSP020210) publié au Journal officiel du 17 mars 2012, édition électronique, texte et 86.
ANNEXE
 FICHE TECHNIQUE DESCRIPTIVE ASSOCIÉE À LA GAMME DE DISPOSITIFS DE TRAITEMENT AGRÉÉS « TRICEL » - MODÈLES FR 4000, 6000, 11000, 14000, 17000 ET 20500
 Références administratives

| Modèle | 201406 | 201509 | 201606 | 201606 | 201606 | 201606 |
|-------------------------|--|-------------------|--------------|--------|--------|--------|
| État de l'équipement | 201406 | 201509 | 201606 | 201606 | 201606 | 201606 |
| Numéro de l'opérateur | KMG KILLARNEY PLASTICS - TRICEL Division Naintré SUD Division SUD | | | | | |
| Désignation commerciale | TRICEL FR 4000 | TRICEL FR 6000 | Gamme TRICEL | | | |
| Capacité de traitement | 4 E3 | 6 E3 | 11 E3 | 14 E3 | 17 E3 | 20 E3 |

 Références de l'évaluation et l'installation
 Organisme agréé en charge de l'évaluation: Centre d'études et de recherches de l'industrie de la santé.
 Date de réception de l'avis de l'opérateur agréé: le 20 novembre 2012

Your exclusive Tricel® Partner: