IRISH AGRÉMENT BOARD

BUILDING PRODUCT CERTIFICATION

CERTIFICATE No. 04/0203

CI/SfB (52.3)

(4-) Nh2

Wm and Ml Kiely Ltd.
Courtbrack, Blarney, Co Cork
Tel: 021 438 5872 Fax: 021 438 1644
Email: kielyconcretebiokast@eircom.net

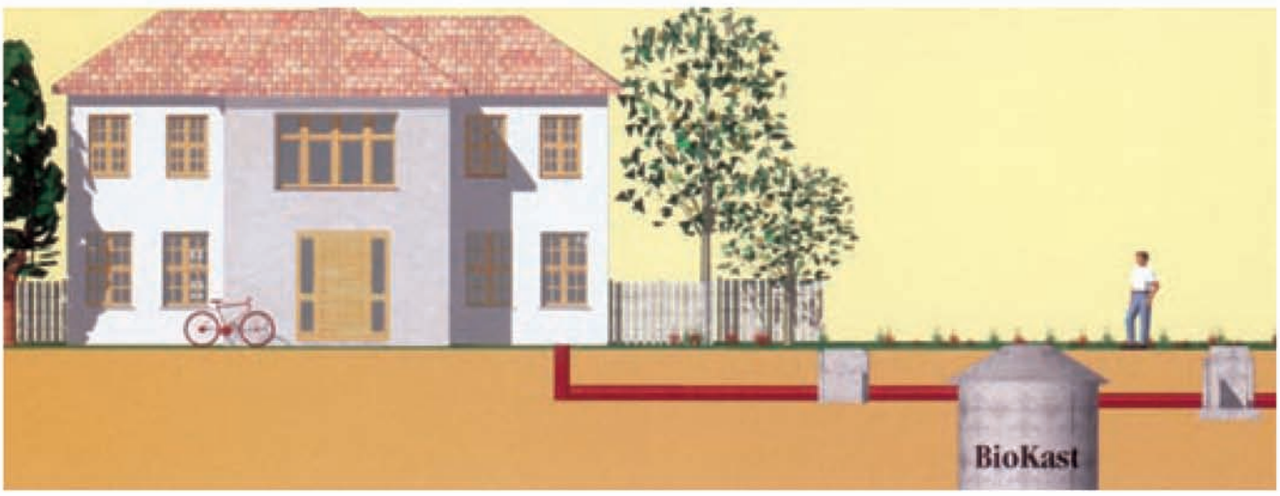
Kiely Biokast P10R Wastewater Treatment System

Systémes de Traitement des Eaux Résiduaires.
Abwasser Aufbereitung

The Irish Agrément Board is designated by Government to issue European Technical Approvals.

Irish Agrément Board Certificates establish proof that the certified products are **'proper materials'** suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 to 2002.**

The Irish Agrément Board operates in association with the **National Standards Authority of Ireland (NSAI)** as the National Member of UEAtc.



PRODUCT DESCRIPTION

This Certificate relates to the Kiely Biokast P10R Wastewater Treatment System for Single Dwellings. The combined aerobic/anaerobic system utilises the Biological Aerated Filter (BAF) process to treat domestic wastewater from dwellings with a population equivalent of up to 10 persons.

The unit is manufactured from fibre reinforced concrete, is circular in shape and has three operating zones.

The tank capacity is 6020 litres. For design loadings and flows, the retention time is in excess of 48 hours and the de-sludging interval at full capacity is at least one year.

The life of the tank, when installed and operated in accordance with the Certificate holder's instructions, should be in excess of 50 years. However, mechanical components, subject to normal wear and tear, will require replacement within this time.

The Kiely Biokast P10R Wastewater Treatment System is patented in Ireland (Patent No. 81989).

USE

The product is for use in wastewater treatment systems designed to meet the requirements as specified in *BS 6297: 1983 Code of practice for design and installation of small sewage treatment works and cesspools*, and the *EPA wastewater treatment manual – Treatment Systems for Single Houses 2000*, for the collection and treatment of domestic wastewater, including the separation and partial digestion of suspended matter, prior to discharge of the treated effluent.

The system should only be installed where the ground conditions, and the water table levels are determined, by a competent authority, to be suitable.

MANUFACTURE AND MARKETING:

The product is manufactured and marketed by:

Wm and Ml Kiely Ltd.,
Courtbrack,
Blarney,
Co Cork.
Tel: 021 438 5872
Fax: 021 438 1644

PART 1 CERTIFICATION

1.1 ASSESSMENT

In the opinion of the Irish Agrément Board (IAB), the Kiely Biokast P10R Wastewater Treatment System, is satisfactory for the purpose defined above, and can meet the requirements of the Building Regulations 1997 to 2002, as indicated in Section 1.2 of this Certificate.

1.2 BUILDING REGULATIONS 1997 – 2002

Requirements:

Part D - MATERIALS AND WORKMANSHIP

D3 - The Kiely Biokast P10R Wastewater Treatment System, as certified in this Irish Agrément Board Certificate, is manufactured from "proper materials" and is fit for its intended use (see Part 4 of this Certificate).

D1 - The Kiely Biokast P10R Wastewater Treatment System, used in accordance with this Irish Agrément Board Certificate, can meet the requirements for materials and workmanship.

PART H - DRAINAGE AND WASTE DISPOSAL

H1 Drainage systems:

The Kiely Biokast P10R Wastewater Treatment System is easily installed and incorporated into soil percolation systems to meet Building Regulation requirements.

H2 Septic tanks:

The Kiely Biokast P10R Wastewater Treatment System has been designed for use as a wastewater treatment system, for the collection and treatment of domestic wastewater, when installed in accordance with the recommendations of BS 6297: 1983: *Code of practice for design and installation of small sewage treatment works and cesspools* and the *EPA wastewater treatment manuals – Treatment Systems for Single Houses 2000.*

The quality of treated wastewater from the Kiely Biokast P10R Wastewater Treatment System exceeds that of the effluent from a septic tank and can meet the Building Regulation requirements.

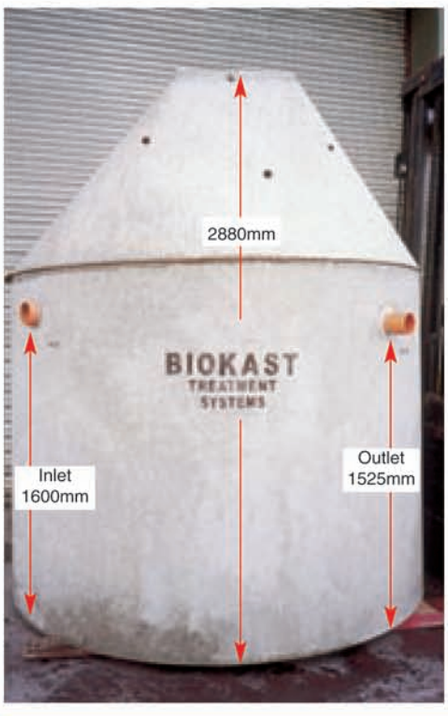
Information on the design, capacity, ventilation, safety and location requirements is given in this Irish Agrément Certificate (see sections 2, 3 and 4 of this certificate).

PART 2 TECHNICAL SPECIFICATION AND CONTROL DATA

2.1 DESCRIPTION

2.1.1 General

The Kiely Biokast P10R Wastewater Treatment System utilises the Biological Aerated Filter (BAF) process to treat domestic wastewater, from dwellings with a population equivalent of up to 10 persons.



Kiely Biokast P10R Wastewater Treatment System

The tank base and cover are manufactured to BS 8007 : 1987 *Code of practice for design of concrete structures for retaining aqueous liquids,* from Grade 40 N/mm^2 concrete to IS EN 206 –1: 2002 *Concrete - Part 1: Specification, performance, production and conformity.*

The submerged biological media and pipework are manufactured in uPVC.

An air diffuser, which is powered by an electrical pump, supplies oxygen to the biological media in the aeration zone. The pump, which is located in an integral cast housing in the concrete cover, operates continuously off a normal domestic power supply. The control unit is generally located in the dwelling house.

Inlet and outlet pipe connections are provided and are clearly labelled. Ventilation is provided through openings in the concrete cover.

The unit is accessed via three removable concrete inspection covers, located in the roof of the tank and designed to be flush with ground level. The lids are secured by a galvanised steel strap, which can be locked using an integrated tamper-proof key. The inspection covers are adequate for pedestrian and farm animal loading.

Discharge from the tank is by gravity. Provision can be made for pumped discharge, by incorporating an additional pump if required.

2.1.2 Treatment

Treatment is carried out in three phases as follows:

Zone 1 Domestic wastewater enters the primary settlement zone through the inlet pipe. Here heavy solids settle out onto the base of the chamber, where they remain until desludging. The effluent passes, by displacement, into the second chamber or biological aeration zone via gravity.

Zone 2 Supernatant liquor passes through the aeration chamber, where it is broken down by micro-organisms growing on the surface of the bio-filter media and the internal tank surface. An electrical air compressor supplies air to an air bubble diffuser, ensuring the liquor is continuously aerated and mixed.

Zone 3 The treated liquor then passes into the final clarifier, where it is generally discharged by gravity, to the percolation area. Settled sludge is continuously returned to the primary chamber by air lift. (This chamber can also house a submersible pump, enabling treated effluent to be discharged by pumping if required.)

2.2 MANUFACTURE

2.2.1 General

The tank, cover and lids are manufactured in steel fibre reinforced concrete to the dimensions given in Figure 1 and Table 1. The inlet and outlet pipe connections, cover, filter media, air diffuser and sludge return system are fitted before the unit is hydraulically tested. The air diffuser and sludge return system are tested to working pressure, before final assembly. The cover is sealed to the base using a proprietary sealant/mortar joint and the inspection lids are fitted.

Table 1. System details

Population served	10
Design flow rate	2 m^3/day
BOD load	0.6 kg/day
Retention time	72 hours
Sludge storage capacity	3 m^3
Desludging period (max): in accordance with certificate holder's instructions	
Desludging period (min)	12 months
Total System Capacity (including freeboard)	8500 litres
Operating capacity	6020 litres
Primary chamber	3090 litres
Secondary chamber	2450 litres
Final clarifier	480 litres
Weight (gross assembled)	6000 kg
Depth from base level to inlet invert level	1600 mm
Depth from base level to outlet invert level	1525 mm
Outside diameter (nominal)	2500 mm
Overall height (mm)	2880 mm
Wall thickness	60 mm
Submersible pump rating (optional)	300 W
Aeration pump rating	86 W

Ancillary Items:

Air diffuser
Air supply lines
Bio-filter media
In house control unit
Submersible pump (for raised percolation bed only)
Sealants
Stainless steel anchors
Stainless steel hose clips
110 nominal diameter uPVC connectors and pipework *to BS 4660: 2000 Thermoplastics ancillary fittings of nominal sizes 110 and 160 for below ground gravity drainage and sewage.*

All components, which are in contact with effluent, are manufactured from either concrete, stainless steel or uPVC.

2.2.2 QUALITY CONTROL

Quality control checks include: computerised batching records, non destructive testing of concrete, hydrostatic tests on finished unit, concrete cube testing and aggregate testing. The system allows for full traceability of installed units, and each unit is inspected and approved before delivery.

2.3 DELIVERY, STORAGE AND MARKING

The unit is delivered to site fully assembled for installation by the Certificate holder. It shall be lifted with certified webbing straps at the points recommended by the Certificate holder. Off loading shall be carefully supervised and lifting equipment shall be selected taking into account the unit weight, dimensions and the distance of lift required (see Table 1). All lifting equipment and procedures shall comply with the requirements of the Safety, Health and Welfare at Work Act 1989. The Certificate holder's instructions shall be followed to avoid damage to the tank during off-loading and installation.

Each unit bears a unique serial number, for traceability purposes, which is located on a plate on the inside of the tank cover. The plate also carries with the Certificate holder's details, model type and population equivalent capacity, such that all are clearly visible. Labels on the outside of the tank denote the inlet and outlet points of the unit.

The tank is supplied with full installation instructions and is labelled with the IAB identification Mark incorporating the number of this Certificate.

2.4 INSTALLATION PROCEDURE

2.4.1 General

Wm and Ml Kiely Ltd can offer a full design, site survey, installation and commissioning service. Alternatively, a competent person, eg an appropriately qualified and experienced engineer or surveyor, may conduct a site suitability assessment.

It is the Certificate holder's policy to deliver, off load and lift each unit into the excavation using specially selected lifting equipment.

Wm and Ml Kiely Ltd supplies, installs and commissions all systems before use.

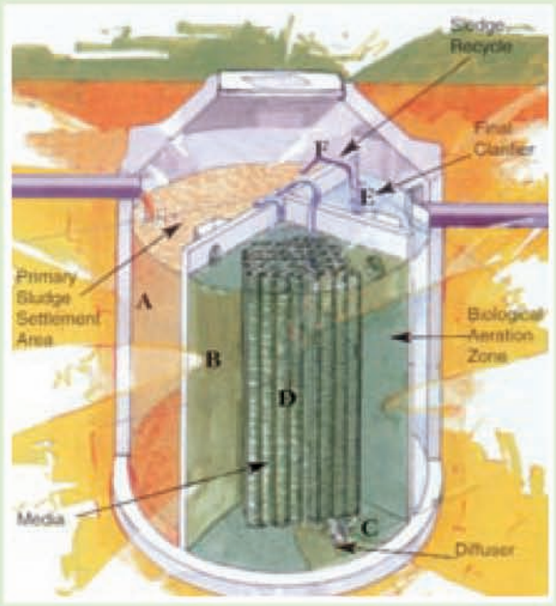


Fig. 1 Section through tank

2.4.2 Electrical Works

Electrical connections must be strictly in accordance with the Certificate holder's instructions, ET101: 2002 *National Rules for Electrical Installations (3rd Edition) incorporating Amendment No. 1 2001* and ET 207 : 2003 *Guide to the National Rules for Electrical Installations As Applicable To Domestic & Similar Installations*, published by the Electro-Technical Council of Ireland (ETCI). Electrical connections, from the mains supply board, must be carried out by a competent person, using materials suitable for the purpose.

Electrical cables must be protected from accidental damage eg by a suitable conduit. It is recommended that the control panel is clearly visible from a suitable location in the dwelling house.

2.4.3 Site Works

The excavation shall be of sufficient size to permit placement of the unit and back filling and to allow for timbering and sheeting as required to meet The Safety, Health and Welfare at Work Act, 1989. There should be sufficient area on site to permit excavation, dumping of excess soil, backfilling, handling and installation, without causing damage to the unit or the ancillary equipment.

It is essential to prevent damage due to superimposed loading from vehicles and site traffic. A suitable fence shall be erected around the unit to restrict loading. The distance between the fence and the unit shall be equal to or greater than the depth of excavation for the unit.

Care shall be exercised to prevent accidental damage arising from blows from tools or concentrated pressure on the tanks from levering etc.

2.4.4 Design

The potential suitability of a site for the installation of such a system shall be assessed using the methodology outlined in the *EPA wastewater treatment manual – Treatment Systems for Single Houses 2000.* The ground water protection responses set out in *'Groundwater Protection Responses for on-site Wastewater Systems for Single Houses'* should be used in the desk study assessment of the site, to give an early indication of the suitability of the site for such a system.

The system should only be installed where the ground conditions, and the water table levels are determined, by a competent authority, to be adequate to support the tank and to provide for disposal of the effluent in accordance with relevant regulations. The system should not be installed in unsuitable ground conditons.

Where poor ground conditions prevail, eg soft ground or shrinking clay, further advice must be sought from a competent person to establish if the ground is adequate to support the tank and prevent differential settlement. The bearing area of the tank is such that the bearing pressure is relatively low (40 kPA).

Good ground working practice must be followed, particularly with regard to the gradient on drainage pipe runs. The inlet pipe should have a gradient of between 1:40 and 1:70. The outfall pipe should have a final gradient of between 1:70 and 1:200.

Storm water run-off eg from roofs or paved areas shall be excluded from the system.

The system must not be installed in areas liable to localised flooding, unless adequate additional protection is provided in accordance with the Certificate holder's instructions.

Photo showing tank cover

Adequate provision shall be made for access, inspection and maintenance, in the drainage system upstream and downstream of the unit, through the provision of manholes, distribution chambers etc.

Adequate provision shall be made for ventilation, to ensure that noxious odours and dangerous gases can escape.

2.4.5 Health and Safety

Excavation, placing and backfilling shall be carried out strictly in accordance with the requirements of the Safety, Health and Welfare at Work Act 1989 and all other relevant legislative requirements.

2.4.6 Procedure

a) Equipment and materials

It is recommended that all plant and materials necessary for the installation should be on site before excavation commences.

b) Tank Installation – dry site

A dry site is defined as one where the local water table never rises above the base of the treatment unit.

The unit should be bedded on firm excavated ground. Care shall be taken to eliminate voids beneath the tank. All water and boulders shall be removed from the excavation before installation of the unit. When installed, the cover should be level in all directions.

The tank is lifted into position using slings and purpose made lifting equipment, which are attached to two lifting sockets cast into the rim of the tank. Care should be taken to prevent damage to external flanges or pipe work and to ensure correct orientation of the inlet/outlet pipe work.

The backfill shall be carefully consolidated around the unit, and all large cobbles, boulders removed, to ensure even transfer of load and prevent stress concentrations. The system does not require ballast when backfilling.

c) Additional requirements for wet sites:

A wet site is defined as one where the local water table can rise above the base of the treatment unit.

A 250 mm type hardcore sub-base is laid, compacted and levelled. The excavation must be kept dry by pumping excess water via a pipe embedded in the hardcore, using a site pump/sump hole/suction hose arrangement. Dewatering should be continued for as long as necessary.

The excavation is then lined with a continuous layer of 1200 gauge polyethylene sheet. The installation should then continue in accordance with the requirements for dry sites.

d) Drainage Connections

The tank is provided with 110mm PVC-U outlet pipe connections to BS4660. These should be connected, via a flexible connection to allow for differential movement, (300mm length of pipe with flexible joints), to the drainage system. Suitable adapters shall be used for connection to other types of pipe work.

e) Venting

Openings are provided in the inspection lids.

f) Ducting

A 100 mm uPVC duct should be laid from the marked connection point on the unit to the power supply.

g) Completion of backfilling

When connections to drainage pipe work are complete and ducting in place, continue backfilling, to ground level, using selected suitable backfill material.

2.5 LOCATION

The units should be sited so that adequate access is available for safe installation, subsequent maintenance and desludging of the unit. Desludging should be carried out by means of a desludging tanker, which requires access to within 30 m of the unit, without transgressing the minimum separation distance from the unit and the effluent percolation system given in Table 2.

Table 2

MINIMUM SEPARATION DISTANCES (m)		
	Unit	**Irrigation area**
Dwelling served	7	10[3]
Adjacent dwelling	7	10[3]
Wall	4.5[1]	3
Road	4.5[1]	4
Site boundary	4.5[1]	3
Potable water source	10	30 – 100[2]
Water course	10	10

1. The depth of excavation to accommodate the unit must be taken into account when determining this distance. The separation distance should be such that the excavation does not undermine adjacent buildings, roads or walls. This distance should generally be not less than 1.5 times the excavation depth.

2. The separation distance should be not less than 30 metres except in the case of very free draining soils or gravels, where a minimum distance of 40 metres should be maintained. The irrigation area should be down hill of any nearby well. Where this is not possible, a separation distance of at least 100 metres must apply.

3. These are minimum permissible distances. Each site should be assessed on its own merits by a 'Competent Person'. However, where the site permits, irrigation areas should be located at greater separation distances from the dwelling. Also where possible on sloping sites the irrigation area should be down slope from the dwelling.

2.6 TREATED WASTE WATER DISPOSAL

2.6.1 General

The unit produces a fully treated wastewater, (BOD < 20 mg/l; suspended solids < 30 mg/l), which is more easily absorbed into soil strata than septic tank effluent. There are two methods used for the disposal of treated wastewater.

Table 3. Guidance for sizing of percolation area (in linear metres of percolation pipe)

Population served	Required length of trench (m)			
	'T/P' values 21-50* Loading at 25 l/m^2 per day		'T/P' values 5-20* Loading at 50 l/m^2 per day	
	Trench width		Trench width	
	450 mm	900 mm	450 mm	900 mm
3	48	24	24	12
4	64	32	32	16
5	80	40	40	26
6	96	48	48	24
7	112	56	56	28
8	128	64	64	32
9	144	72	72	36
10	160	80	80	40

*For percolation values 'T/P' <5 or 'T/P' >50, consult the Certificate holder for details of the percolation area required

a) Sub-surface percolation, or
b) Raised percolation bed

2.6.2 Site Assessment

The site suitability assessment and choice of disposal method should be undertaken by a "competent person" as defined by the appropriate Authority.

The assessment shall include a detailed visual inspection of the site, inspection of the trial hole for soil profile, depth of water table, percolation value, (eg. Standard 'T/P' test) together with local knowledge of the area. From this information it should be possible to ascertain the size and type of percolation area required for a particular site. Reference should also be made to the publication - *Ground Water Protection Responses for On-Site Waste Water Systems for Single Houses* published by EPA/DoELG/GSI (2001).

The results of this assessment will (a) determine if the site is suitable and (b) enable the selection of the most suitable method for disposing of the final treated effluent, having due regard to soil type and percolation characteristics, water table level and other factors. The disposal method will be either to sub- surface percolation or raised percolation bed.

Guidance for sizing of a percolation area is set out in Table 3. Treated wastewater is discharged from the unit by gravity, or by pumping if a raised bed facility is required.

2.6.3 Sub-Surface percolation

The treated wastewater discharges, by pump or by gravity, into a network of perforated pipes laid in stone filled trenches. The objective is to spread the effluent as evenly as possible over the required land area, thus minimising the possibility of the ground becoming over-saturated.

The discharge from the unit has minimal suspended solids and is therefore, much more readily absorbed than septic tank effluent. The extent of the irrigation system may be determined by the site assessment, taking into account the soil type and percolation test results, as well as the population to be served; (see Table 3). These values are given for guidance only and should be discussed in detail with the competent person who conducted the site suitability assessment.

Trenches are generally 450 to1000mm wide. The base of the trench should be at least 1000 to 1200 mm above the water table or fissured bedrock. Typically, perforated pipe (110 mm OD for gravity discharge; 32 mm OD for pumped discharge) is laid on a 250mm bed of clean 20/30 mm washed stone or gravel. The percolation trench is backfilled to give 500 mm overall depth of washed stone or gravel. The trench is then covered with a geo-textile layer, before final backfilling to ground level with 300 mm topsoil.

Layout of the trenches will be determined by site topography; the overall fall of the pipes should be not more than 1 in 200.

2.6.4 Raised percolation bed – additional requirements

Where raised percolation beds are required, e g. thin top soils and/or rock or water table close to the surface, the capacity of pump may need to be increased in some instances.

The percolation trench construction is generally similar to that specified for sub-surface percolation. The base of the raised bed should be at least 1000 to 1200 mm above the water table or fissured bedrock. Again, the perforated pipe is laid on a bed of clean washed stone or gravel. The trench is backfilled to give an overall depth of 500 mm. The trench is then covered with a geo-textile layer, before final backfilling to ground level with 150 mm topsoil.

2.6.5 Provision for inspection of percolation area

For monitoring, sampling and maintenance purposes, access to the effluent percolation systems can be provided at the end of each irrigation or filter trench via a suitably constructed inspection chamber.

2.6.6 Further treatment

In some instances (e.g. proximity to a drinking water source), the effluent may require "polishing" before discharge, to reduce coliform bacteria levels. A commonly used method is to pass the discharge through a sand filter. In this situation, the discharge is pumped to the sand filter using an effluent pump set capable of discharging in 180 litre doses. Polishing filters can be partly or wholly above ground and the filter may be covered or open. A typical filter serving a 4-person household would have a plan area of 8 to 20 m^2, depending on design and type of sand used.

Where part of the polishing system is exposed above ground, care must be taken to ensure there is no risk of casual or accidental access to the area. Polishing filter design is available on request from the Certificate holder, as an additional item.

2.7 Alarm

A float switch incorporated into the electrical system allows for indication of pump failure. It is recommended that the alarm panel should be clearly visible so that if a fault does arise it can be identified and rectified as soon as possible.

2.8 Commissioning

Commissioning shall be carried out by Wm and Ml Kiely Ltd, after installation is complete and all services are connected.

2.9 Servicing and maintenance

Wm and Ml Kiely Ltd offers service and maintenance contracts.

2.10 Enclosure

The area around the tank and percolation area should be fenced off to protect it from unwanted traffic.

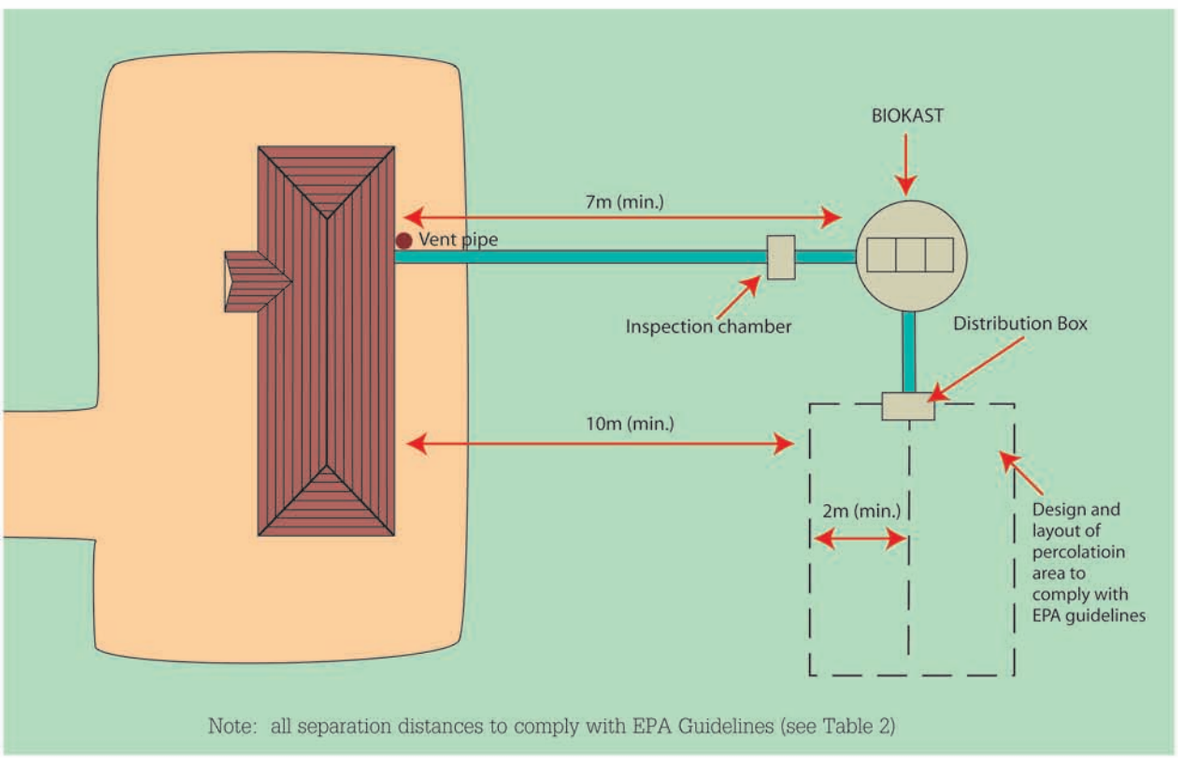


Fig. 2 Schematic layout for wastewater treatment system

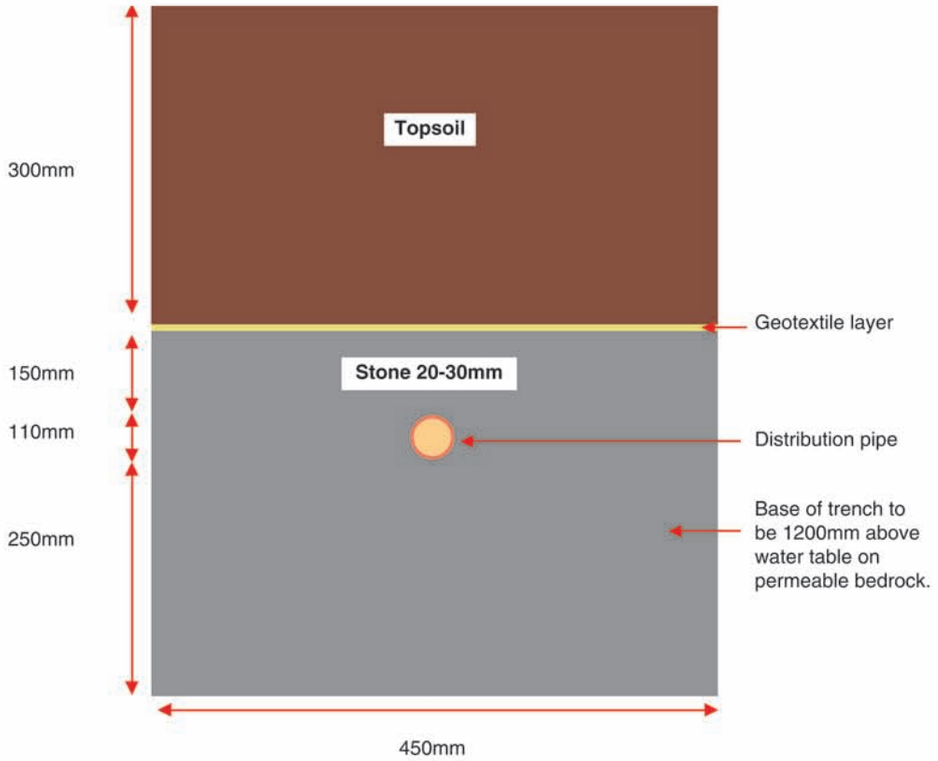


Fig. 3 Typical cross-section through a percolation trench

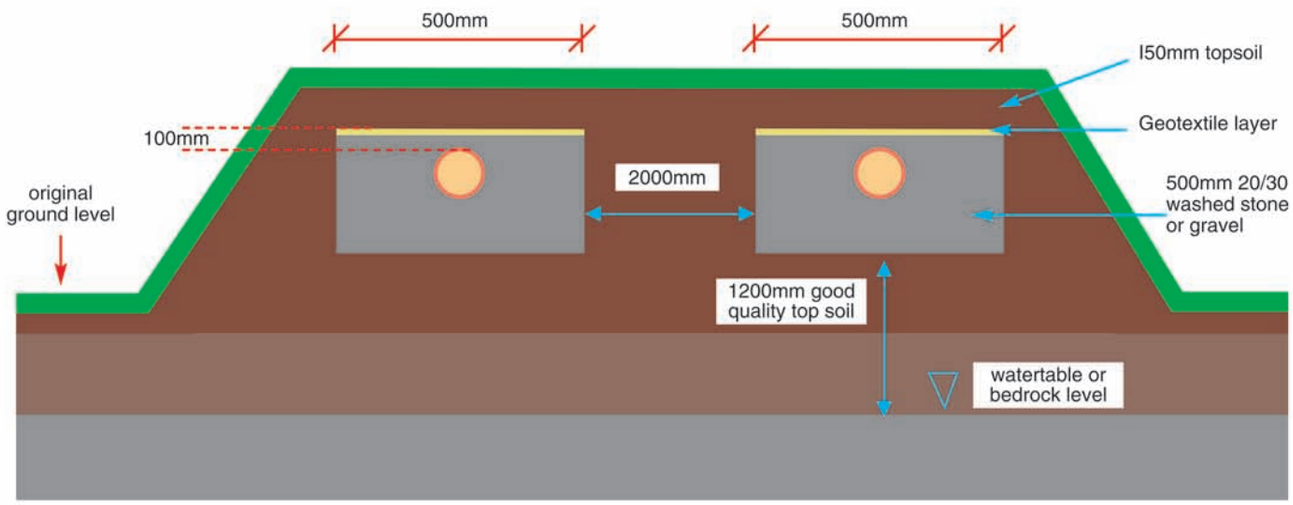


Fig. 4 Typical cross-section through a raised percolation trench

PART 3 DESIGN DATA

3.1 General

The Kiely Biokast P10R Wastewater Treatment System is suitable for the collection and treatment of domestic sewage and should be installed in accordance with the Certificate holder's instructions, the requirements of BS 6297: 1983 and *EPA wastewater treatment manual – Treatment Systems for Single Houses 2000*. The following conditions apply:

- Design loadings shall be based on the maximum population served
- Detailed site assessment records and installation locations are maintained by the Certificate holder for inspection/audit.
- The unit must be sited/installed in accordance with the relevant Building Regulations
- Ground water and flood levels must always be below outlet level.
- The effluent must be discharged to a suitable sub-soil irrigation system or raised percolation bed. The irrigation system must be correctly designed in accordance with the detailed site assessment report for the 'particular site'.
- All wastewater treatment systems shall be indelibly marked with the model type and population equivalent in such a way that when installation is complete the details are clearly visible for record purposes.

The effluent resulting from the sewage treated by the unit will normally be within Royal Commission Standard (ie suspended solids content less than 30 mg per litre and Biochemical Oxygen Demand (BOD) less than 20 mg per litre) provided that the hydraulic and BOD loadings are within the limits recommended by the Certificate holder for the unit installed (200 litres per head per day and 60 grammes per head per day, respectively). Under certain unusual conditions, the resulting effluent may not be within Royal Commission Standards. This is normal for any biological sewage treatment process, and may be caused by unusual hydraulic or BOD loading, weather conditions, contamination by excessive quantities of (a) offal and grease, (b) household disinfectants, (c) detergents or poisoning of microbiological flora or fauna by other chemicals.

3.2 DESIGN BASIS

The relevant dimensions of system certified in this Irish Agrément Certificate is indicated in Table 1.

3.3 WASTE WATER QUALITY

Table 4: Treated waste water characteristics

	Standard
pH	6-9
Biochemical Oxygen Demand (B.O.D.)	< 20 mg/l
Suspended solids (S.S.)	< 30 mg/l
Ammonia	< 10 mg/l

The specification and power requirements of the system are listed in Table 1.

The unit can be used to provide temporary sewage treatment facilities. A short period of acclimatisation must be allowed after installation and commissioning of the unit before a full degree of treatment can be expected. This period is generally a few weeks and is normal for any biological treatment plant.

PART 4 TECHNICAL INVESTIGATIONS

4.1 ENVIRONMENTAL ASSESSMENT

The treated wastewater from a number of working installations has been monitored. The test results indicate that values stated for the parameters listed in Table 4 are consistently achievable over a range of operating conditions.

4.2 STRENGTH

The Certificate holder's design has been assessed as satisfactory. The unit has adequate resistance to resist damage due to handling or installation. The cover and frame assembly is suitable for pedestrian traffic and farm animals.

4.3 WATERTIGHTNESS

The system, when correctly installed, has been assessed as fully capable of preventing seepage either into or from the surrounding soil. The pipe joints, when correctly made, will be watertight.

4.4 DURABILITY

The system, when installed, operated and maintained in accordance with this Certificate, will have a design life in excess of 50 years in normal soil conditions. The mechanical and electrical components may require replacement within that time.

4.5 CLEANING AND MAINTENANCE

Desludging, cleaning and maintenance should be in accordance with the Operation and Maintenance Instructions supplied by the Certificate holder.

The unit can be accessed through the lids provided. Both the compressor and the associated pipe work are readily accessed for maintenance and cleaning.

The primary settlement chamber shall be desludged by suction tanker in accordance with the Certificate holder's instructions. Care must be taken to avoid damage by the hose nozzle.

Frequency of inspection

It is recommended that an inspection of the system be carried out regularly (typically every six months but at least once a year).

4.6 SAFETY

The access lids are securely fixed and lockable, to prevent un-authorised access. The access lids shall not be left off an unattended tank.

Sewage treatment plants are potentially dangerous, particularly when being desludged. Desludging shall never be carried out alone. If it is necessary to enter the unit, adequate safety precautions shall be made to ensure the safety of personnel involved. Naked lights, which can cause explosions, shall not be used in the vicinity of the tanks.

The unit should be positioned, or marked, or protected, to prevent superimposed loading or accidental impact by vehicles.

4.7 TESTS AND ASSESSMENTS WERE CARRIED OUT TO DETERMINE

- dimensional checks
- concrete specification
- adequacy of ventilation provision
- tank capacity
- structural integrity, resistance to ground pressure and imposed loadings
- resistance to hydrostatic pressure
- strength and security of covers
- Lifting and handling procedures

4.8 OTHER INVESTIGATIONS

(i) The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

(ii) An examination of the results of sample analysis of effluent from system, to measure suspended solids content and Biochemical Oxygen Demand, was undertaken.

(iii) An assessment of the tank was made in relation to degradation of mechanical properties owing to exposure to sewage, ground water, dissolved salts and dilute acids or alkalis; long-term loading conditions.

(iv) Site visits were conducted to assess the practicability of installation.

(v) Bought-in components were assessed for suitability for use.

No failures of the product in use have been reported to the IAB.

PART 5 CONDITIONS

5.1 CONDITIONS OF CERTIFICATION

The National Standards Authority of Ireland ("NSAI") following consultation with the Irish Agrément Board ("IAB") has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this certificate and in accordance with the manufacturer's instructions and usual trade practice. This certificate shall remain valid for five years so long as:

(a) the specification of the product is unchanged;

(b) the Building Regulations, 1997 to 2002 and any other regulation or standard applicable to the product/process, its use or installation remain unchanged;

(c) the product continues to be assessed for the quality of its manufacture and marking by NSAI;

(d) no new information becomes available, which in the opinion of the NSAI would preclude the granting of the certificate;

(e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate;

(f) the registration and/or surveillance fees due to IAB are paid.

5.2 The IAB mark and certification number may only be used on or in relation to products/processes in respect of which a valid certificate exists. If the certificate becomes invalid, the certificate holder must not use the IAB mark and certification number and must remove them from products already marked.

5.3 In granting this certificate, the NSAI makes no representation as to:

(a) the presence or absence of patent rights subsisting in the product/process; or

(b) the legal right of the certificate holder to market, install or maintain the product/process; or

(c) whether individual products have been manufactured or installed by the certificate holder in accordance with the descriptions and specifications set out in this certificate.

5.4 This certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this certificate relating to the safe use of the certified product or process are preconditions to the validity of the certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act, 1989 or of any other current or future statute or current or future common law duty of care owed by the manufacturer or by the certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage, including personal injury, arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this certificate to any Act of the Oireachtas, regulation made thereunder, statutory instrument, code of practice, national standards, manufacturer's instructions or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this certification.

THE IRISH AGRÉMENT BOARD

This Certificate No. 04/0203 is accordingly granted by NSAI to Wm and Ml Kiely Ltd on behalf of The Irish Agrément Board.

Date of Issue: May 2004

Signed: _____

Chief Executive, NSAI

Readers may check that the status of this Certificate has not changed by contacting the

Irish Agrément Board,
NSAI, Glasnevin, Dublin 9. Ireland.

Telephone: (01) 8073800.
Telefax: (01) 8073842
www.nsai.ie

IRISH AGRÉMENT BOARD

BUILDING PRODUCT CERTIFICATION

Irish Agrément Board,
NSAI,
Glasnevin,
Dublin 9.
Ireland.
Telephone: (01) 807 3800.
Telex: 32501.
Telefax: (01) 807 3838.