



# **FESTER GARDEN**

Set of drains and geomembranes for naturalization systems or roof green areas. It complies with the standard NADF-013-RNAT-2007

Plastic and geomembrane element system which, together, are an alternative to attend the necessities of placing green areas on roofs, making easier the outlet of water drains and downpipes.

## USES

- For green roofs and to seed topsoil.
- As drain and protection system for horizontal, vertical and sloped surfaces of concrete, wood, fiberglass, prefabricated concrete, etcetera, used in planters, gardeners, green roofs or lands where the risk of growth of roots that may perforate the waterproof systems and/or affect the elements where the roots get attached to or grow.

#### ADVANTAGES

- Easy installation and excellent durability.
- Avoids direct contact between the substrate (soil) and the waterproofing systems, making its durability significantly longer.
- Filters water, preventing the loss of fine substrate aggregates, making clean water go towards rain drains.
- Reinforces significantly the waterproofing system, avoiding affectations or damages caused by roots.
- When is completed the system with Fester Mip Garden for waterproofing, it complies against the root resistance required in CEN / TS 14416, tests of bituminous membrane made in the laboratory Lanxess in Germany.
- When completed the system with Fester Mip Garden for waterproofing, it complies with the standard NADF-013-RNAT-2007 issued by Mexico City.
- It complies with the yield to obtain the government supports and incentives to install Roof Garden Systems.
- Ideal to generate green spaces for recreation and amusement on the roofs of government, businesses and housing buildings.



- It contributes to make more comfortable interiors and helps to earn points for LEED certification.
- It avoids warming on the roof and contributes to reduce electrical power consumption due to air conditioners and fans.
- It benefits water retention, helping to reduce its consumption in green areas maintenance (ask for this option).
- This system can be installed in any geographic zone (consult for the corresponding vegetation type).
- It resists underground conditions and/or in permanent contact with water and moisture.

**Note:** In order to ensure the proper yield of the Fester Garden System, it is necessary to waterproof the surface previously, and you must follow all instructions written below.



# WATERPROOFING



Fester Garden offers two systems directly related to the type and size of garden that is going to contain.

### **1. INTENSIVE FESTER GARDEN SYSTEM**

- System for abundant vegetation
- Reinforced system
- 20-years warranty



#### **Components** (application order):

#### 1. Fester MIP Garden Waterproofing system (see Technical Data Sheet) Fester MIP Garden

#### ......

- Torch on Membrane (TOM)
- With polystyrene reinforcement and ant-root protection

#### 2. Draining Fester





High density polyethylene laminate that is result of a semi-rigid plastic derived from virgin and recycled products. The laminate is extruded and molded, so holes of 7 mm depth approximately are shaped, forming for one side a flat surface and for the another a sharped surface for making air spaces between the waterproofing and the drain system.

#### 3. Polyethylene Fester Polyethylene Fester



## 2. EXTENSIVE FESTER GARDEN SYSTEM

- System for reduced vegetation
- 10-years warranty



Virgin polyethylene film compounded of high-density resins and UVS additives, 600-gauge, penta-layer and black color. Recommended to reinforce the Fester Garden system when is directly collocated on the waterproof system.

#### 4. Filter Fester

#### **Filter Fester**



High density polyethylene laminate, that is result of a semi-rigid plastic derived from virgin and recycled products. The laminate is extruded and molded, so holes of 7 mm depth approximately are shaped, forming for one side a flat surface and for the another a sharped surface for making air spaces between the waterproofing and the drain system. The laminate has an attached geomembrane working as filter which allows the water flow and retain the substrate fine elements.



#### **APPLICATION INSTRUCTIONS**

In order to apply this system, it is necessary to have previously applied the waterproofing system. For more information about the application, see Fester Mip Garden Technical Data Sheet.



To apply the Fester Garden system, it is

recommended to follow the order and position of the elements as showed in the previous page.

Below you are going to find the instructions and recommendations for each step, taking a roof intensive system as basis.

#### 1. Draining Fester Application

After doing a flooding test on the roofs with the waterproofing system, making sure there are no filtrations, unroll Draining Fester and place it with the "vessels" upwards, completely covering the surface at the level of the walls or parapets. If the surface is uneven, you must make the necessary cuts. The overlaps at any



direction must measure 10 cm as minimum, assembling one laminate on top of the other so the surface remains flat. Note: <u>At</u> this point, it is recommended to take photographic evidence and register it in the work log signed by the involved parties (work executer and supervisor or work resident).

#### 2. Fester Polyethylene Application

Cover all the surface taking care of not damaging or perforating the product; the collocation must be done according to the

surface slope, starting at the lower part, in a manner that the overlaps improve water drain. The overlaps must be 25 cm minimum. Consider that, at this step, the purpose is to place the polyethylene system all over the surface, at the level of walls and parapets, leaving it 5 cm approximately above the level



considered for the substrate (soil). When placing the substrate, the polyethylene must remain trapped against the walls and parapets.

#### 3. Filter Fester Application

Consider that, in this case, the laminate has an attached geotextile membrane, which must be installed on top, so it will work as basis and filter when you put the substrate (soil) on it.



Spread out the roll all over the surface, folding up in the edges on the walls or parapets to the higher height considered for the substrate or soil. In this step, the plastic laminate overlaps, whenever they are necessary, must measure at least 10 cm, assembling it appropriately for keeping a flat surface. It is important to indicate that the roll will be overlapped, so you must unstick the geo-membrane in all its edge 20 cm inwards, in order to be overlapped, firstly, with the plastic membrane and, secondly, with the geo-membrane.

**Notes:** Remember that, if you decide to use an extensive system, Filter Fester will work as drain system and filter.

Finally, consider that the application of geo-membrane in the vertical surfaces of walls and parapets, on the polyethylene previously placed and overlapping it in square way on the horizontal surface. For this step, the geo-membrane can be obtained by removing it from Filter Fester, and the fixing can be done while the one used for the polyethylene.

While the material sheets are being applied, and if necessary, place on it pebbles or any other counterweight to avoid air currents lift them and make difficult their installation.

#### 4. Treatment of downpipes or rain drains

Identify the zones where there are sewers, drains and downpipes and make the corresponding piercings to the Fester Garden system, respecting the same tube diameter. Cut a square of geomembrane of 1.5 m, on both sides, place on the sheet pebble ball



(river stone), gravel or tezontle with a 1" maximum size and wrap it fastening to form a kind of bag which must be placed on the downpipe point, reaching a perimeter of at least 30 cm additional to the downpipe diameter, with a 15 cm minimum height.



Reinforce enough so there is no risk for the stones go through the downpipe. The provided dimensions and the size of the stone may vary according to the substrate thickness.

To see other options related to this point, consult standard NADF-013-RNAT-2007 or the technical department.

#### 5. Collocation of substrate and soiltop

Collocate the substrate (soil) at the planned height according to the considered soiltop (consult standard NADF-013-RNAT-2007). To benefit the drain and produce circulation areas for maintaining the plants, it is recommended to build halls made of tezontle and a higher bed with pebbles, which will benefit the appearance. In this case, it is necessary to



consider die-cut (perforated) aluminum or galvanized, corrugated sheets, which will separate substrate and tezontle. Remember a geomembrane must be placed between substrate and sheet. (Consult standard NADF-013-RNAT-2007).

**Note:** The substrate must be installed as soon as possible to avoid material damages and a sunlight long exposure. It is recommended it does not take longer than one week.

#### RECOMMENDATIONS

Make sure that the waterproofing system for flooding test is done in 24 hours, this provides assurance in order to begin the plastic drain installation.

During the collocation of the system, it is recommended to implement the supervision work, in order to avoid any damage or piercing of the previously placed waterproofing system, as well as to suitably complete the system.

### PRECAUTIONS

It is very important that the roof where the Fester Garden system is planned to be placed is estimated and reviewed by a Civil Engineer in order to guarantee that it does not have any difficulties supporting the load of the system considered to be installed there. The load must be calculated considering the maximum weight of the system with the substrate (soil) saturated with water included.

All safety measures related to work at heights must be taken into account (as ladder in optimal conditions, fastenings, life cords, harness, etc).

For safety measures with the products, see the corresponding Material Safety Data Sheet.

#### PACKAGING

PRESENTATION	<ul> <li>Draining Fester: Rolls of 20 m length and 2.44 m width (48.8m<sup>2</sup>)</li> <li>Polyethylene Fester Rolls of 2 m width. Film with intermediate folds which extended reaches 6 m width and 33 m length (198 m<sup>2</sup>).</li> <li>Filter Fester Filter Fester Rolls of 20 m length and 2.44 m width (48.8m<sup>2</sup>).</li> </ul>
STORAGE	The laminates shall be stored rolled, preferably in vertical position and under roof, avoiding rain and sunlight exposure.
EXPIRATION	24 months
MAXIMUM STOWAGE	One stowage

**Note:** The referred coverings, do not consider reductions due to cuts and/or overlaps.

## **ECOLOGICAL FEATURES**

It complies with the standard NADF-013-RNAT-2007 issued by Mexico City.

It benefits the system for rain water usage.

The system avoids roof warming and, consequently, the hot island effect.

It increases green areas in cities contributing to cool and clean air through the photosynthesis process carried out by the plants.

It benefits to plastics recoveries, since some elements comes from recycled material.

**FESTER GARDEN** 

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## **PHYSICAL PROPERTIES**

TEST	STANDARD	SPECIFICATIONS	TYPICAL VALUES	
			FILTER FESTER	DRAINING FESTER
Chemical composition		Information	HDPE / Polyester*	HDPE
Color	Information		Black / White*	Black
Weight [gr/m²]	EN 1849-2	EN 1849-2 475 - 525 / 95 - 105*		500
Thickness [mm]	0.495 - 0.605 / 0.76 - 0.935*		0.55 / 0.85*	0.55
Compressive strength [kN/m <sup>2</sup> ]		170 - 230	200	200
Longitudinal tensile strength [kN/m]		7.2 – 10.8	9	
Transversal tensile strength [kN/m]	EN 10319	8.1-9.9	9	
Longitudinal elongation strength [%]		32 - 48	40	
Transversal elongation strength [%]		36 - 44	40	
Longitudinal tensile strength [N / 5 cm]		200 - 300		250
Transversal tensile strength [N/ 5 cm]	EN 12311-2	225 - 275		250
Longitudinal elongation strength [%]		32 - 48		40
Transversal elongation strength [%]		36 - 44		40
Water immersion (60kPa, 24h)	EN 1928 Must comply		Complies	Complies
Drainage capacity (100kPa, RR, i=0,1) [l/ms]	EN 12958	0.72 - 1.08	0.9	NA
Drainage capacity (100kPa, RR, i=1) [l/ms]		2.24 - 3.36	2.8	NA
Work temperature (°C)		From 30 to 80	Complies	Complies
Fire reaction (class)	EN 13501-1	F	Complies	Complies

Properties of the attached geotextile membrane (individually)\*



PHYSICAL PROPERTIES			
TEST	STANDARD	SPECIFICATIONS	TYPICAL VALUE
Product 600-gauge, black, polyethylene film			Polyethylene Fester
Chemical composition			Virgin PE
Appearance			Bright black, without clots
Roll weight 198 m <sup>2</sup> [kg]		27.0-33.0	30.0
Weight /m² [grams]		135.0 - 165.0	150
Gauge, thickness (micron)		60 minimum / 150 minimum	65 / 160.0
T elongation [%]		Minimum 780	870
L elongation [%]	E - 882	Minimum 585	650
T tensile strength [kg/cm <sup>2</sup> ]		Minimum 5.0	5.65
L tensile strength [kg/cm <sup>2</sup> ]		Minimum 5.2	5.75
T tear resistance [kg/mm]	D - 1922	Minimum 1.0	1.22
L tear resistance [kg/mm]		Minimum 1.0	1.20

The instructions we provide in this Technical Sheet are based on our wide experience. However, as the methods and specific conditions under which this product will be applied are beyond our control, it is recommended that users perform previous tests, according to their needs. In case of doubts, please, contact the Fester's Technical Department.



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Customer Service: 01800-FESTER7 web.fester@henkel.com www.fester.com.mx The previous information, particularly the recommendations to handle and use our products, is based on our professional knowledge and experience. Since materials and conditions may vary in each application and thus are beyond our sphere of influence, we recommend performing enough tests to confirm the suitability of our products for intended application method and use. Not geal liability may be accepted based on this data sheet contents or verbal advice provided, unless there is evidence of deceit or serious negligence on our part. This technical data sheet supersedes any previous editions for this product and is complemented by the data in the relevant safety sheet. We recommended reviewing the safety sheet before applying this product.