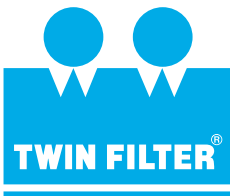


We care,



we filter



OVERVIEW

OILFIELD FILTER CONSUMABLES

Twin Filter designs and manufactures a full range of consumables especially for oilfield filtration applications. The filter consumables are used in a wide range of applications from filtration of completion fluids to mud pit clean-up.

Twin Filter delivers top quality filter consumables from highly tested and proven materials. Our scope of supply will handle most filtration requirements including high pressure, high temperature and aggressive chemical applications.

Our filter cartridges guarantee clean fluids necessary for maximum reservoir protection and environment friendly operations.

OUR RANGE

- Absolute rated pleated filter cartridges (standard, high flow large diameter, high pressure)
- Nominal rated filter cartridges (wound and spunbonded)
- Filter bags (felt and monofilament)
- Media – DE (Diatomaceous Earth – filter aid)
- Oil absorption cartridges and media

OUR BENEFITS

- Especially designed for oilfield applications
- High performance
- Worldwide stocking
- Technical and on-site support for consumables and equipment
- Retro-fit all competitors
- Economical

APPLICATIONS

Our filter consumables are used for;

- Well completion fluids
- Gravel pack fluids
- Work-over fluids
- Brines
- Acids
- Stimulation fluids
- Seawater
- Hydrocarbons (Free, Soluble and Emulsified)
- Pre-filtration RO
- Lube oil
- Fuel oil
- Water injection (water flooding)
- Diesel
- Waste water
- Glycol
- Amines
- Produced water



ABSOLUTE PLEATED FILTER CARTRIDGE

Our pleated standard glass fiber cartridge has become an industry standard. The Beta 5000 rated filter media gives optimal efficiency of solids removal. High flow rate, high dirt holding capacity and low pressure drop create optimal system operation.

The TH cartridges assure the removal of particles in the desired size range necessary to protect the formation. The pleated absolute cartridges are manufactured in different diameters. The standard 64 mm, and the 174 mm high flow Magnum cartridge. We also manufacture other diameters and lengths to suit specific customer requirements.

Brand new methods of fabrication of these cartridges improve and extend the possibilities for its use. Now the fully thermal welded construction ensures safe usage in filtration with high temperature fluids, acids, diesel, oily water and solvents. Furthermore the outer-guard has been renewed strengthening the cartridge and increasing its resilience.

TECHNICAL DATA

Micron rating	0.5 – 20 micron
Beta ratio	5000 (99.98% removal efficiency)
Filter media	Glass fiber (between polyester support/drain layers) (other media's on request)
Length	10, 20, 29 ¼, 29 1/2, 30, 40 inch
Diameter	2 ½, 2 ¾ and 6 5/8 inch (Magnum)
Connections	Plug in type "222" (type 226, DOE)
Maximum working temperature	80° C (176 F)
Maximum differential pressure	5.5 bar @ 25°C (80 psi @ 77F)
Change out dP	2.5 bar (37 psi)
Construction	Fully thermal welded

For more technical details see our data sheet.



NOMINAL RATED FILTER CARTRIDGE

The nominal rated filter cartridges of Twin Filter are true depth filters. These cartridges are available in different types: wound and spun bonded. Our wound cartridges are manufactured with a choice of media, from the most common polypropylene to glass fibre for high temperature applications. The spunbonded cartridges are thermally bonded micro fibres and contains no wetting agents, solvents, antistatic agents or binders. The nominal rated cartridges are rated from 0.5 to 150 micron.

TECHNICAL DATA

Micron rating	0.5 – 100 micron
Rating	Nominal
Filter media	Polypropylene (wound and spunbonded), Glass fiber, Nylon, Cotton
Length	10, 20, 29 ¼, 29 1/2, 30, 40 inch
Diameter	2 ½, 2 ¾
Connections	Plug in type "222" (type 226, DOE)
Maximum working temperature	80 °C (176 °F)
Maximum differential pressure	40 psi (2.5 bar) @ 50 °C (122°F)

For more technical details see our data sheet.



FILTER BAGS

Our filter bags are mainly used for pre-filtration of differential fluids. Our standard PP bags are suitable for almost all fluids. The flow of contaminated liquid is from the inside to the outside of the bag. Filtration occurs on the inner face of the bag by impingement, inertial impact and diffusion. Filtration in bag filters is predominantly 'surface filtration' with a partial degree of 'depth filtration' with felt media. Thus all contaminants are collected in the bag, simplifying disposal of the bag and contaminants on change-out and allowing incineration of the bag and contents if required, to suit environmental concerns.



TECHNICAL DATA

Micron rating	1 – 150 micron
Rating	Nominal
Filter media	Polypropylene, Polyester, Glass fiber, Nylon, Nomex
Size	2
Maximum working temperature	PP 80 °C (176 °F) – Nomex 220 °C (428°F)
Maximum differential pressure	40 psi (2.5 bar) @ 50° C (122° F)

For more technical details see our data sheet.



OIL ABSORPTION CARTRIDGES AND ABSORPTION MEDIA

Many oilfield applications require zero discharge. Therefore a quick and efficient removal of hydrocarbons from water or brines is required. The Oilclog and Oilblock cartridge/media which fit into the standard filter vessels remove 99.9% of all free, emulsified, dissolved hydrocarbons and heavy metals from water in one single pass. Our unique media absorbs at high rates and can be applied in different forms.

For more technical details see our data sheet.

FILTERAID - DIATOMACEOUS EARTH

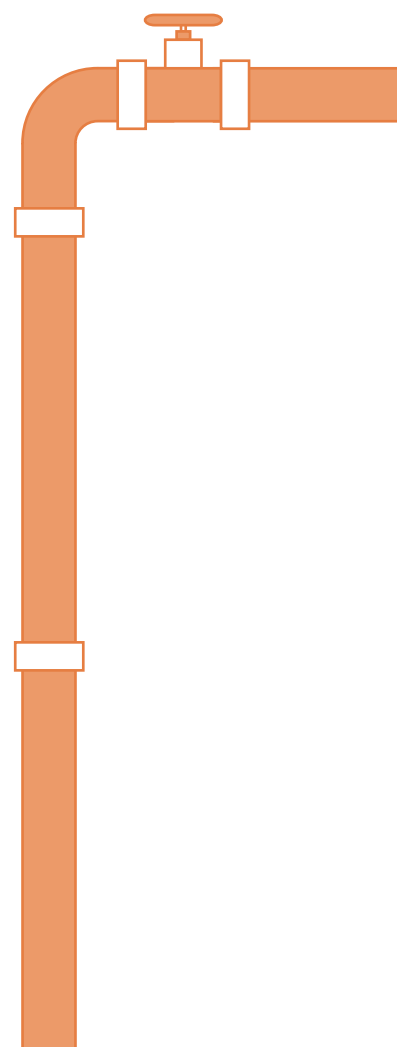
Twin Filter supplies filter aid to use with the VPL (vertical pressure leaf) or filter press. Our DE material will give the best filter performance on completion fluids filtration, gravel pack fluids, work over and seawater.

The media when used in combination with our vertical pressure leaf or filter press will show a NTU of <5 and removes particles between 1-4 micron.

Benefits:

- High Dirt loading capacity
- Low NTU
- High flow rates
- Long filtration batches

For more technical details see our data sheet.



FILTRATION GLOSSARY

Absolute micron rating

The largest hard spherical particle that will pass through a filter under specified test conditions.

Beta ratio

Efficiency measurement of any filter expressed by the number of particles of a given size upstream of the filter, divided by the number of particles of that size downstream of the filter.

Depth Filtration

Filtration of a fluid by passing it through a deep filter material, providing a tortuous path with many points for impingement of particles to occur. Traditionally used in 'Packed Tower' type filters.

MICRON

A unit of length, 1/1000 of one millimeter (1/24,000 of an inch) used as a measurement of the largest diameter of a particle; 74 microns are equal to a 200 mesh opening.

Nominal filter rating

An arbitrary rating assigned by the manufacturer that is based upon weight percent removal and not particle size.

Surface Filtration

Removal of particles on the outside surface of a filter material.

COMPARISON BETWEEN DIFFERENT FILTER CONSUMABLES

The following table will show the most suitable consumable for each application.

	A	B	C	D	E	F	G	H	I
Polishing completion fluids	•	•							
Filtration of gravel pack fluid	•	•					•		
Diesel	•			•	•	•			
Pre-filtration completion fluids			•	•	• ²	•			
Stimulation fluids	•	•	•	•	•	•	•		
Gels	• ¹	• ¹		•	•				
Seawater				•	•		•		
Oily water pre-filtration				•	•	•		•	•
Waterflood (water injection)	•	•	•		•				
Polish filtration, quick change out		•							
Oily waste water				•	•	•		•	•
Produced water polishing									•

¹ in combination with our polymer shearing device

² Small batches

A Absolute rated pleated filter cartridge

B Magnum pleated filter cartridge

C High pressure pleated filter cartridge

D Nominal wound filter cartridge

E Nominal spunbonded filter cartridge

F Filter bag nominal rated

G DE-media (filter aid)

H Oilblock

I Oilclog

ABOUT THE OILFIELD DIVISION

Twin Filter Oilfield Division is part of Twin Filter BV. Twin Filter BV is an independent, 100% Dutch company founded in 1985. The Oilfield Division is active all over the world. We design and manufacture filtration solutions for the oilfield and petrochemical industries.

Our manufacturing facilities for equipment and consumables are strategically based in The Netherlands, close to Schiphol Airport and the Port of Rotterdam. Our engineers, with field experience, are constantly improving and designing new filtration solutions. Twin Filter is ISO 9001 certified.

The Oilfield Division is known for its problem solving. They provide filtration solutions and services for:

- Completion / Gravel pack fluids
- Workover fluids
- Water injection (water flood operations)
- Oily water clean-up
- Wastewater treatment
- Chemical injection
- Pipeline flushing
- Produced water treatment
- (Sea) water intake filtration

WHY FILTRATION?

Costs of environmental protection are key issues for oilfield operations. Efficiency, reliability and maximum performance are of the utmost importance.

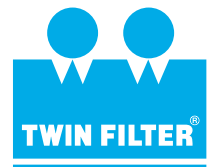
The main concern in oilfield filtration is to prevent reservoir damage. Many contaminants can plug off the reservoir / production zones during completion and water injection. Twin Filter will protect the reservoir from contaminants, including bacteria, scale, clay, rust, etc.

Current environmental laws are becoming more stringent and are aiming for zero discharge. Many waste treatment technologies will not meet the discharge levels of the future.

Twin Filter offers a solution for the removal of more than 99% of all hydrocarbons, heavy metals and emulsions from water streams.

Twin Filter provides total filtration solutions to the oilfield industry.

Any time, any place



AGENT, DISTRIBUTOR

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