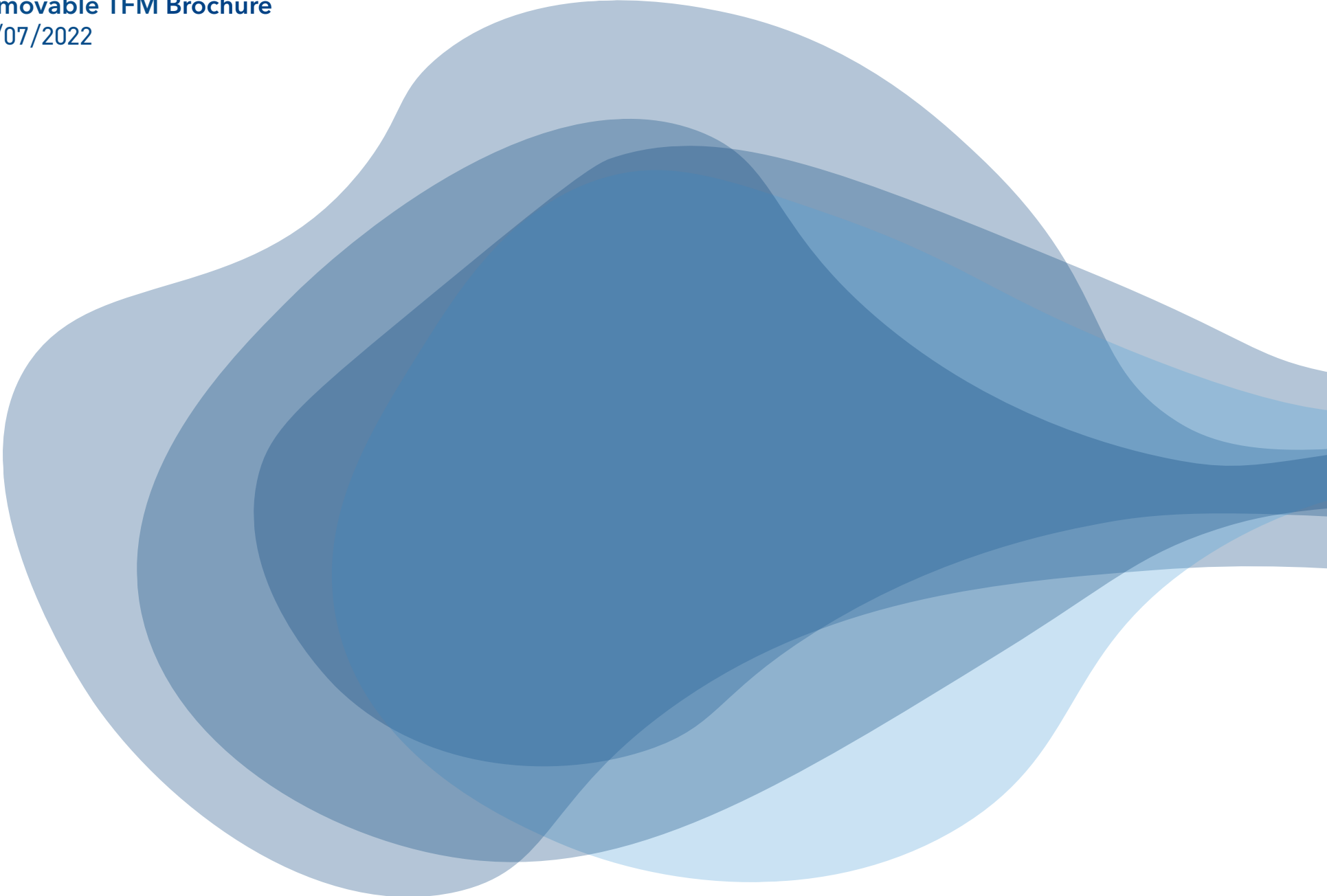




# UP

## Removable TFM (PTFE)

Property of Ultrapharma BV



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# Removable TFM Brochure

05/07/2022

## 1. Introduction

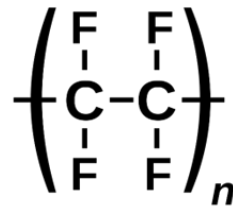
PTFE and TFM, together with the other fluorine-containing plastics, forms a specific group within the high-performance plastics. PTFE or Polytetrafluoroethylene is a synthetic polymer consisting of two simple elements; Carbon and Fluorine. It is derived from Tetrafluoroethylene (TFE) and has some unique properties that make it a very useful sealing material.

PTFE is resistant to almost all chemicals, is flame-retardant and easy to sterilize, has excellent UV resistance and remarkable non-stick properties. PTFE has one of the lowest coefficients of friction of any solid. The intrinsic purity of the material makes PTFE suitable for direct food contact. It is non-reactive, partly because of the strength of carbon-fluorine bonds. PTFE is hydrophobic: neither water nor water-containing substances wet PTFE.

### Unique features of PTFE:

- Chemically inert
- Non-stick material
- No moisture absorption
- Low coefficient of friction
- Non-flammable
- Hydrophobic
- FDA approved
- No reaction with any chemical molecules it encounters

### Molecular structure of PTFE



## 2. Difference between PTFE and TFM

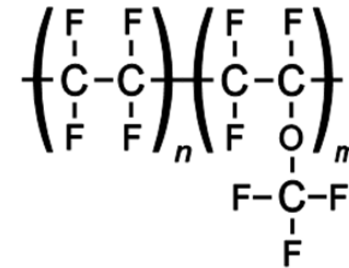
TFM, the second generation PTFE, is a chemically modified PTFE. Its unique property profile make it suitable for applications that would otherwise be out of reach of the PTFE materials group. These includes in particular those products that can only be manufactured using special welding methods. Ultrapharma uses welding methods to produce products like PTFE gaskets with screens or orifice plates.

TFM differs from standard PTFE by its reduced molecular weight as well as its proportion of comonomer Perfluoropropylvinylether (PPVE). These two factors, which are well matched to each other, lead to a high performance product that sets itself apart from standard PTFE through the following advantages:

### Advantages of TFM:

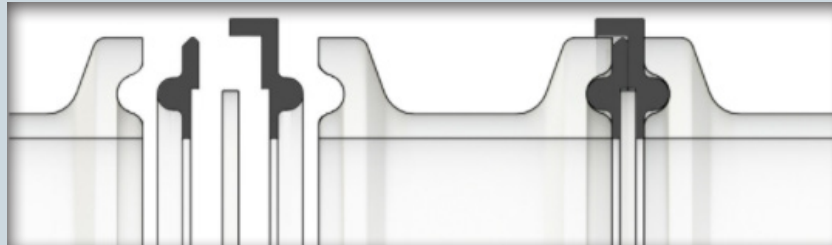
- Lower deformation under load
- Improved weldability
- Higher transparency facilitates the checking of purity
- Higher breaking elongation
- Higher tensile strength at higher temperatures

### Molecular structure of TFM



A disadvantage of virgin PTFE is that the material can start "moving" with thermal changes, which is known as cold-flow. The wear, compression resistance and cold-flow can be greatly improved by adding additives such as stainless steel powder, which is also a material in our range called Steam-Flon®.

### 3. Removable TFM



The removable TFM is a gasket that we developed because of these unique mechanical properties. The gasket is made out of two mating parts. In between these two parts you can place any kind of product as long as it is not thicker than 1,00 mm. Products like orifice plates, screens and perforated discs can be used.

If we want to install an orifice plate with a thickness of 1,00 mm we use the above setup with two mating parts with both a 0,50 mm chamber. These two chambers total up to 1,00 mm. Carefully locate the center chamber and place the orifice plate inside and click the two gasket chambers together so they lock. Ready to use.

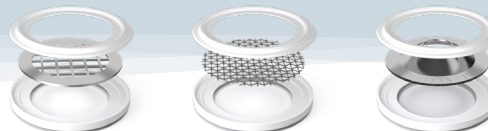


Some screens are much thinner, a 40 mesh screen is  $\pm 0,50$  mm thick, therefore we designed a top part with no chamber. See Top Part II above. Same installation.

The removable Steam-Flon® gasket can be dismantled after use, cleaned and reassembled again without any problem. Perfect if a screen needs to be cleaned. Orifice plates can be exchanged rapidly. Sock screens can now be supplied with a TFM seal.

#### Supply

We offer removable TFM as a complete product, assembled with plate or screen. We can also supply just the removable TFM gasket by itself, which means three gasket parts, you can make all possible combinations. The bottom-part with flange and 0,5 mm chamber, the top-part with 0,5 mm chamber and the top-part without the chamber. Typical screens for removable TFM are: 10, 20, 40, 60, 80, 100 mesh in 316SS and 316L on special request. Fine mesh screens down to the 10 $\mu$ m range are so called double mesh screens with a sintered support mesh for strength, these are all 0,80 mm thick. Orifice plates are supplied in 316L. All metal items can be supplied with EN10204-3.1 certification.



## 4. Available sizes

DIN32 676 Series A  
 DIN32 676 Series B  
 DIN32 676 Series C  
 = = =  
 DIN  
 ISO  
 „

DN Size		Flange Size			Chamber Ø	Rec. Torque
DN12	25 mm				19 mm	1,5 Nm
DN16	25 mm				19 mm	1,5 Nm
DN18	25 mm				19 mm	1,5 Nm
1/2"	25 mm				19 mm	1,5 Nm
3/4"	25 mm				19 mm	1,5 Nm
DN10 DIN+ISO		34 mm			29 mm	2,5 Nm
DN15 DIN+ISO		34 mm			29 mm	2,5 Nm
DN20 DIN+ISO		34 mm			29 mm	2,5 Nm
DN15 ISO			50,5 mm		44 mm	5,0 Nm
DN20 DIN+ISO			50,5 mm		44 mm	5,0 Nm
DN25 DIN+ISO+SMS			50,5 mm		44 mm	5,0 Nm
DN33,7 SMS			50,5 mm		44 mm	5,0 Nm
DN32 DIN+ISO			50,5 mm		44 mm	5,0 Nm
DN38 SMS			50,5 mm		44 mm	5,0 Nm
DN40 DIN			50,5 mm		44 mm	5,0 Nm
1"			50,5 mm		44 mm	5,0 Nm
1,5"			50,5 mm		44 mm	5,0 Nm

		DN Size	Flange Size		Chamber Ø	Rec. Torque	
DIN32 676 Series A DIN32 676 Series B DIN32 676 Series C		DN32 ISO			64 mm	57 mm	6,0 Nm
		DN40 ISO			64 mm	57 mm	6,0 Nm
		DN50 DIN			64 mm	57 mm	6,0 Nm
		DN51 SMS			64 mm	57 mm	6,0 Nm
		2"			64 mm	57 mm	6,0 Nm
		DN50 ISO		77,5 mm		72 mm	10,0 Nm
		DN63,5 SMS		77,5 mm		72 mm	10,0 Nm
		2,5"		77,5 mm		72 mm	10,0 Nm
		DN65 DIN+ISO		91 mm		84 mm	6,0 Nm
		DN76,1 SMS		91 mm		84 mm	6,0 Nm
DIN ISO ,		3"		91 mm		84 mm	6,0 Nm
	=	DN80 DIN+ISO+SMS	106 mm			97 mm	10,0 Nm
	=	DN100 DIN + 4" + DN101,6 SMS		119 mm		110,4 mm	10,0 Nm

**Recommended Torque**  
The removable Steam-Flon® is a product that we designed to be reused, therefore we recommend the Torque guide line for your convenience: as per the last column in table above.

+

**Recommended Clamp**  
To secure a leak tight connection with Removable Steam-Flon® gaskets we recommend using the 13HMP clamp. This is the double bolted clamp.

## Removable TFM Brochure

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### 5. Orifices plates with tab

Tabs are a helpful feature to visualize the presence of an orifice plate "in line" easy to recognize from the outside. Text can be laser engraved on the tab indicating hole size for example. The tab is very useful when positioning a plate with an eccentric self-draining hole.

We always drill the hole opposite the tab, so the tab always points up.

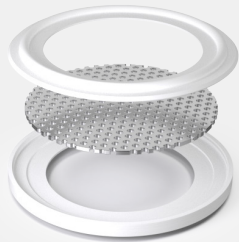
#### Available Sizes

1/2" through 6" (TC 25 -TC 167)

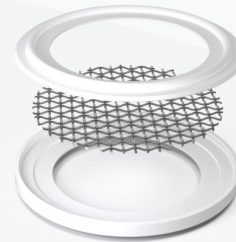
DIN32676 A, B, C same TC diameters



### 6. Available options



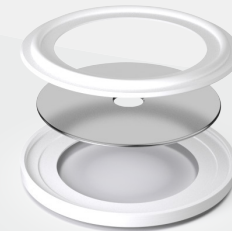
Perforated plates with 0,80 - 3,00 mm holes



Wire screen in many different mesh sizes



Laser cut from 316L plate coarse 4 & 6 mesh screens

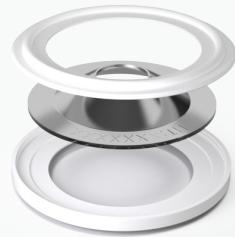


Orifice plates can randomly be drilled by removing them from the gasket

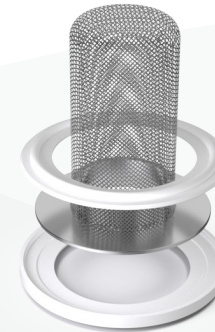




Orifice plates with tab, for laser engraving and identification



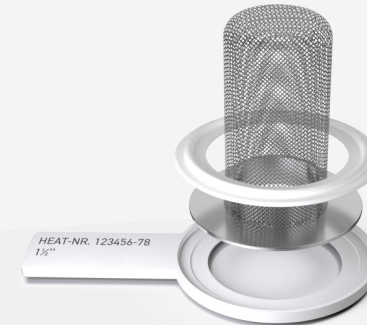
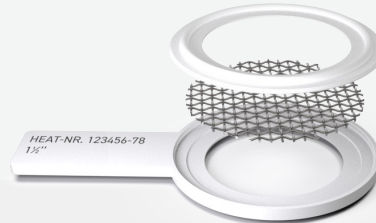
Vertical Orifice plates



Sock Screens now available with TFM gasket

## 7. Under development

Removable TFM with molded TFM tab.



Previously a tabbed removable TFM gasket was available in only one configuration, because the original-tab is attached to the orifice plate. With a molded TFM tab attached to the gasket, every configuration of the regular TFM removable is now possible.

Another advantage is that a wrong installation simply is not possible because the tab does not go through the gasket. A closed gasket lowers the chances of a leakage and requires less torque to be installed correctly, which extends the lifespan of the gasket.

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