PTFE.
Sheets & Gaskets | 3M™ Dyneon™ TFM™.

WS 7110 | WS 7115 | WS 7221

DESCRIPTION

IDT-PTFE-sheets and gaskets are made from high quality 3M™ Dyneon™ TFM™. The basic characteristics of PTFE [polytetrafluoroethylene] are based on the special molecular structure of the fluorine and carbon atoms; both chains have an extremely strong bond. The carbon network is hermetically sealed by the fluorine atoms which makes a chemical attack extremely hard and the PTFE therefore becomes resistant to chemicals and solid. The pharmaceutical-chemical industry requires low permeation for sealing applications, high chemical resistance, solid mechanical resilience and easier processability. Only few materials, mostly on fluoropolymer basis, combine these advantages. TFM™, a PTFE of the second generation, has proven itself. TFM™ distinguishes itself from classic PTFE by the additionally applied modifier. The particles melt more easily into a dense, low pore polymer structure due to the achieved, more homogeneous crystalline structure; as a result the tightness is significantly improved. A further disadvantage of classic first generation PTFE is that it flows under load [cold flow] and resulting in a loss of surface pressure in clamped condition. This negative characteristic has been significantly improved with the development and gasket technology application of TFM™ and the cold flow behaviour has been optimised. An additional modification can be achieved in a finishing process by mixing in filler or aggregates. During recent years, the use of the modified compound TFM™ 4105 with 25% glass fiber content has stood the test in the gasket technology practice. Semi-finished products and sheets as the source material for non-metallic gaskets are produced in a press-sinter process.

PROPERTIES

- Very good media resistance with the exception of liquid alkali metals and some flourine compounds
- Fillers in compounds affect the chemical resistance
- Electrical conductivity for TFM™ 6221 compound with conductive pigment; also FDA-conform
- Temperature resistant from -200 °C to 260 °C [depending on pressure and load]
- PTFE is physiologically harmless for continuous operation temperatures up to 260 °C as per BG no. 21
- FDA-conform and complies with regulations in Europe and Asia for food use
- TFM™ allows for immediate welding, which is safe and easy using a special technique
- Low permeability towards gases and liquids
- Good non-stick characteristics
- UV- and ageing resistant, no embrittlement
- Complies with TA Luft 2002 [VDI 2440/2200] leakage requirements
- Anti-adhesive surface
- Excellent [di]electric properties
- Fire class: is not flammable as per UL94

APPLICATIONS

- Non-metallic gaskets for pipeline flanges, device and container flanges, pumps and valves
- Broad range of applications primarily in the chemical and petrochemical sector
- Use in the food sector and pharmaceutical production
- Non-metallic layers for corrugated metal and Kammprofile serrated gaskets as well as insert for spiral wound gaskets
- For designs with inner eyelets, used for increased requirements for cleanliness and blow-out resistance [technical tightness]
- Use in oxygen applications depends on the compound [BAM-test report]

PRODUCT RANGE

Technical delivery conditions as per DIN 28091

- Foils and sheets
- Non-metallic gaskets
  - Dimensions: as per DIN EN 1514-1 and DIN EN 12560-1 or ASME B 16.21 as well as non-standard sizes, made from:
  - 3M™ Dyneon™ TFM™ 1600 [WS 7110]
  - 3M™ Dyneon™ TFM™ 4105 [WS 7115]
  - 3M™ Dyneon™ TFM™ 6221 [WS 7221]
  - PTFE not modified, white-unfilled [WS 7010]
  - PTFE not modified, with 25% glass fiber content [WS 7015]

Gaskets made from above mentioned materials are also available with inner eyelets and/or outer eyelets.

Additionally: IDT Profile Overview | FD Series

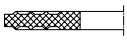
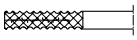
ADDITIONAL DESIGNS

- TFM™-envelope gasket with corrugated metal ring WS 7110/1.4571 PW-I
- TFM™-envelope gasket with non-metallic insert WS 7110/3822; WS 7110 / 3825; WS 7110 / 7550
- TFM™-envelope gasket with corrugated metal ring and non-metallic insert WS 7110/1.4571/3822; WS 7110 /1.4571/3825; WS 7110 /1.4571/7550
- Kammprofile serrated gasket with TFM™-layer WS 1.4571/7110
- Spiral wound gasket with PTFE-filler WS 1.4541/7010 /1.4541
- TFM™-component /turned part WS 7110
- Plastics: semi-finished products, moulded parts, turned and milled part

PTFE.

Product designation	Non-metallic gasket, TFM™ 1600	Non-metallic gasket with inner and outer eyelet, TFM™ 1600	Non-metallic gasket with 25% glass fiber content, TFM™ 4105
Product name	WS 7110	WS 7110 DB	WS 7115
Product image			
Profile No.	FD01 	FD30 	FD01 
Features	Sealing system made from modified, cold flow reduced Dyneon™ TFM™ 1600 without fillers. Characterised by a dense, homogeneous, almost non-porous polymer structure. Maximum chemical resistance due to the absence of fillers.	Sealing system made from modified, cold flow reduced Dyneon™ TFM™ 1600 with inner and outer eyelet was developed specifically for tongue and groove areas, male and female flanges and similar applications. The double eyelets create a chambering effect. Material extrusions into the sealing gap and flowing of the gasket are prevented by eyelets.	Sealing system made from modified, cold flow reduced Dyneon™ TFM™ 4105 with a glass fiber content of 25%. The modification and the glass fiber content cause a reduced cold flow and an increased pressure stability in comparison to standard PTFE. The chemical resistance is only slightly impacted by the glass fiber content.
OPERATIONAL DATA			
Pressure	Max. 16 bar[2]	Max. 40 bar[2]	Max. 16 bar[2]
Temperature	Max. 150 °C	Max. 200 °C	Max. 150 °C
APPROVALS			
TA Luft 2002 [VDI 2440/2200]	X	X	X
BAM oxygen	X		X
BAM EO/PO [Ethylene-/Propylene oxide]			
DVGW [DIN 3535-6]			
KTW-guideline			
Fire Safe Test			
FDA	X	X	X
EG 1935/2004			
Blow-out resistance			
Germanischer Lloyd			
Features			

[2] Max. pressure and max. temperature should not occur at the same time

Product designation	Non-metallic gasket, serrated, TFM™ 1600 or TFM™ 6221 [conductive]	Non-metallic gasket, serrated with metal insert, TFM™ 1600 or TFM™ 6221 [conductive]
Product name	WS 7110/WS 7221	WS 7170/WS 7221
Product image		
Profile No.	FD04 	FD05 
Features	Sealing system made from modified, cold flow reduced Dyneon™ TFM™ 1600 without fillers [WS 7110] or high quality, electrically conductive Dyneon™ TFM™ 6221 [WS 7221]. Characterised by a dense, homogeneous, almost non-porous polymer structure. Maximum chemical resistance. FDA-conform. Low installation surface pressure necessary and suitable for plastic flange connections. Complies with TA Luft and VDI 2290[1].	Sealing system made from modified, cold flow reduced Dyneon™ TFM™ 1600 without fillers [WS 7110] or high quality, electrically conductive Dyneon™ TFM™ 6221 [WS 7221]. Maximum chemical resistance. FDA-conform with additional metal insert. Low installation surface pressure necessary and suitable for plastic flange connections. Blow-out resistance due to metal insert. Complies with TA Luft and VDI 2290[1].
OPERATIONAL DATA		
Pressure	Max. 20 bar[2]	Max. 20 bar[2]
Temperature	Max. 150 °C	Max. 150 °C
APPROVALS		
TA Luft 2002 [VDI 2440/2200]	x	x
BAM oxygen		
BAM EO/PO [Ethylene-/Propylene oxide]		
DVGW [DIN 3535-6]		
KTW-guideline		
Fire Safe Test		
FDA	x	x
EG 1935/2004		
Blow-out resistance		x
Germanischer Lloyd		
Features		

[1] Complies with VDI 2290 only in combination with a leakage certificate as per EN 1591-1 | [2] max. pressure and max. temperature should not occur at the same time