

UNIFLEXON INSTALLATION INSTRUCTIONS

Uniflexon tape is a universal sealing material, suitable for most lightweight flanges and joints in the chemical industry, food industry, ventilation and HVAC equipment. Expanded PTFE is an excellent sealant both in vacuum and high pressure conditions, and also maintain flexibility in a wide temperature range: from cryogenic levels to 260°C. PTFE in the form of a tape enables immediate implementation seals, without delays and wastes caused by cutting gaskets in required dimensions.

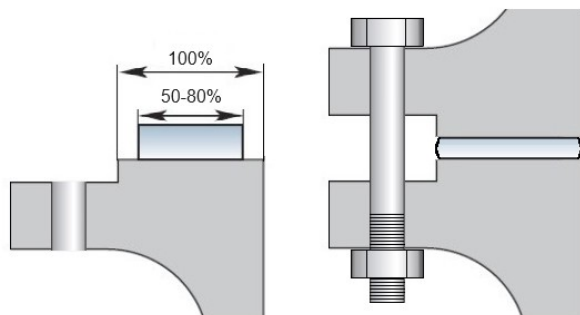
The sealing tape allows to achieve a particularly high efficiency for implementation sealing large-sized devices and pipelines. Unlike gaskets cut from sheets, the tape can be easily and quickly formed directly on the flange face into any shape of the seal. Installation is easy and does not generate any troublesome waste.

The seal is a critical and most frequently serviced component of devices, so care in this area can give great benefits to users. To ensure long and effective seal operation, you should use basic and necessary knowledge in the selection of material and follow several basic installation rules.

1. Tape sizes selection.

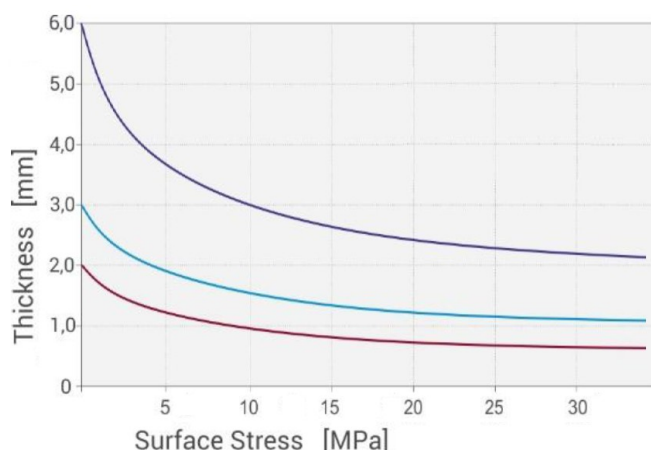
1.1 Seal width.

Select a tape with a width that ensures the following coverage of the face flange: 50 to 80% of the flange face for standard flanges compliant with EN and ANSI.



The width of the tape for non-standard flanges can be selected experimentally or based on the tape subsidence chart for given surface stresses. The minimum screw tensions should be determined separately to ensure sufficient assembly pressures for obtain the assumed tightness class.

1.2 Tape thickness.



Uniflexon tapes cover a thickness range from 1,5 mm to 10 mm, and given that these tapes can be applied twice, we achieve a very wide range of sealing thickness possibilities.

1.3 Tape thickness and seal thickness.

The tape used to make the seal should have the thickness specified in the technical documentation. Alternatively, you can consider the thickness of the removed seal, but you should take into account the degree of its subsidence. Usually it is from 30 to 60% of the thickness depending on the type of material. A gasket that is too thin may not guarantee sufficient tightness, and a gasket that is too thick may wear out quickly.

2. Preparation of devices.

2.1 Condition of flanges.

Before installing the gasket, the face of flange should be cleaned, any residues left after dismantling the used gasket removed, and make sure that they are smooth and parallel.

2.2 Supporting materials.

It is not recommended to use auxiliary agents or any lubricants, their presence may negatively affect the ability of the gasket material to transfer stress. On the contrary, the surfaces must be cleaned and dried before installing the seal.

2.3 Measurement and size evaluation.

Measure the target seal width and estimate its dimensions to determine the size and amount of tape needed.

3. Installation on flat flanges.

3.1 Preparing the flanges.

Spread the flanges apart and thoroughly clean the flange faces. Prepare the space for convenient tape operation and precise locks perform.

3.2 Montage of the tape.

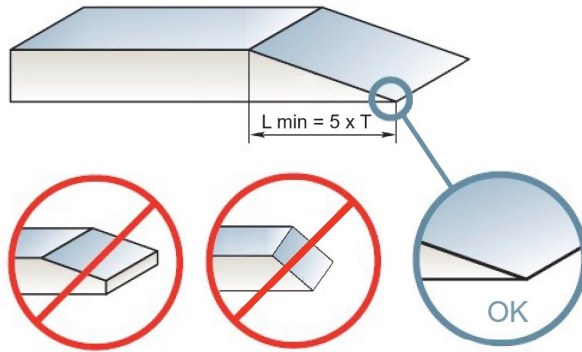
Stick the beginning of the tape in the appropriate place on the flange face. Apply the tape, gradually removing the



paper protecting the adhesive surface.

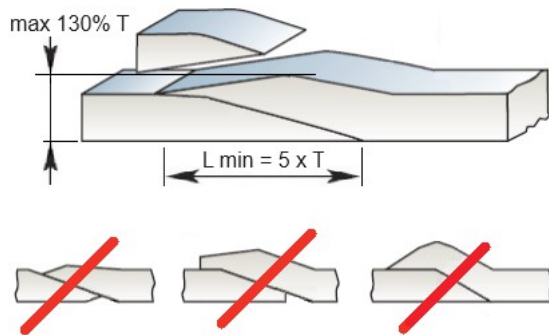
3.3 Making the locks.

There are three dominant ways of making a locks: by cutting the ends aslant, by overlapping, and by dovetail.



3.4 Aslant cutting of the ends.

In the case of connections in the form of aslant cut ends, the tape should be cut at a slight angle and to a considerable length. The length of the aslant should be at least 5 times the thickness of the tape. The thickness of the lock at the connection point should be slightly thicker about 30% than the thickness of the seal.



3.5 Overlap jointing.

If the tape is connected in the form of an overlap, the lock is made at one of the flange screws. Place the ends of the tape on each other crosswise and leave them slightly longer. When tightening screws, tighten the screws on the lock first.

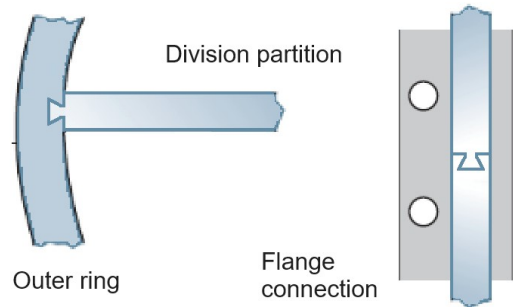


3.6 Dovetail jointing.

If we use a wider tape, we can make locks with a dovetail joint. The ends of the tape are easy to cut using a cutting die made of sharpened sheet metal, which simultaneously cuts out the female and male elements on both sides of the tape.



It is a good idea to wrap the connection area with thin PTFE thread tape. By dovetails locks it is possible to make seals of complex shapes in heat exchangers with partitions.



4. Mounting on tongue/groove flanges.

4.1 Tape width.

Uniflexon tape can be installed both in a groove and on a tongue. The width of the tape can be from 70 to 100% of the width of the flange face, as there is no risk of squeezing the tape out of the joint.

4.2 Installation in a groove.

In such an installation, the locks should be made by cutting the tape aslant or using a dovetail. To prevent excessive stress concentration, do not exceed 130% of the belt thickness at any zone.

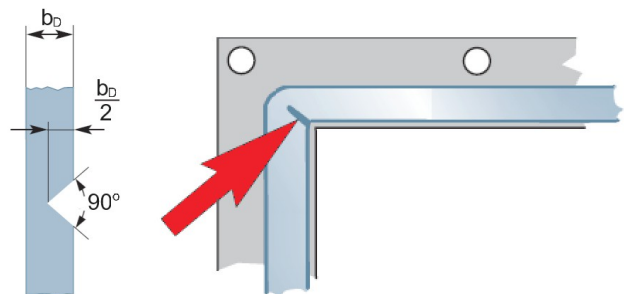
5. Installation on rectangular flanges.

5.1 Prepare the flanges, evaluate tape sizes and quantity.

5.2 Start applying the tape to the clean flange face.

5.3 Making the corners.

Triangular pieces should be cut from the Uniflexon tape at the corners of the flange. Make a cut at a 90° angle on the inner edge of the tape. At least half of the tape width should remain intact to ensure tightness and even stress distribution.



5.4 Shape the tape around the corner of the collar. The tape is held in place by a layer of adhesive.

5.5 Finishing of montage.

Press the seal on the corners first, making sure that the strips of tape do not overlap.

6. Installation on large uneven surfaces.

If the flange has irregularities not exceeding half the thickness of the gasket, it is possible to compensate with

overlays. We even out places with large defects and unevenness by applying an additional layer of tape. In such cases, the reduced strength of the seal made in this way should be taken into account.

7. Bolt tensioning.

7.1 Clean any dirt from the threads of bolts and nuts.

You should also make sure that the nuts move freely. It is recommended to lubricate bolts and nuts with grease, which leads to a reduced difference in bolt tensions and a more even distribution of stresses on the gasket.

7.2 Determining the assembly stress.

Proper screw tension should ensure the appropriate "operating point" of the seal. Too high tension causes faster degradation of the sealing material, and too low a risk of joint leakage. The documentation should be followed or the tensions should be determined based on appropriate calculation factors. The appropriate pressure of the UFX tape may be determined by the moment when the tape is pressed onto the flange face edge.

7.3 Screw tightening process.

The process of tightening the bolts should take place in several stages. First tighten the screws by hand. Then tighten the screws using the following steps: 50%, 80% and 100% of the required tension. These activities should be performed while maintaining an alternating sequence of tightening the bolts using a torque wrench.

7.4 Tightening the bolts after starting.

Following the above recommendations should eliminate the need to tighten the bolts later. However, if it proves necessary, this operation can only be carried out after the installation has been turned off and cooled down.

8. Standard sizes of Uniflexon tapes.

8.1 Rectangular profiles with adhesive UFX.

Symbol	Sizes	Length	Quantity
	[mm]	[m]	[kg]
UFX 3x1,5	3 x 1,5	80	0,27
UFX 5x2	5 x 2	40 / 25	0,3 / 0,2
UFX 7x2,5	7 x 2,5	25	0,33
UFX 10x2	10 x 2	22	0,33
UFX 10x3	10 x 3	40/25/10	0,9/0,5/0,2
UFX 10x6	10 x 6	20	0,90
UFX 12x4	12 x 4	25	0,90
UFX 14x4	14 x 4	20	0,84
UFX 14x5	14 x 5	17	0,89
UFX 17x6	17 x 6	12	0,92
UFX 20x3	20 x 3	20	0,90
UFX 20x5	20 x 5	12	0,90
UFX 20x7	20 x 7	8	0,84
UFX 24x5	24 x 5	10	0,90
UFX 24x8	24 x 8	6	0,86
UFX 28x6	28 x 6	7	0,88
UFX 30x10	30 x 10	4 / 8	0,9 / 1,8
UFX 40x5	40 x 5	6 / 12	0,9 / 1,8
UFX 40x10	40 x 10	6	1,8
UFX 50x4	50 x 4	12	1,8

UFX 50x10	50 x 10	5	1,8
UFX 85x3	85 x 3	4,5 / 10	0,8 / 1,8
UFX 85x5	85 x 5	6	1,8
UFX 85x7	85 x 7	4,5	1,8

8.2 Round profiles UFD.

Symbol	Diameter	Length	Quantity
	[mm]	[m]	[kg]
UFD 2,5	2,5	90	0,33
UFD 3	3	60	0,32
UFD 4	4	35	0,33
UFD 5	5	22	0,32
UFD 6	6	40	0,85
UFD 7	7	30	0,87
UFD 8	8	22	0,83
UFD 10	10	14	0,82
UFD 12	12	10	0,85
UFD 14	14	7	0,81

8.3 Square profiles UFP.

In addition, a whole range of square profiles without gluing is available from 2x2 mm to 20x20 mm. Typically, they are used for stuffing box seals, but they can also be used as static seals.

9. Parameters and calculation data of Uniflexon tapes.

9.1 Scope of use and approvals:

Uniflexon tape is made of 100% pure premium expanded PTFE. The PTFE has excellent resistance to most chemicals, including strong acids, bases, salts, oxidants, oils and petroleum products.

This material has also passed strict tests and poses no risk to the environment or human health. The health quality certificate according to EU 10/2011 is available on user request. Pure PTFE has the FDA approval for food 21 CFR 177.1550 issued by the US Food and Drug Administration.

9.2 Data for gasket design:

Forming pressure - y factor = 5 N/mm².

Maintenance of stress - m factor = 2,5

Surface pressure 26 N/mm²

for leakage 0,01 at 40 bar.

Gas permeability 0,1 ml/h.

Maximum assembly pressure 90 N/mm².

Tensile strength 4 MPa.

Friction coefficient $\mu \sim 0,1$ to 0,2.

9.3 Technical parameters:

Maximum working temperature +260°C.

Cryogenic applications from -240°C.

Admissible working pressure 80 bar.

Can be used in high vacuum.

Chemical resistance in the pH range 0 - 14.

Specific resistance of 10⁻¹⁶ Ω·m.

Flammability UL 94 class V-0.

Oxygen index 95%.

Compressibility min. 60% for 35 MPa.

Compressibility min. 30% for 5 MPa.

Recovery not less than 10%.

Shore A hardness 55 - 65 ShA.

Bulk density: 0,7 - 0,9 g/cm³.

Dimensional tolerance -5 / +10%.