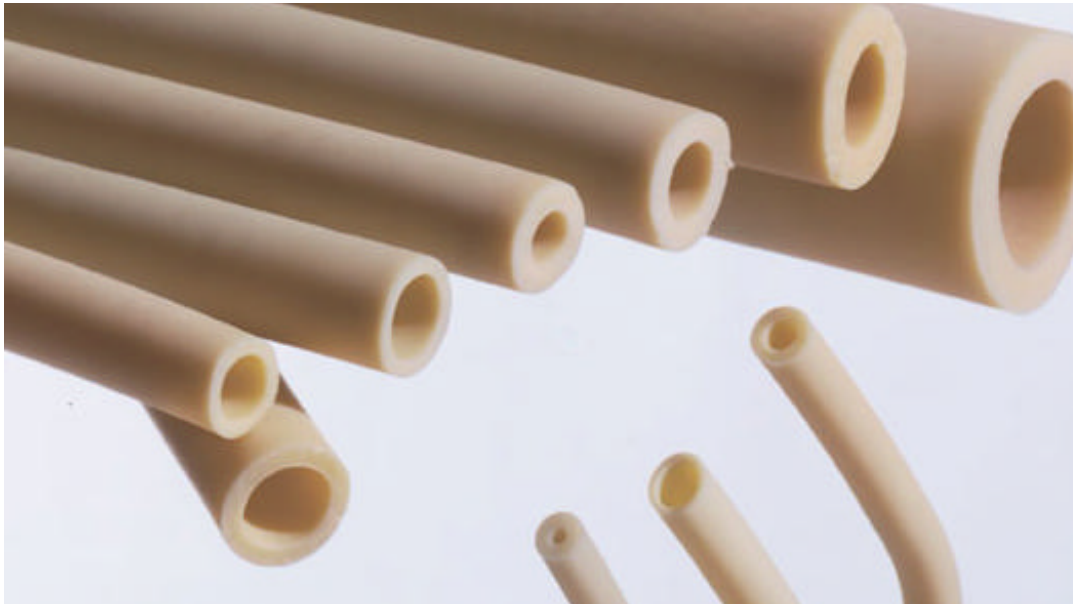


## **PERISTALTIC TUBES**



# PERISTALTIC PUMPS TUBINGS



Since 1992 Teknofluor Srl has a rubber tubes-productive line (named **Teknoprene®**) specifically addressed to peristaltic pumps.

The Teknoprene®-line is based on four different materials, fitting any possible application:

- **Teknoprene® TPV**
- **Teknoprene® SIL**
- **Teknoprene® HCR**
- **Teknoprene® FKM**

Working together with well-known peristaltic pump-users we have developed this range of materials, which allows the pumping of chemical agents (acids, bases, food, pharmaceutical liquids, hydrocarbon, solvent, thinner, etc.). To acknowledge the dimensions **ON STOCK** we are able to supply, please visit our web-site ([www.teknofluor.it](http://www.teknofluor.it)). For different dimensions, hardness, materials or colours get in touch with our Technical Dept.: we will satisfy your needs!

## HOW DOES A PERISTALTIC PUMP WORK?

The peristaltic pump exploits the compression on the tube of 2 (or more) rollers in rotary motion. This compression pulls the liquid onwards. Meanwhile the expansion of the previously compressed part causes a depression that sucks the liquid. Obviously the tube's elasticity is fundamental either for the correct functioning of the pump or for its lasting.

The right tube allows the best performance, that is:

- Correct suction
- Correct flow-rate
- Uniform and constant performance
- Long, foreseeable, reliable lasting
- Little maintenance

## **HOW TO CHOOSE THE RIGHT TUBE**

Hereby we will underline which are the main factors to consider while choosing a peristaltic pump-tube. Anyway, each pump a/o each pumped liquid has peculiar characteristics; this is the reason why we suggest you to contact our Technical Dept. in order to receive a sample to 'play' with the chosen article: the choice has **always** to be made according to the single application.

- **TUBE COMPRESSION**

The above-said compression causes the tube's breaking, according to the elasticity of the rubber. The pump must fit the application, therefore we suggest to contact our Technical Dept. to find out the right wall-dimension for the best performance. The compression must be the slightest allowing suction/flow, that is, it should not exceed the 25% of the wall.

- **ROTATION**

The rotation-speed is one of the most common causes of the tube-breaking. A high speed does not allow the right wall's extension/compression: this brings to a 'superheating' of the polymer and, following, the breaking of the tube.

- **PRESSURE**

The counterthrust opposing the liquid's flow provokes a stress that, being too excessive, brings to the tube's life shortening. We suggest to ask our Technical Dept. the limits not to be exceeded.

- **VISCOSITY**

Since the friction grows together with the liquid's density we suggest to use the tube with a wall as thicker as allowed by the motor gear. This tip will protect the tube from an excessive mechanical stress.

- **SPALLATION**

There are rubbers that crumble in the shoulder (that is, there where they fold), generating small parts that soil the pumped liquid. Get in touch with our Technical Dept. to choose the right rubber for your application.

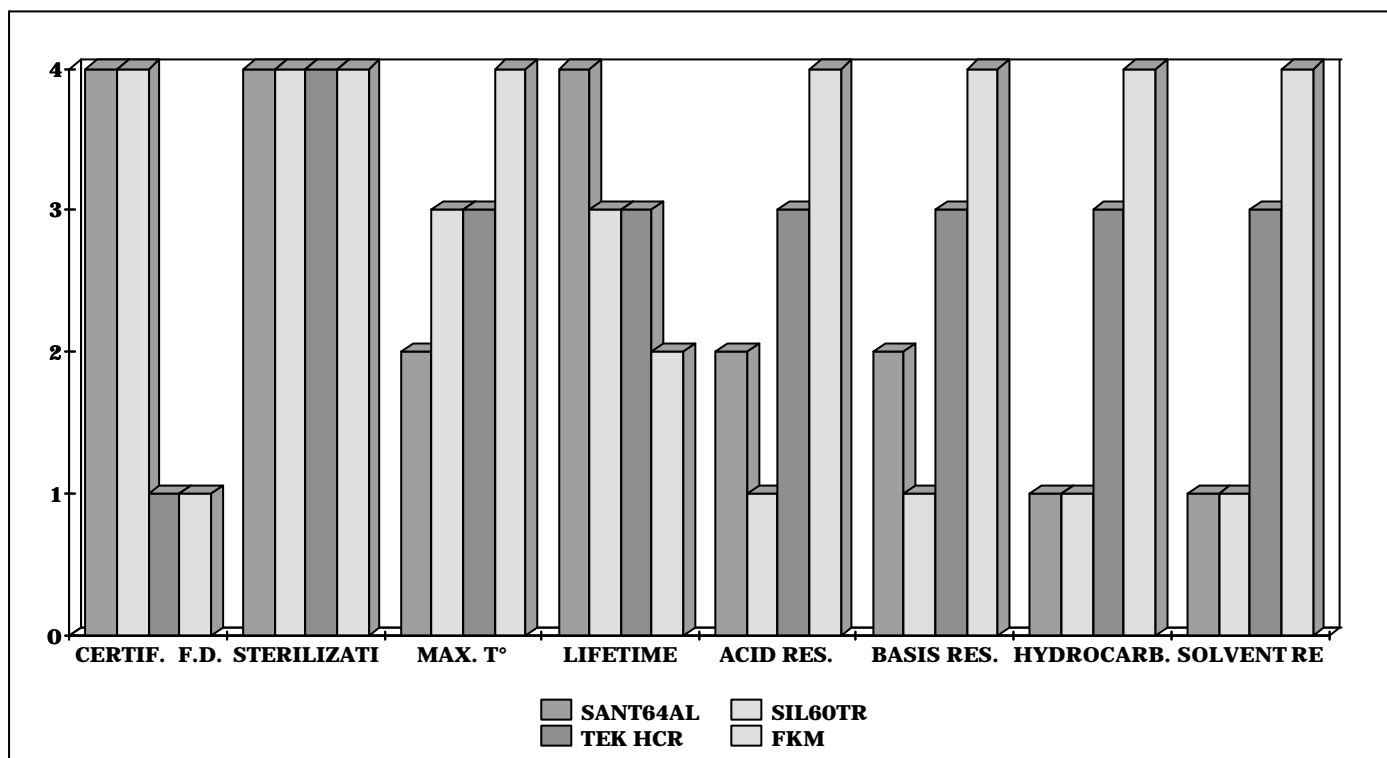
- **CHEMICAL ATTACK**

The contact between rubber and incompatible liquid provokes a very fast weakening of the tube's characteristics, it may bring the tubing to collapse, even in a few hours. We suggest to get in touch with our Technical Dept. to decide what kind of tube we can send you as a free sample: tabs and static test are not enough, the dynamic test is essential to choose the right material.

- **ASSEMBLING**

From time to time the problems troubling tubes/pump's performance are due to the wrong assembling of the tube itself. The tube has to be insert in the cradle without traction a/o torsion. We suggest to lightly 'grease' the tube, in order to ease-off the friction tube-rolls.

## ELASTOMERS COMPARISON



### LEGENDA:

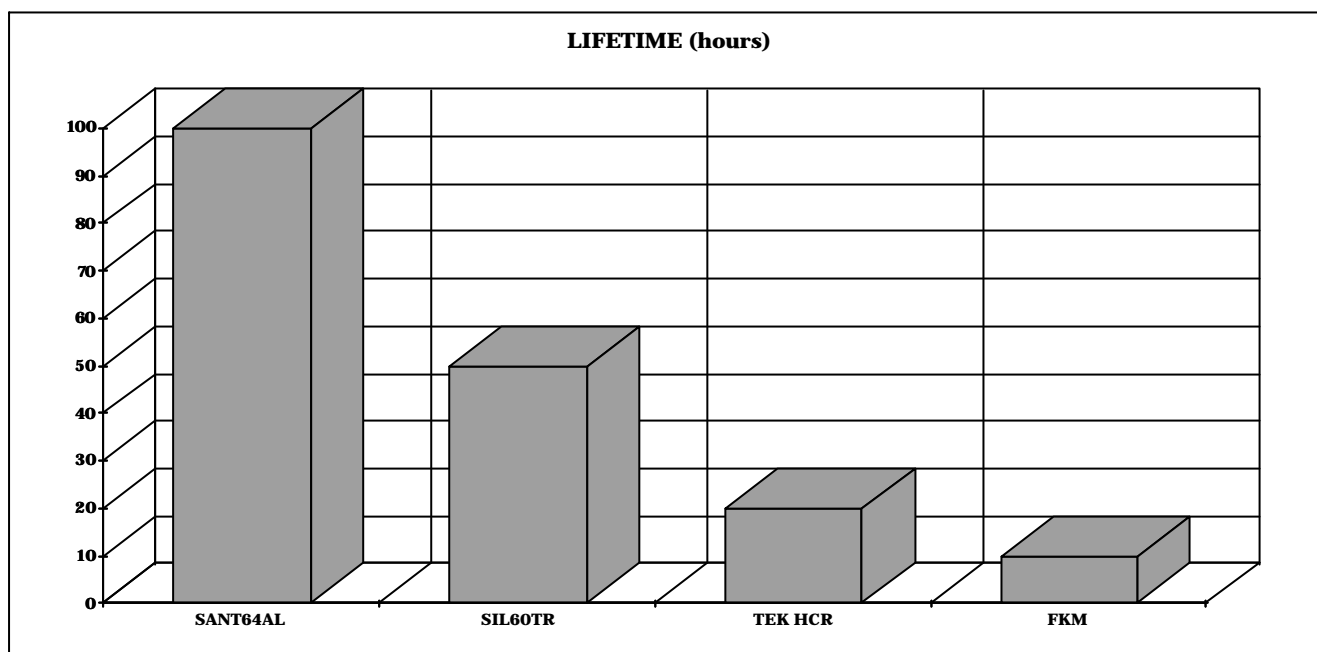
**SANT64AL = Teknoprene® TPV      SIL60TR = Teknoprene® SIL**

**TEK HCR = Teknoprene® HCR      FKM = Teknoprene® FKM**

### Diametri standard

Diam. int.	Wall	Diam. ext.	Diam. int.	Wall	Diam. ext.	Diam. int.	Wall	Diam. ext.	Diam. int.	Wall	Diam. ext.
0,8	x	1,6	4	4,8	x	0,8	6,4	9,6	x	2,4	14,4
1,6	x	0,8	3,2	4,8	x	1,6	8	9,6	x	3,2	16
1,6	x	1,6	4,8	4,8	x	2,4	9,6	9,6	x	4,8	19,2
1,6	x	2,4	6,4	4,8	x	3,2	11,2	12,7	x	1,6	15,9
2,4	x	0,8	4	6,4	x	0,8	8	12,7	x	3,2	19,1
2,4	x	1,6	5,6	6,4	x	1,6	9,6	12,7	x	4,8	22,3
3,2	x	0,8	4,8	6,4	x	2,4	11,2	12,7	x	6,4	25,5
3,2	x	1,6	6,4	6,4	x	3,2	12,8	15,9	x	2,4	20,7
3,2	x	2,4	8	6,4	x	4,8	16	15,9	x	3,2	22,3
3,2	x	3,2	9,6	8	x	1,6	11,2	15,9	x	4,8	25,5
				8	x	2,4	12,8	15,9	x	6,4	28,7
				8	x	3,2	14,4				

## USEFUL WORKING LIFE (reference SANT64AL=100)



## MATERIALS/APPLICATIONS – DATUM TABLE

	Disinfezione/ Trattamento H2O	Detergenza	Agricoltura/ Vivaismo/ Allevamento	Laboratorio/ Biotecnologia	Medicale/ Farmacosmesi	Vending	Macchine alimentari	Imballaggio	Industria generale
	Water treatm.	Wwashing	Agriculture/ Milk treatm.	Laboratory/ Biotechnology	Medical/ Pharma	Vending	Food machines	Packaging/ Inks	Industry
<b>SANT64AL</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>
<b>SIL60TR</b>	/	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>	<b>Si</b>
<b>TEK HCR</b>	/	/	/	<b>Si</b>	<b>Si</b>	/	/	/	<b>Si</b>
<b>FKM</b>	/	/	/	<b>Si</b>	<b>Si</b>	/	/	/	<b>Si</b>

Si = adatto alla maggior parte delle applicazioni / = non adatto al settore

Si = able for many use

/ = unadapted

**SANT64AL = Teknoprene® TPV**

**SIL60TR = Teknoprene® SIL**

**TEK HCR = Teknoprene® HCR**

**FKM = Teknoprene® FKM**

## **WORKING PRESSURE TABLE**

### **TEKNOPRENE TPV**

iD x oD (wall th.)	Max suggested working pressure (Bar)
1.6x4.8 (1.6)	1,93
3.2x6.4 (1.6)	1,18
4.8x8 (1.6)	0,86
6.4x9.6 (1.6)	0,69
8x11.2 (1.6)	0,58
9.6x16 (3.2)	0,86
12.7x19.1 (3.2)	0,69
19x31.8 (6.4)	0,86
25.4x35 (4.8)	0,52

### **TEKNOPRENE SIL**

iD x oD (wall th.)	Max suggested working pressure (Bar)
1.6x4.8 (1.6)	1,30
3.2x6.4 (1.6)	0,80
4.8x8 (1.6)	0,58
6.4x9.6 (1.6)	0,46
8x11.2 (1.6)	0,39
9.6x16 (3.2)	0,58
12.7x19.1 (3.2)	0,46
19x31.8 (6.4)	0,58
25.4x35 (4.8)	0,35

## Teknoprene® TPV



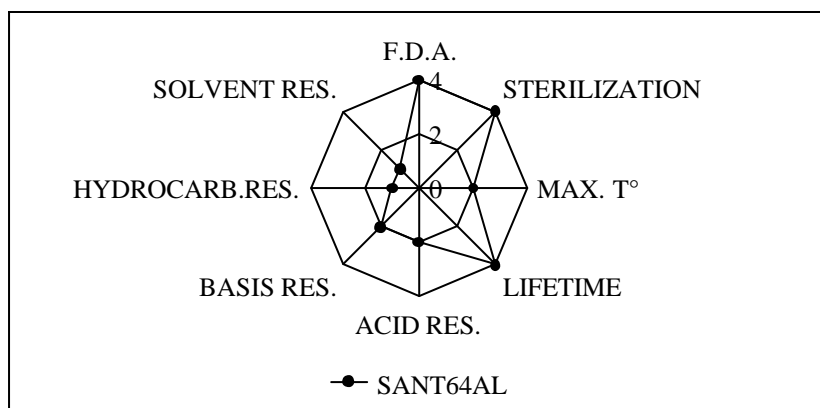
Our rubber tubes in **Teknoprene®** TPV for peristaltic pumps are manufactured by a new production line equipped with a laser device to control the dimensions. We can supply products with very close tolerances in dimensions.

**Teknoprene®** TPV special features:

- It keeps its qualities from  $-40^{\circ}$  to  $+120^{\circ}$  C;
- It is resistant to ozone, solar radiation, water, acids, oily liquids, greases, etc.,
- It can be sterilized both with steam and ethyleneoxide;
- It preserves its features even after it has been squashed for hours;
- Approved for alimentary use according to the international standards (ask for documents);
- The tube walls do not stick together even if the machine has not worked for a long time.

**STANDARD GRADE:** TEKNOPRENE® TPV (SANT64AL) - hardness: 64 Sh. A - colour: natural (beige) - FDA standards approved.

**ON REQUEST:** hardness: 45, 55, 73, 80, 87 Sh. A - colour: black or RAL colours.



**LEGENDA: 4 = VERY GOOD; 3 = GOOD; 2 = POOR; 1 = UNSUITABLE**

## Teknoprene® SIL



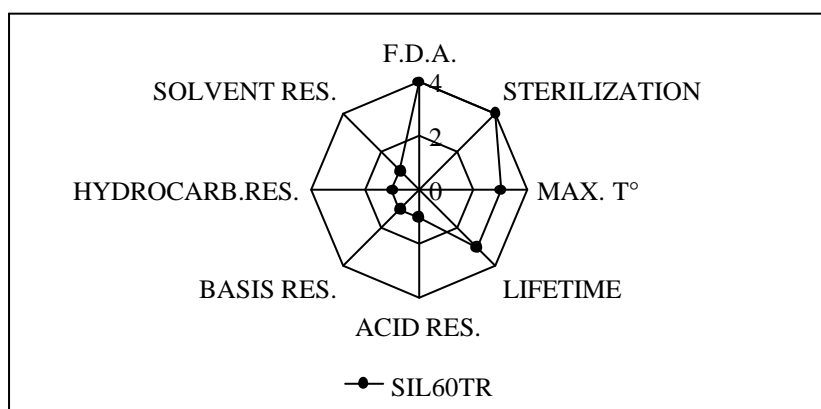
Our tubes **Teknoprene® SIL** (silicone rubber) are made of a brand new Silicone in order to fit the most difficult working conditions (squashing, chemicals,...).

**Teknoprene® SIL** special features:

- It keeps its qualities from  $-40^{\circ}$  to  $+180^{\circ}$  C;
- It is resistant to ozone, solar radiation, water (cold and hot), acids, oily liquids, greases, etc.;
- It can be sterilized both with steam and ethyleneoxide;
- It preserves its features even after it has been squashed for hours;
- Approved for alimentary use according to the international standards (ask for documents).

**STANDARD GRADE:** Teknoprene® SIL (SIL60 TR P) - hardness: 60 Sh. A - colour: transparent - FDA standards approved.

**ON REQUEST:** hardness: 40, 50, 70, 80 Sh. A - colour: RAL colours.



**LEGENDA: 4 = VERY GOOD; 3 = GOOD; 2 = POOR; 1 = UNSUITABLE**



# Teknoprene® HCR



**MATERIALE STANDARD:** Teknoprene® HCR - durezza: 60 Sh. A - colore: rosso.

**SU RICHIESTA:** durezza: 50 Sh. A - colori: riferimento RAL.

Our tubes **Teknoprene® HCR** tubings for peristaltic pumps are manufactured with a brand new elastomer in order to fit the most difficult working conditions (quashing, chemicals,...). **Above all, it is the real Teknoprene® FKM (fluorelastomer)-substitute, maintaining the typical Teknoprene® SIL and Teknoprene® TPV rubber flexibility.**

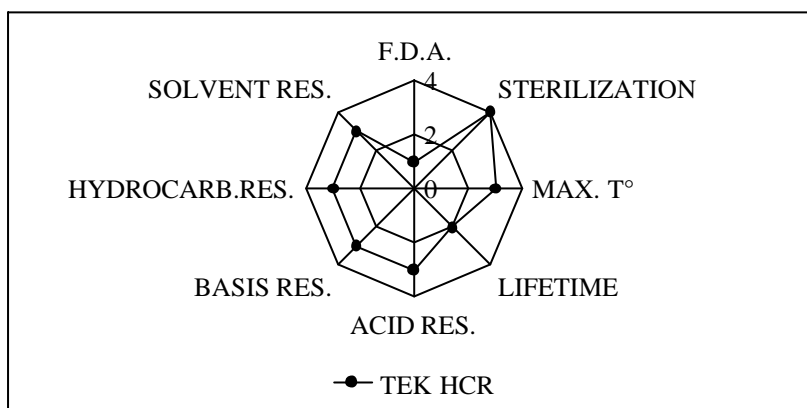
Teknoprene® HCR special features:

- It keeps its qualities from  $-60^{\circ}$  to  $+180^{\circ}$  C;
- It is resistant to ozone, solar radiation, water (cold and hot), acids, oils, greases, hydrocarbons, fuel, etc.;
- It can be sterilized both with steam and ethyleneoxide;
- It preserves its features even after it has been squashed for hours.

**STANDARD GRADE:** Teknoprene® HCR - hardness: 60 Sh. A - colour: red.

**ON REQUEST:** hardness: 50 Sh. A - colour: RAL colours.

**Possiamo realizzare i tubi anche in altre misure ed altri tipi di elastomeri. Quotazioni su richiesta. We are able to manufacture rubber tubes of any measures and any kind of elastomer, according to drawings. Ask for quotation.**



**LEGENDA: 4 = VERY GOOD; 3 = GOOD; 2 = POOR; 1 = UNSUITABLE**

## Teknoprene® FKM



Our **Teknoprene® FKM** tubes fit for aggressive chemicals.

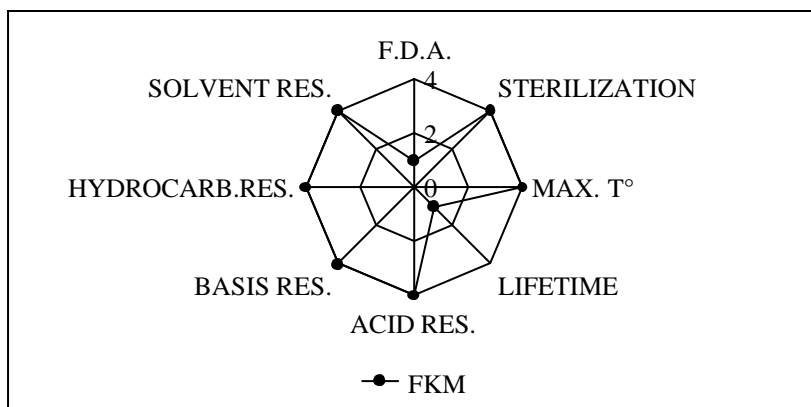
**Teknoprene® FKM** incomparable features:

- It keeps its qualities from  $-25^{\circ}$  to  $+260^{\circ}$  C;
- It is resistant to ozone, solar radiation, water (cold and hot), acids, oils, greases, hydrocarbons, fuel, etc.;
- It can be sterilized both with steam and ethyleneoxide.

**STANDARD GRADE:** Teknoprene® FKM - fluorelastomer - hardness: 70 Sh. A - colour: black.

**ON REQUEST:** hardness: 60, 80 Sh. A - colour: green, brown.

**Possiamo realizzare i tubi anche in altre misure ed altri tipi di elastomeri. Quotazioni su richiesta. We are able to manufacture rubber tubes of any measures and any kind of elastomer, according to drawings. Ask for quotation.**



**LEGENDA: 4 = VERY GOOD; 3 = GOOD; 2 = POOR; 1 = UNSUITABLE**

# CHEMICAL RESISTANCE TABLE



Liquido <i>Immersion Medium</i>	Condizioni immersione <i>Immersion Conditions</i>	Teknoprene				
		FKM	HCR	TWIN	SIL	TPV
ACETIC ACID (30%)	2 days / 24° C	C	B	A	A	A
ACETONE	2 days / 24° C	D	D	B	B	D
ACETONITRILE	2 days / 24° C	D	A	B	A	C
AMMONIA (40%)	2 days / 24° C	B	B	B	C	A
ANILINE	2 days / 24° C	A	D	D	D	C
BENZENE	2 days / 24° C	B	D	D	D	D
BUTYL ALCOHOL (BUTANOL)	2 days / 24° C	A	A	A	C	B
CARBON TETRACHLORIDE	2 days / 24° C	A	C	D	D	D
CHLOROFORM	2 days / 24° C	C	D	D	D	D
CYCLOHEXANE	2 days / 24° C	A	A	D	A	D
DIMETHYL FORMAMIDE	2 days / 24° C	D	A	A	C	C
ETHYL ALCOHOL (ETHANOL)	2 days / 24° C	B	A	D	C	A
ETHYLENE GLYCOL	2 days / 24° C	A	A	A	A	A
ETHYLENE OXIDE	2 days / 24° C	D	D	A	D	A
ETHYLENE DICHLORIDE	2 days / 24° C	C	D	D	D	D
ETHYLENE TRICHLORIDE	2 days / 24° C	A	C	-	D	D
FREON R11/R12	2 days / 24° C	C	D	D	D	D
FREON R22	2 days / 24° C	D	D	D	D	D
FREON R134a	2 days / 24° C	D	-	-	C	-
FUEL A	7 days / 24° C	A	B	-	D	-
FUEL B	14 days / 24° C	A	B	-	D	-
HYDROCHLORIC ACID (10%)	2 days / 24° C	A	A	A	A	A
HYDROCHLORIC ACID (conc)	2 days / 24° C	A	C	C	D	A
HYDROGEN PEROXIDE HTP (90%)	2 days / 24° C	B	B	A	B	A
METHYL ALCOHOL (METHANOL)	2 days / 24° C	D	A	A	A	A
METHYL ETHYL KETONE	2 days / 24° C	D	D	C	D	C
METHYLENE CHLORIDE	2 days / 24° C	C	B	D	D	D
MONOCHLOROBENZENE	2 days / 24° C	B	C	-	D	D
NAPHTA	2 days / 24° C	A	C	D	D	D
NITRIC ACID (10%)	2 days / 24° C	A	B	A	B	A
NITRIC ACID (50%)	2 days / 24° C	B	D	A	D	C
NITRIC ACID (70%)	2 days / 24° C	C	D	B	D	D
NITROCELLULOSE SOLVENT	2 days / 24° C	D	A	-	C	-
OIL SAE	2 days / 24° C	A	-	C	B	D
PERCHLOROETHYLENE	2 days / 24° C	A	B	D	D	D
PHOSPHORIC ACID (85%)	2 days / 24° C	A	D	D	D	B
SODIUM HYDROXIDE (10%)	2 days / 24° C	A	A	A	B	A
SODIUM HYDROXIDE (50%)	2 days / 24° C	B	C	A	C	A
SODIUM HYPOCHLORITE (20%)	2 days / 24° C	C	C	A	C	A
SULFURIC ACID (50%)	2 days / 24° C	A	C	A	C	A
SULFURIC ACID (90%)	2 days / 24° C	C	D	A	D	C
TOLUENE	2 days / 24° C	A	B	D	D	D
TRICHLOROETHYLENE	2 days / 24° C	A	C	D	D	D
XYLENE	2 days / 24° C	A	A	D	D	D

**LEGENDA:**

**A = nothing or light corrosion**

**B = light or medium corrosion**

**C = big corrosion**

**D = very big corrosion/destroyed**

**- = no datas available**

**IMPORTANT NOTE**

*It is the user's responsibility to ensure the suitability and safety of Teknoprene products for all intended uses, including establishing the compatibility of any fluid with the tubing through which it is transmitted.*

*Laboratory, field or clinical tests must be conducted in accordance with applicable requirements in order to determine the safety and effectiveness for use of a product in any particular application.*

## **TUBE LUBRICATION**

*Before the assembling we recommend a soft tube lubrication: this granted a better installation and almost no friction among rollers and tube, extending its life.*

*We have selected some greases fitting this operation: contact our Technical Dept. to know the right grease for your special applications.*

