



Comparison of fluoropolymer gaskets

Recommended service range
Usable range (The usable range depends upon the conditions. Be sure to consult us in advance.)

TOMBO™ No.

1133

CLINSIL™ Clean



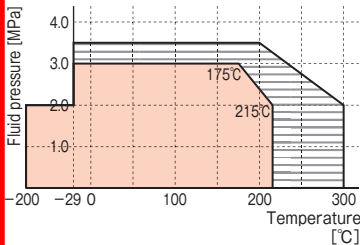
Conforms to the Standards and criteria for food and food additives, etc. (S.D.2: Public Notice No. 370 of the Ministry of Health & Welfare, 1959) stipulated by the Food Sanitation Act



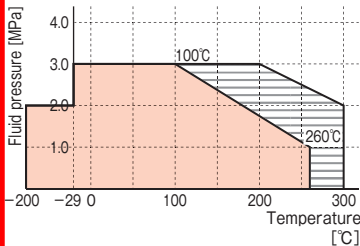
- Can be used with a wide range of fluids including acids, alkalis, petroleum, petrochemical products, organic solvents, hot oil, heating medium gas, and steam. (Excluding some strong alkalis and strong acids.)
- Has the highest heat resistance of all fluororesin gaskets.
- Can also be used where electrical insulating performance is necessary.

Main constituents: PTFE, alumina

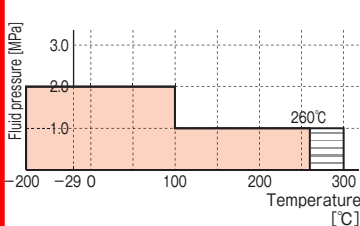
Water-type fluid



Oil-type or corrosive fluids



Gas-type fluid



* The greater the thickness, the larger is the deformation due to creep. For this reason, it is recommended that you select a gasket of 1.5mm in thickness for a gas line which exceeds 200°C.

TOMBO™ No.

9007-SC

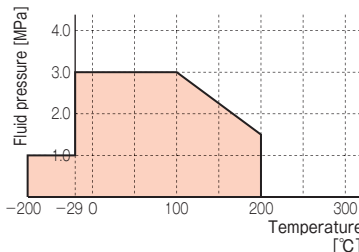
NAFLON™ special carbon filler filled PTFE cut gasket



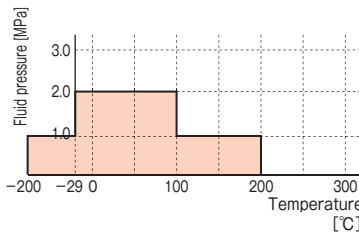
- Can be used with strong alkaline fluids. (It cannot be used with nitric acid, concentrated sulfuric acid, chromic acid, or other oxidizing fluids.)

Main constituents: PTFE, carbon

Water-type, oil-type or corrosive fluids



Gas-type fluid



Information

Creep is a deformation that occurs after the lapse of a certain time after a material has been exposed to a certain temperature and stress. Creep at normal temperature is also called "cold flow".

TOMBO™ No.

9007-LC

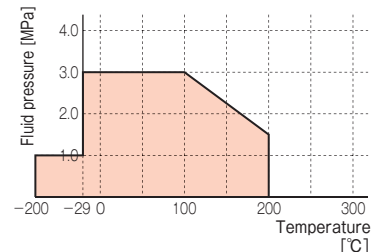
NAFLON™ PTFE Low Creep cut gasket



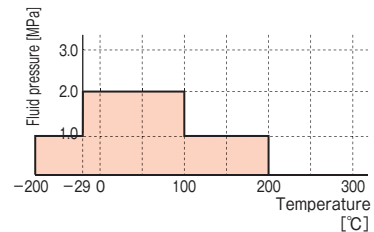
- Can be used with strong acidic fluids. (It cannot be used with hydrofluoric acid or strong alkalis.)
- Can be used where electrical insulating performance is necessary.

Main constituents: PTFE, silica

Water-type, oil-type or corrosive fluids



Gas-type fluid





Design criteria

TOMBO™ No.		1133	9007-SC	9007-LC	9007-GL	9007-FD	9096-SGM	9007	9007-ST	9007-ML	9007-LP	9007-G20
Gasket coefficient m [-]	1.0 t	3.50	3.50	3.50	—	—	2.50	3.50	—	—	—	3.50
	1.5 t	2.75	3.20	3.20	—	—	2.50	3.20	3.20	3.20	—	3.20
	2.0 t	2.75	3.00	3.00	—	—	2.50	3.00	3.00	—	3.00	3.00
	3.0 t	2.00	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	—	2.50
Minimum design seating stress y [N/mm ²]	1.0 t	44.8	24.5	24.5	—	—	19.6	24.5	—	—	—	24.5
	1.5 t	25.5	22.5	22.5	—	—	19.6	22.5	22.5	22.5	—	22.5
	2.0 t	25.5	19.6	19.6	—	—	19.6	19.6	19.6	—	19.6	19.6
	3.0 t	11.0	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	—	19.6
Minimum seating stress σ_3 [N/mm ²]	Water-type or oil-type fluid	14.7	14.7	14.7	14.7	14.7	19.6	10.8	10.8	10.8	14.7	12.7
	Gas-type fluid	34.3	29.4	24.5	14.7	—	39.2	19.6 ⁽¹⁾	19.6 ⁽¹⁾	19.6 ⁽¹⁾	19.6	24.5 ⁽¹⁾
Allowable seating stress [N/mm ²]		150.0	58.8	49.0	39.2	39.2	117.6 ⁽³⁾	39.2	39.2	39.2	29.4	49.0

Note : (1) Minimum seating stress for a thickness of 1.0t or 1.5t.
 (2) Minimum seating stress for a thickness of 2.0t or 3.0t.
 (3) The allowable seating stress for a thickness of 2.0t or 3.0t is 78.4N/mm².

Standard dimensions

TOMBO™ No.		1133	9007-SC	9007-LC	9007-GL	9007-FD	9096-SGM	9007	9007-ST	9007-ML	9007-LP	9007-G20
Maximum O.D. [mm]	1.0 t	φ610	—	—	—	—	φ1380	φ1200	—	—	—	—
	1.5 t	φ1250	φ1200	φ1200	—	—	φ1380	φ1200	φ1200	φ930	φ277	φ1200
	2.0 t	φ1250	φ1200	φ1200	—	—	φ1380	φ1200	φ1200	φ930	φ277	φ1200
	3.0 t	φ1430	φ1200	φ1430	φ600	φ1200	φ1380	φ1200	φ1200	φ930	φ277	φ1200
Standard thickness	1.0 t	●	—	●	—	—	●	●	—	—	—	●
	1.5 t	●	●	●	—	—	●	●	●	●	—	●
	2.0 t	●	●	●	—	—	●	●	●	—	●	●
	3.0 t	●	●	●	●	●	●	●	●	●	—	●

* The yellow parts in the table indicate that the gaskets concerned can be manufactured to a larger bore than indicated, by carrying out welding work.
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Basic physical properties

TOMBO™ No.		1133	9007-SC	9007-LC	9007-GL	9007-FD	9096-SGM	9007	9007-ST	9007-ML	9007-LP	9007-G20
Thickness [mm]		1.5	1.5	1.5	3.0	3.0	1.5	1.5	1.5	1.5	2.0	1.5
Specific gravity [-]		2.74	2.06	2.30	1.94	1.62	1.83	2.18	2.17	2.18	2.18	2.21
Tensile strength [N/mm ²]		18	24	18	22	17	141	34	35	22	28	21
Compressibility [%]	34.3MPa	5	4	5	7	10	18	9	14	13	9	8
Recovery [%]		47	67	55	73	57	39	60	69	62	78	53
Stress relaxation ratio [%]	100°C × 22h	27	56	50	62	71	43	73	57	59	65	67
	200°C × 22h	59	79	74	87	90	67	—	—	—	—	—

* The above values are measured values. They are not standard values.

Precautions for fluoropolymer products

Precautions concerning design and selection

● Finish of the gasket seat

The recommended gasket seat when using a fluoropolymer gasket is as follows.

- For sealing liquid: 6.3 μm Ra
- For sealing gas: 3.2 μm Ra

Precautions for use

● Fluids for which a fluoropolymer gasket is not suitable.

- Do not use a PTFE gasket with molten alkali metal, high-temperature fluorine, chlorine trifluoride or other fluid that corrodes PTFE.
- When a fluororesin gasket is used with a monomer-based fluid, the fluid may permeate into the gasket, resulting in polymerization. In such a case, it is recommended it is recommended that you use a TOMBO™ No.9007-ML.

● Gas-type fluid

- When using a fluoropolymer gasket to seal gas, use TOMBO™ No.9400 (NAFLON™ paste) together in order to improve the sealing performance.