



TOMBO No. 1133
CLINSIL™ Clean

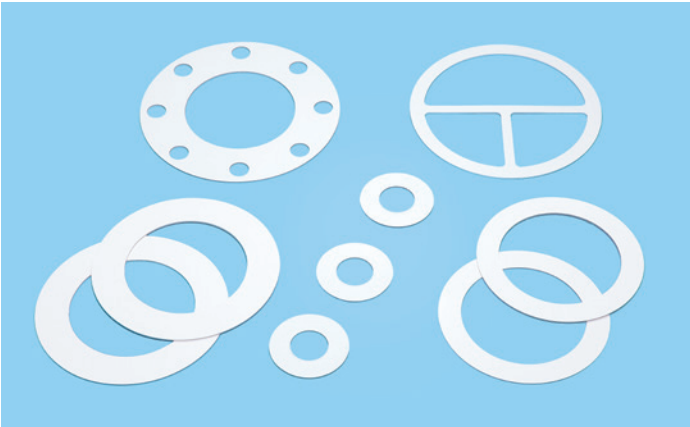


Conforms to the Standards and criteria for food and food additives, etc.

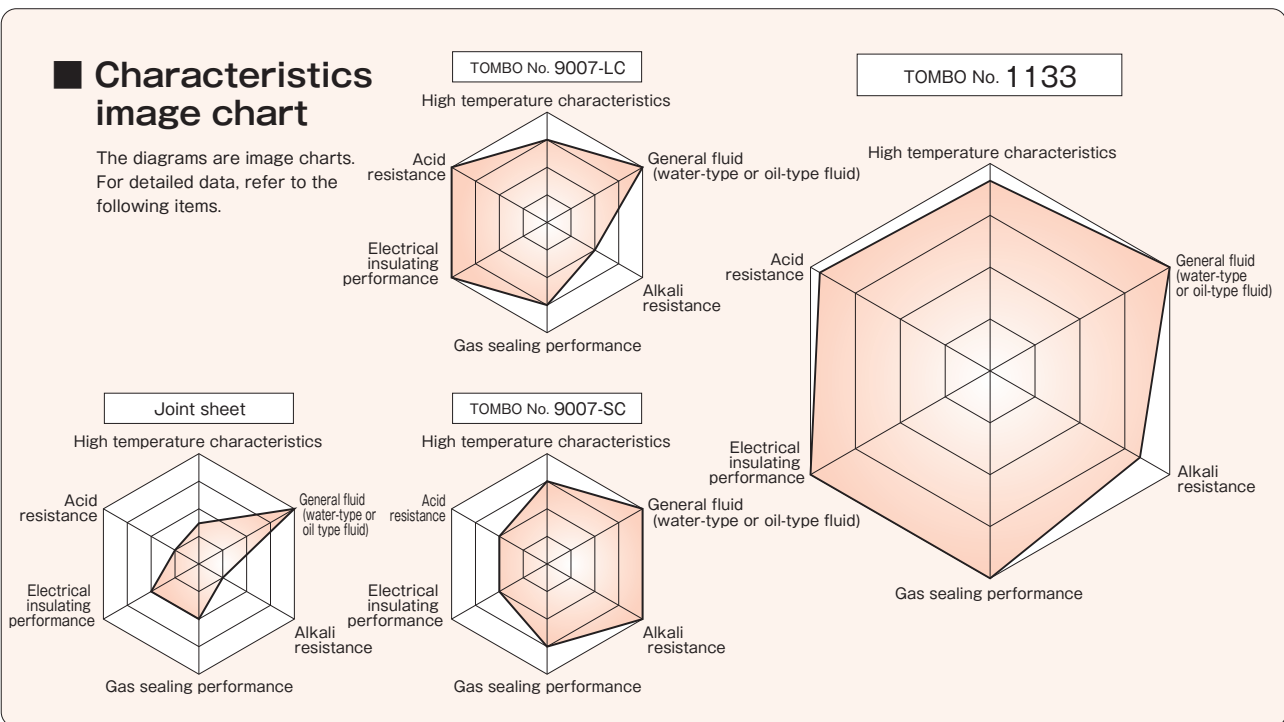
(3-D-2, Public Notice No. 370 of the Ministry of Health & Welfare, 1959) stipulated by the Food Sanitation Act

Precautions for use are on P.23.

White sheet gaskets that can be used for a wide range of applications.



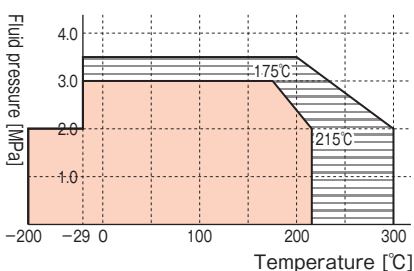
- They are clean and have excellent resistance to chemicals.
- They can be used at high temperature and high pressure.
- Alumina, which has excellent resistance to chemicals, is used as a filler, so it is not necessary to use different type of gaskets to match the type of fluid, whether it is acid or alkali.



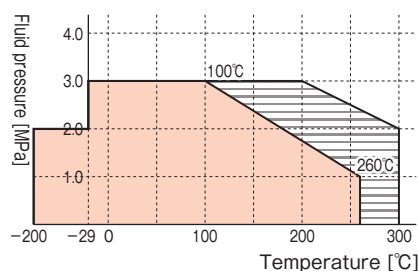
Service range

Recommended service range
 Usable range (Usable depending on the conditions of use. Consult us in advance.)

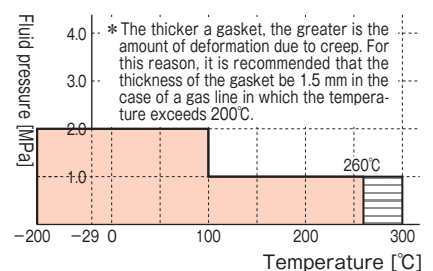
Water-type fluid



Oil-type fluid and corrosive fluid



Gas-type fluid



■ Design criteria

TOMBO No.		1133
Gasket factor m	[—]	
	1.0 t	3.50
	1.5 t	2.75
	2.0 t	2.75
Minimum designed seating stress y	[N/mm ²]	
	1.0 t	44.8
	1.5 t	25.5
	2.0 t	25.5
Minimum seating stress σ^3	[N/mm ²]	
	3.0 t	11.0
Allowable seating stress	[N/mm ²]	
	—	150

■ Standard dimensions

TOMBO No.		1133
Maximum O.D.	[mm]	
	1.0 t	φ 610
	1.5 t	φ 1250
	2.0 t	φ 1430
Standard thickness		
	1.0 t	●
	1.5 t	●
	2.0 t	●
	3.0 t	●

* The yellow part in the table can be made larger by welding.

Chemical resistance test

Test method: Measure the weight change rate of TOMBO No.1133 and our conventional gasket after leaving them immersed in representative acid and alkali fluid for 7 days each.

Fluid	Concentration	Temperature	TOMBO No.			
			1133	9007-SC	9007-LC	
Acid	Hydrochloric acid	35%	50°C	A	A	A
	Nitric acid	95%	100°C	A	A	A
	Sulfuric acid	65%	100°C	A	Measurement impossible ^{*1}	A
	Hydrofluoric acid	55%	Room temperature	A	A	C
	Phosphoric acid	85%	100°C	A	A	A
Alkali	Sodium hydroxide	48%	100°C	A	A	C
	Potassium hydroxide	48%	100°C	A	A	B

*1: The test was interrupted because the filler reacted with the fluid and emitted smoke.

A ...Good chemical resistance. B ...Study must be carried out using actual machine. C ...Cannot be used.

TOMBO No.1133 has excellent resistance to chemicals, including acids and alkalis.

■ Examples of chemicals for which CLINSIL™ Clean is suitable

Acids	Alkalis	Halogens	Aromatics	Others
Hydrochloric acid	Potassium hydroxide ^{*1}	Chlorine gas	Benzene	Alcohols Dimethylform-amide
Sulfuric acid	Sodium hydroxide ^{*1}	Bromine	Toluene	Hydrocarbons Tetrahydrofuran
Nitric acid	Liquid ammonia		Xylene	Organic acid Diethylamin
Acetic acid			Nathphalene	Vinyl acetate monomer Acetoaldehyde
Phosphoric acid ^{*1}			Phenol	Styrene monomer Nitril liquid
Hydrofluoric acid			Cumene	Acrylonitrile Methyl chlorides
Formic acid				Saturated steam Etc.
Boric acid				Hexane

*1: Fluids for which care is necessary

Under the following conditions, the filler may liquate out and impair the performance of the gasket. For this reason, do not use this gasket under such conditions.

- For a sodium hydroxide water solution or potassium hydroxide water solution:
 - Fluid concentration is 30% or higher and fluid temperature is 100°C or higher
 - Fluid temperature is 120°C or higher

● In the case of phosphoric acid, when the temperature is at 100°C or higher.

● Chromic acid (hexavalent chrome)

* For other fluids, refer to the precautions for use.

Precautions for use are on P.23.

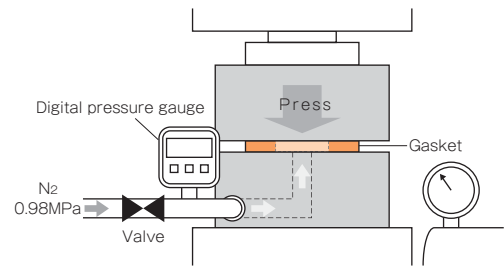
Gas seal test

Test method: Compress the gasket-sealed flanges filled with N₂ gas using a press, and measure the amount of leakage in terms of the reduction of pressure of the sealed gas.

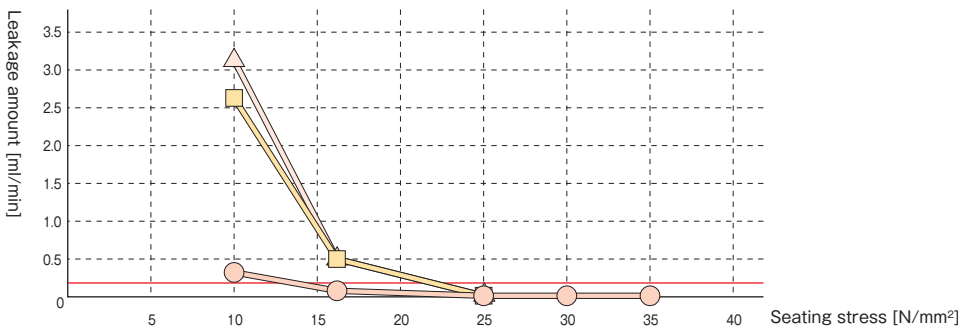
[Test conditions]

- Gasket size: JIS 10K 50A FR (1.5t)
- Test jig: Platen that has the same dimensions as that used in JIS B 2490
- Tightening method: Press
- Seating stress: max. 34.3N/mm²
- Fluid: Nitrogen
- Internal pressure: 0.98MPa
- Leakage detection: Digital pressure gauge

[Test schematic drawing]



- ...TOMBO No.1133 (CLINSIL™ Clean)
- ...TOMBO No.9007-LC (NAFLON™ special filler filled PTFE cut gasket)
- △...TOMBO No.9007-SC (NAFLON™ special carbon filler filled PTFE cut gasket)
- Limit of leakage detection using soapy water foaming method (0.2ml/min)



TOMBO No.1133 has excellent sealing performance, even when the seating stress is low.

Heat resistance test

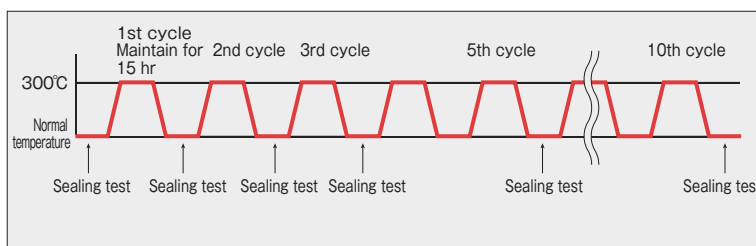
Test method: Subject the gasket to a heat cycle under the following conditions, and carry out a sealing test for the specified number of cycles.

[Test conditions]

- Flange size: JIS 10K 25A RF
- Gasket thickness: 1.5mm
- Seating stress: 34.3N/mm²
- Heating conditions: 300°C × 15hr × 10 cycles
- Fluid: Nitrogen
- Internal pressure: 1.0MPa
- Sealing test method: Soapy water foaming method

[Test results]

Number of cycles	Leakage
0	None
1	None
3	None
5	None
10	None



* Criterion for no leakage
Limit of detection using soapy water foaming method (0.2ml/min)

TOMBO No.1133 has excellent heat resistance.