

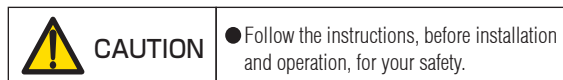
■ Domestic sale network

Head office	7-1, Shinmachi 1-chome, Nishi-ku, Osaka, 550-0013 Japan	TEL: 81-(0)6-7166-8326 FAX: 81-(0)6-7166-8514
Sales Head Quarter	2-2, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo, 100-0011, Japan	TEL: 81-(0)3-3508-1800 FAX: 81-(0)3-3508-1881
Tokyo Branch Office	2-2, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo, 100-0011, Japan	
Yokohama Branch Office	6-113, Aioi-cho Naka-ku, Yokohama-shi, Kanagawa, 231-0012, Japan	
Nagoya Branch Office	4-13, Higashisakura 1-chome, Higashi-ku, Nagoya-shi, Aichi, 461-0005, Japan	
Kyoto Branch Office	293-1, Ayahorikawa-cho, Shimogyo-ku, Kyoto, 600-8482, Japan	
Osaka Branch Office	7-1, Shinmachi 1-chome, Nishi-ku, Osaka, 550-0013 Japan	
Kobe Branch office	1-29 Taruyamachi ,Akashi-shi, Hyogo, 673-0898 Japan	
Hiroshima Branch office	4-1, Inarimachi Minami-ku, Hiroshima, 732-0827, Japan	
Kyushu Branch office	1-25, Fukuhara, Koushi-shi, Kumamoto, 861-1116, Japan	
Pillar Service Sales Co.,Ltd	4-4, Kainochonishi 3-chome, Sakai-ku, Sakai-shi, Osaka, 590-0950, Japan	
Chubu Pillar Service Sales Co.,Ltd	3-4, Jingu 2-chome, Atsuta-ku, Nagoya-shi, Aichi, 456-0031, Japan	
Tokyo Pillar Co.,Ltd	16-1 Minamimachi Kawasaki-ku, Kawasaki-shi, Kanagawa, 210-0015 Japan	
Hokuriku Pillar Co.,Ltd	15-28, Chuo-cho 1-chome, Tsuruga-shi, Fukui, 914-0811, Japan	
Pillar Engineering Service Co.,Ltd	3-28, Matsue 3-chome, Kurashiki-shi, Okayama, 712-8052, Japan	
Kanto Pillar Engineering Service Co.,Ltd	6-1, Aoyagikita 2-chome, Ichihara-shi, Chiba, 299-0101, Japan	
Sanyo Pillar Engineering Service Co.,Ltd	3391-1 Tokuyama, Shunan-shi, Yamaguchi, 745-0851 Japan	
Nippon Pillar Kyushu Co.,Ltd	1-25, Fukuhara, Koushi-shi, Kumamoto, 861-1116, Japan	

■ Group corporations

Nippon Pillar Singapore Pte Ltd.	No. 237 Pandan Loop #03-01 Westech Building, Singapore 128424 TEL : SINGAPORE(65)6861-7138 FAX : SINGAPORE(65)6862-9098 URL : http://www.pillar.com.sg/ e-mail: sales@pillar.com.sg Jl.T.B.Simatupang, Kav.36 Sovereign Plaza 21st floor, Suite M23 Jakarta 12430 INDONESIA TEL : Indonesia(62)21-2939-8831 FAX : Indonesia(62)21-2939-8833 NO.23/33 Sorachai Bldg., 15th Floor, Soi Sukhumvit 63, Sukhumvit Rd., Klongtonnue, Wattana, Bangkok 10110 TEL : Thailand(66)2-726-9701 FAX : Thailand(66)2-726-9702 URL : http://www.pillar.co.th/ e-mail: info@pillar.co.th 8F, No.45, Section 1, Minquan East Road, Zhongshan District, Taipei City 104 52, Taiwan TEL : TAIPEI(886)2-2587-1911 FAX : TAIPEI(886)2-2585-3131 URL : http://www.taiwanpillar.com.tw/ e-mail: sales@taiwanpillar.com.tw NO.1 Dazhong Factory Building, 255 Hua Jin Road, Tong An Suzhou New District, Jiangsu, P. R. China (215153) TEL : CHINA(86)512-6607-0636 FAX : CHINA(86)512-6607-6627 Far East International Plaza A-1111, No.319, Xianxia Road, Changning District, Shanghai China. (200051) TEL : CHINA(86)21-6208-7711 FAX : CHINA(86)21-6235-0501 URL : http://www.pillar-cn.com/ e-mail: sales@sh.pillar-cn.com Room 1703, Kukdong BUILDING Toegye-ro/173, Jung-gu, Seoul, Korea TEL : KOREA(82)2-2277-4031 FAX : KOREA(82)2-2275-9140 URL : http://www.koreapillar.com/ e-mail: webmaster@koreapillar.com 6EA 133 Dubai Airport Free Zone P.O.Box371455,Dubai, UAE TEL : Dubai(971)4-2952907 FAX : Dubai(971)4-2952908 e-mail: info@nipponpillar.ae 6630 Roxburgh Drive, Suite 171, Houston, TX 77041 TEL : U.S.A(1)281-529-6367 FAX : U.S.A(1)281-529-6380 URL : http://www.nipponpillar.com/ e-mail: sales@nipponpillar.com 48521 Warm Springs Boulevard. Suite 317 Fremont, CA 94539 TEL : U.S.A(1)510-573-6146 FAX : U.S.A(1)510-573-6236 URL : http://www.nipponpillar.com/ e-mail: sales@nipponpillar.com Av. Rita Perez 2001 D, Colonia Colinas de Lagos, Lagos de Moreno, Jalisco, Mexico C.P.47515 TEL : MEXICO(52)474-403-1609 URL : http://www.npk-mexico.com/en/ e-mail: info@npk-mexico.com Hans-Riedl-Strasse 19, 85622 Feldkirchen Germany TEL : GERMANY(49) 89-5908-1268 e-mail: npeu@nipponpillar.eu
Nippon Pillar Singapore Pte Ltd. Indonesia Representative Office	
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*Specifications and dimensions are subject to change without prior notice. *The data on this catalogue are solely for your reference and are not to be construed as constituting a warranty.



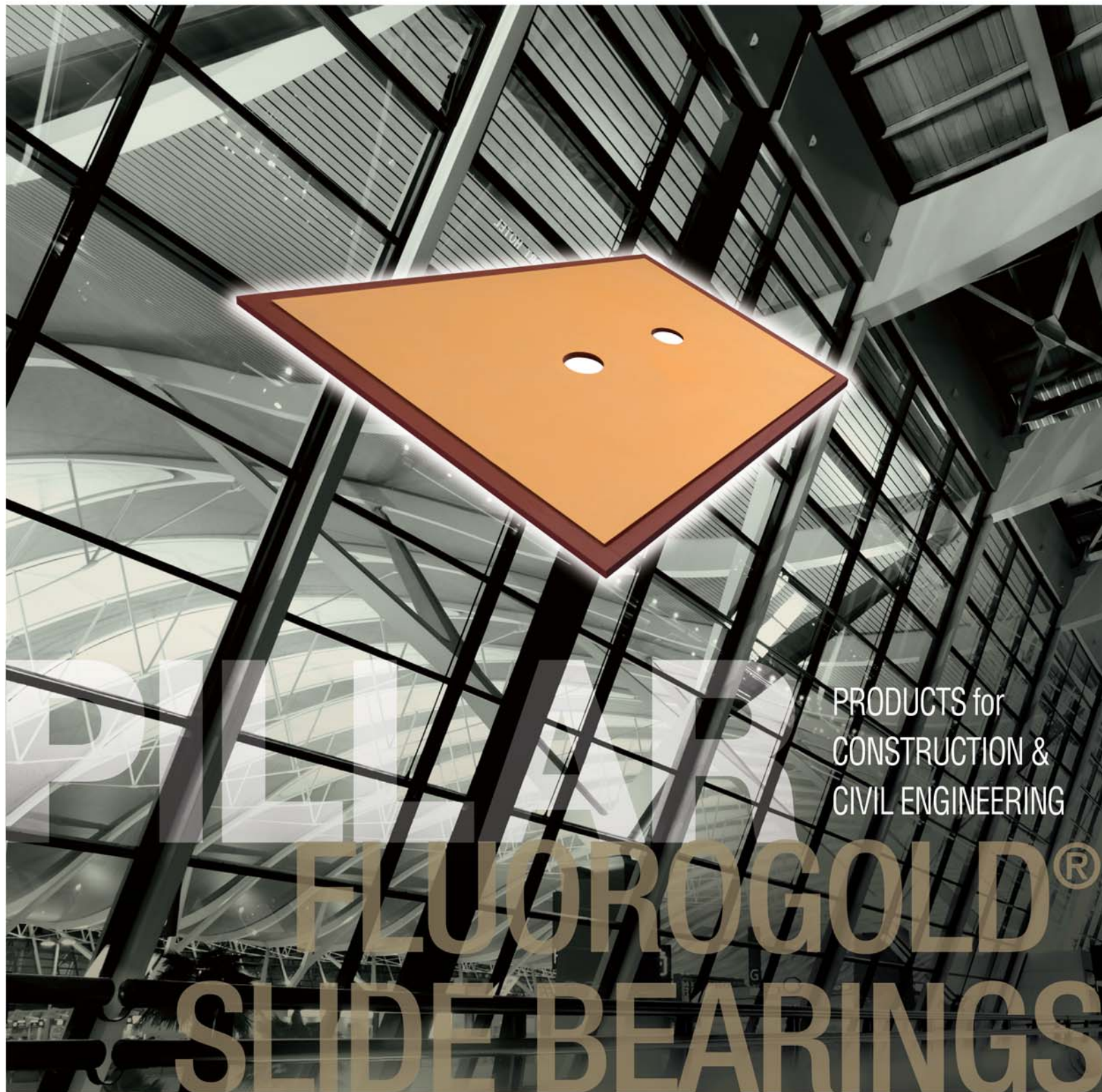
<https://www.pillar.co.jp/>
E-mail:sales@pillar.co.jp

CAT No.411601 1901(S)



Products for Construction and Civil Engineering
**PILLAR FLUOROGOLD®
SLIDE BEARINGS**

Small-sized slide bearing plates to support heavy loads



NIPPON PILLAR PACKING CO., LTD.

PPLC0333-1

PILLAR FLUOROGOLD® SLIDE BEARINGS

The PILLAR FLUOROGOLD® slide bearing is a sliding material made of PILAFロン® bonded to metal, and used for various applications, centered in earthquake measures for buildings, thermal expansion countermeasures in industrial plants, and the transportation of equipment. In order to maximize the function of the slide bearing, the bearing material uses PILAFロン®, which incorporates special filler. PILAFロン® is firmly bonded to the metal blending to achieve high wear resistance and high load resistance. Furthermore, this slide bearing ensures ease of mounting, thus gaining high popularity.

PILAFロン® is NIPPON PILLAR PACKING's registered trademark for a filler-containing polytetrafluoroethylene (PTFE) resin molding.

Features of PILLAR FLUOROGOLD®

Low coefficient of friction

Extremely low coefficients of friction(μ) can be achieved by using PILAFロン on PILAFロン, or polished stainless steel plates on PILAFロン.

Self-lubricating

PILLAR FLUOROGOLD is self-lubricating and requires no oil. PILLAR FLUOROGOLD are generally maintenance-free and can be used over extended periods of time.

Weather resistance

PILAFロン offers exceptional weather resistance and can be used in a broad range of temperatures. The material is stable even below the freezing point and only has a coefficient of water absorption of 0.01% or less.

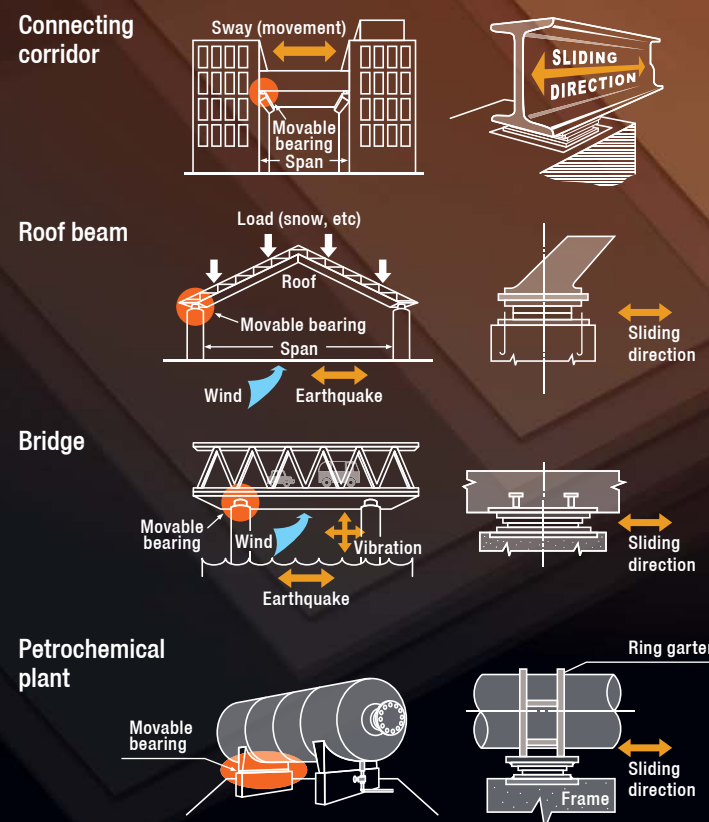
Chemical resistance

PILAFロン is chemically inert, and reacts with few chemical solutions. Consequently, it can be used with peace of mind, even if close proximity to sea.

Compact

The standard thickness of a PILAFロン plate is 2.4 mm and the standard thickness of the steel plate is 3.2 mm. The product is very compact with a total thickness of 5.6 mm, which ensures ease of designing.

Applications example



Major accomplishments

Construction

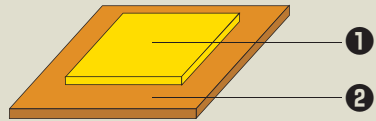
- Modification of Osaka Ekimae Building No. 3 (curtain wall and drive way bearings)
- Construction of Ashiya Beach High-rise Apartments (structural walls and connecting corridors)
- Kobe Portopia Hotel (connecting corridors)
- Kasugai Indoor Pool (roof beams)
- Matsumoto City Gymnasium, Nagano Prefecture (roof beams)
- New Construction of Tokyo Health Plaza (expansion)
- Tokyo International Airport International Terminal (expansion)
- Hakata Bay Oriental Hotel & Resort (expansion)
- Kansai International Airport Passenger Terminal (connecting corridors)
- Hyogo Prefectural Museum of Art (expansion)
- Nagoya Inuyama Senjin Multistory Car Park (expansion)
- Okinawa Prefectural General Welfare Center (expansion)
- Tokyo Takarazuka Building (expansion)
- Miura Gymnasium (roof beams)
- AEON Mall Itami-nishi (connecting corridors)
- Glass Building of Tokyo International Forum (expansion)

Plants and Civil Engineering

- No. 4 blower of Nippon Steel Kimitsu (Piping bearing)
- Kobe Power Plant, Kobe Steel (Electrostatic precipitator stand)
- Maizuru Power Station of Kansai Electric Power (Flue support)
- Akashi Kaikyo Bridge (Piping bearing)
- Glendale Freeway, Los Angeles (Road support)
- Barka Power & Desalination Project (Expansion)
- DA building of Japan Nuclear Fuel Limited's Rokkasho reprocessing facilities (Expansion)
- TEPCO's Kashima Power Station (Chimney support)
- China / Baoshan Iron & Steel (Device frame)
- Oji Paper's Yonago Plant (Boiler stand)
- Warak LNG Plant, Malaysia (Pipeline support)
- Chita LNG Base (Pipeline support)
- New Tokyo International Airport Authority (Aviation fuel pipeline support)
- Algeria Hassi R'Mel Gas Plant (Pipeline support)
- China / Mikawa Power Generation Facilities (Boiler stand)
- Mobil Oil Singapore Pte., Ltd. (Pipeline support)

Specifications

Standard specifications



Parts name	Material / Specifications	Remarks
① Bearing	PILAFLON®	Thickness: 2.4 mm
② Metal plate	Carbon steel (JIS G 3101, SS400)	Thickness: 3.2 mm
Painting	Lead-free, Chromium-free anticorrosive paint	JIS K5674

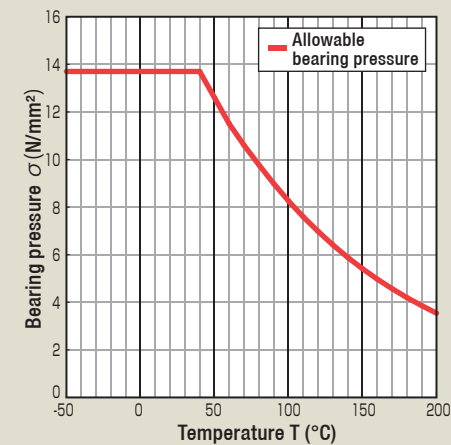
* Materials, thicknesses, and painting other than the above are available as well. For details, please contact us.

Type and Use method

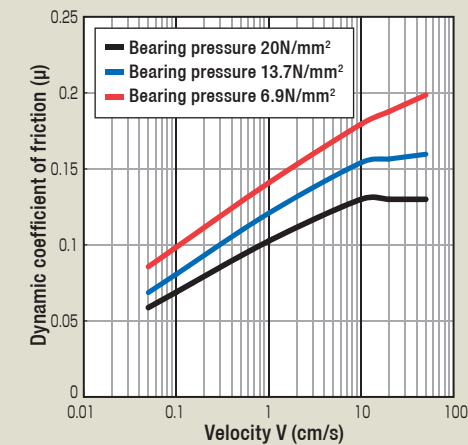
Standard Type	How to use	Details
Standard ① FLUOROGOLD and SUS304 special polishing plate	A sliding combination consisting of FLUOROGOLD and special polishing SUS304 plate. FLUOROGOLD consists of 2.4mm of PILAFLON bonded to a SS400 metal plate on which 15mm lip has been left. This is the most common usage. Bearing pressure: 0.5N/mm²~13.7N/mm² Temperature: -60°C~+200°C	
Standard ② FLUOROGOLD and FLUOROGOLD	A sliding combination with two FLUOROGOLD slide bearing each of it consists of 2.4mm of PILAFLON bonded to a SS400 metal plate on which 15mm lip has been left. This combination is ideal when there is little horizontal space in which to install the system. Bearing pressure: 0.5N/mm²~13.7N/mm² Temperature: -60°C~+200°C	
Special Type	How to use	Details
Dust seal Type	A FLUOROGOLD plate is the same as that for the standard product ①, but a dustproof seal is on the FLUOROGOLD plate. This product used in dusty environments. Bearing pressure: 0.5N/mm²~13.7N/mm² Temperature: -45°C~+100°C	
Back welding Type	This is the same in combination as that for the standard product ②, but the metal plate thickness is 19 mm in the case of back welding. Bearing pressure: 0.5N/mm²~13.7N/mm² Temperature: -60°C~+200°C	
Screw-mounting Type	A countersunk screw hole is provided for screw mounting, and the metal plate thickness is 4.5mm. The type with screw-mounting is used when welding is not possible on site, for example when the mounting portion is plated with a hot-dip galvanized. Bearing pressure: 0.5N/mm²~13.7N/mm² Temperature: -60°C~+200°C	
FLUOROGOLD with rubber Type	Consists of 2.4mm of PILAFLON bonded to chloroprene rubber placed between stainless steel plates. The height is determined by individual design. Bearing pressure: 0.5N/mm²~4.9N/mm² Temperature: -30°C~+100°C	
LBP slide bearings	Consists of 0.8mm of PILAFLON joined to 0.8mm punching stainless steel plate and welding to a 3mm stainless steel plate. Use this product as a slide bearing for high loads such as equipment. Bearing pressure: 0.5N/mm²~34.3N/mm² Temperature: -60°C~+200°C	

Performance

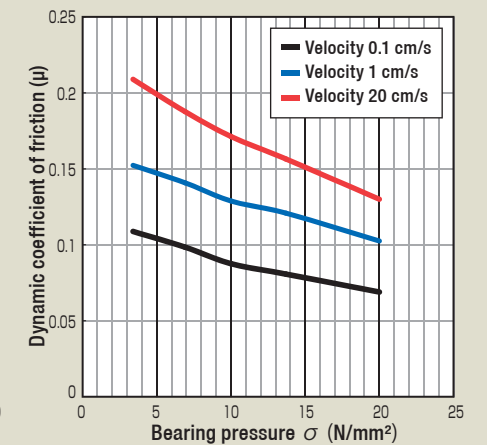
Relationship between temperature and allowable bearing pressure



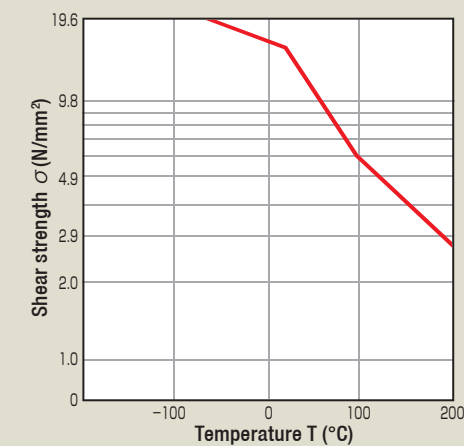
Velocity dependence of friction coefficient



Bearing pressure dependence of friction coefficient



Bonding strength (shear)



Physical properties of PILAFLON®

Mechanical properties	Units	Measurement method	Cross direction
Tensile strength	N/mm ²	JIS K6897	11
Elongation	%	JIS K6897	190
Compressive strength (0.2% offset)	N/mm ²	ASTM D695-68T	7.8
Compressive modulus	N/mm ²	ASTM D695-68T	686
Flexural strength (0.2% offset)	N/mm ²	ASTM D790-66	6.9
Flexural modulus	N/mm ²	ASTM D790-66	680
Hardness (Shore D)	—	ASTM D2240	58~68
Physical properties			
Coefficient of linear thermal expansion	cm/cm/°C	ASTM D696-44	6.5×10 ⁻⁵
Thermal conductivity	kJ/mh°C	JIS K6897	1.31
Specific gravity	—	JIS K6897	2.20
Wear coefficient	$\frac{\text{mm}}{\text{N/mm}^2 \cdot \text{cm}^2 \cdot \text{sec} \cdot \text{hr}}$		11.2×10 ⁻⁶

* The numerical values in the above table and graph are reference values and not guaranteed values.
* Cross direction: The direction perpendicular to the molding direction of the material.

How to order

Specify the dimensions of the PTFE and steel plate of PILLAR FLUOROGOLD by the following explanation.

P / #4801
FC - 10 10 - CS - 15L 200×150
 ① ② ③ ④ ⑤ ⑥

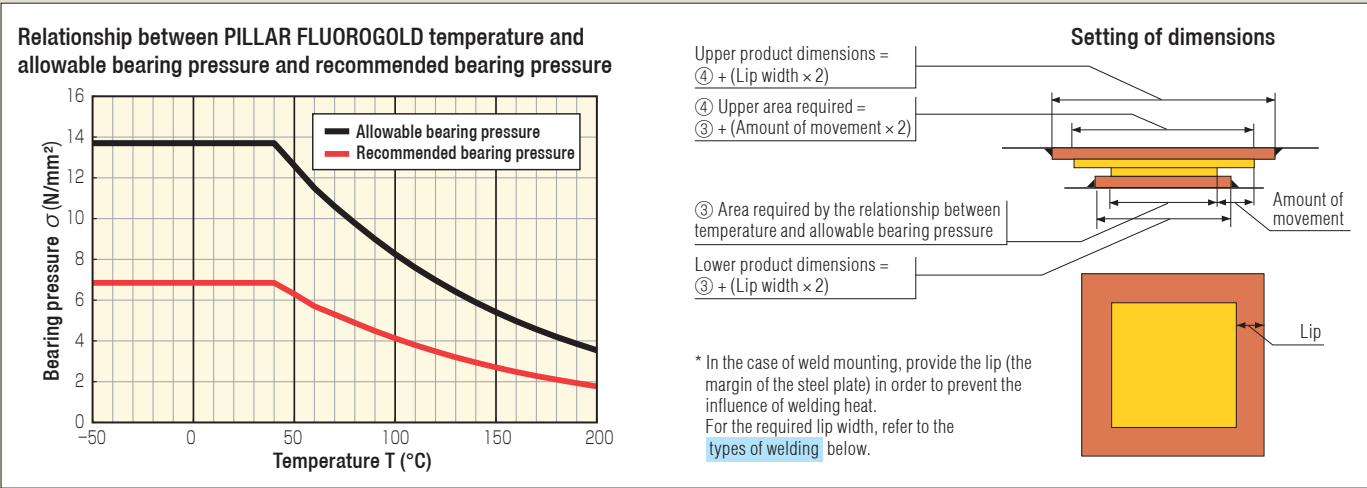
- ① PILLAR FLUOROGOLD
- ② Thickness of filled PTFE (2.4 mm)
- ③ Steel plate thickness → See table at right
- ④ Steel plate material
(CS = Carbon steel (SS400), SS = Stainless steel (SUS304))
- ⑤ Lip width (mm)
- ⑥ Steel plate plane dimensions

③ Code No.	Steel plate thickness (mm)	
	SS400	SUS304
10	3.2	3
15	—	4
20	4.5	5
25	6	6
30	9	9
50	12	12
70	16	15
75	19	20
100	25	25

* Special material and thickness orders are accepted.

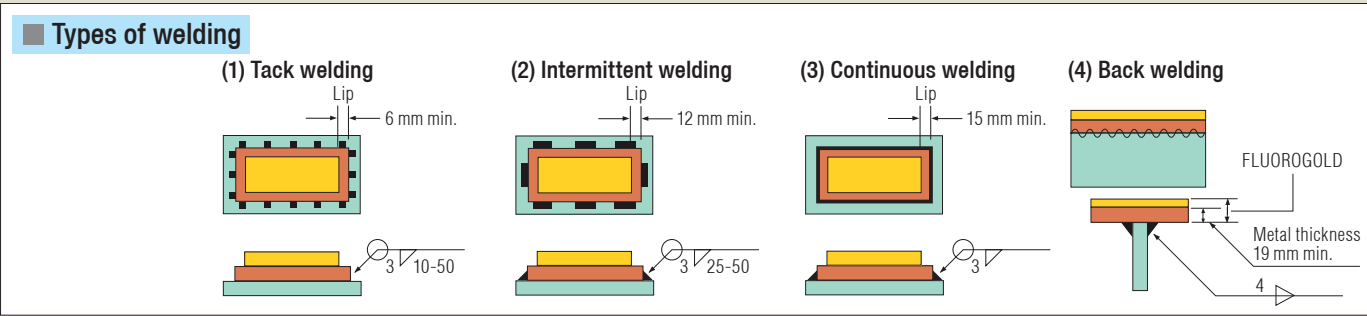
Design procedure

- ① Calculate the load temperature and movement applied to PILLAR FLUOROGOLD.
- ② Decide the method of mounting PILLAR FLUOROGOLD.
- ③ FLUOROGOLD cannot perform rotational absorption. On the assumption that the entire surface of FLUOROGOLD does not come in uniform contact, the bearing pressure of FLUOROGOLD recommends lower bearing pressure than the recommended bearing pressure (with a minimum safety factor of 2).
- ④ Decide on the area (dimensions) of the upper PILAFLO or upper stainless steel plate according to the amount of movement.



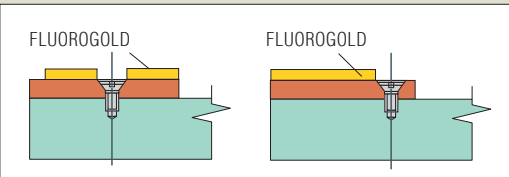
Notes of installation

- Preparation before welding
 - Clean the seat surface where PILLAR FLUOROGOLD is mounted.
 - Remove the paint coating, moisture, dust, oil, and rust, etc. on the welding portion of PILLAR FLUOROGOLD immediately before welding, because they affect adversely to the welding.
- Welding
 - Use a welding rod with size of less than 3.2 mm diameter. The welding rod of 2.6 mm diameter is the best.
 - Lightly wet the soft package paper on PILLAR FLUOROGOLD and perform welding while protecting the surface of FLUOROGOLD in order to prevent the adhesion of welding spatter on the sliding surface at the time of welding. (A wet waste cloth may be used instead.)
 - Do not use the gas welding procedure.
 - In the case of tack welding or intermittent welding, apply sealant to the periphery of the welded part so that rainwater, will not penetrate between the mating member and FLUOROGOLD after welding.



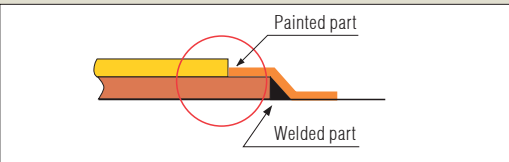
■ Screw and tightening of bolt

- Make sure that the screw head will not protrude the sliding surface.
- Apply sealant to the periphery of the FLUOROGOLD and around the screw so that rainwater will not penetrate between the mating member and FLUOROGOLD after mating.

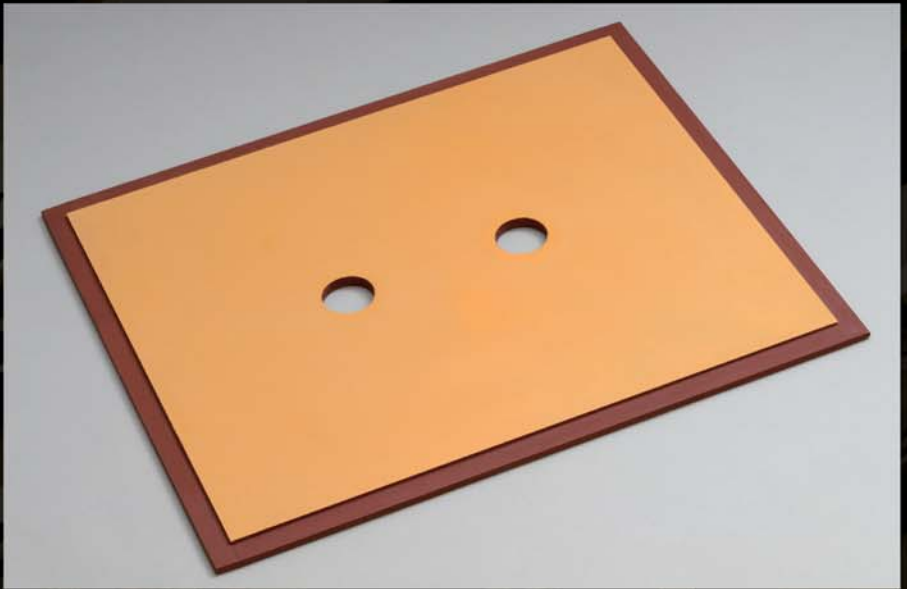


■ Painting

The steel surface is painted with JIS K5674 Lead-free, Chromium-free anticorrosive paint. At the time of welding, remove the painting of the welded portion of PILLAR FLUOROGOLD. Perform repair and finish painting after mounting. Perform painting carefully in particular within the circle as shown on to the right.



PILAFLO® products in a wide variety contribute to the fields of construction and civil engineering and general industries.



FLUOROGOLD®



UNI-TON® bearing

U-bolt & pad



Insulating bolt

Insulation bearing

NIPPON PILLAR PACKING performs the strict quality control of products, ranging from PTFE material selection through molding and processing stages, thus realizing high-quality products. Feel free to contact NIPPON PILLAR PACKING if you need help with sliding bearing materials.