Manufacturing Low Friction Fluoroglide Skidway Plates and Bearings

Manufacturing and supplying slide bearings for more than 50 years, Fluorocarbon's bearings are based on Fluorogold technology from the original Fluorocarbon USA company. During the last 40 years Fluorocarbon UK has developed the product and applications for two different markets, offshore and onshore.

Fluorocarbon developed a Fluoroglide skidway system for the load out of the BP Fortes jacket at McDermotts Scottish construction yard in 1986. Since this success Fluorocarbon has continuously developed and improved the concept with additional products and services to reduce load-out friction. Due to changing tides and barge/crane availability engineers often only have one chance or window to ensure the skidding operation of a large structure is successful. Fluorocarbon is proud of a 100% successful load-out record, in this way ensuring first time load-out with low coefficient of friction, which saves the construction yard additional costs normally associated with extra pulling force required with higher load-out friction.

Skidding large offshore fabrications on a PTFE skidway is now the accepted standard for structures heavier than 5000 tons. The standard for PTFE skidways is specified worldwide, these skidways being used in conjunction with Timber skid-shoes to ensure a coefficient of friction less than 10%. Fluoroglide skidway systems incorporating PTFE technology are now used around the world. The Liwan process platform fabricated by COOEC weighing 33000 tons was recently successfully loaded out on a Fluoroglide skidway system achieving Dynamic friction values of less than 5%.

Along with on site consultancy, Fluorocarbon offers a range of products to complement our skidway systems, in this way ensuring we offer the best systems for successful load-outs with a low coefficient of friction including lubricating systems, reduced break out membrane and timber skid shoes.

The offshore market for Fluoroglide Fluorinoid bearing systems can be broken down into 3 market segments:

- Skidding of Jackets and process decks on to the transportation barges ready for load-out
- Bearings for pipe and pedestrian bridges between jackets
- Subsea slide bearings for PLETS and Sleeper foundations

Jacket load out

Fluoroglide bearings can be manufactured to a particular specification for use in the aggressive marine environment such as platform bridge bearings between jackets or flare stacks. There is a requirement for slide bearings in high temperature environments under flare stacks, which is why, for these applications, Fluorocarbon has a range of slide bearings utilising graphite as the sliding face.

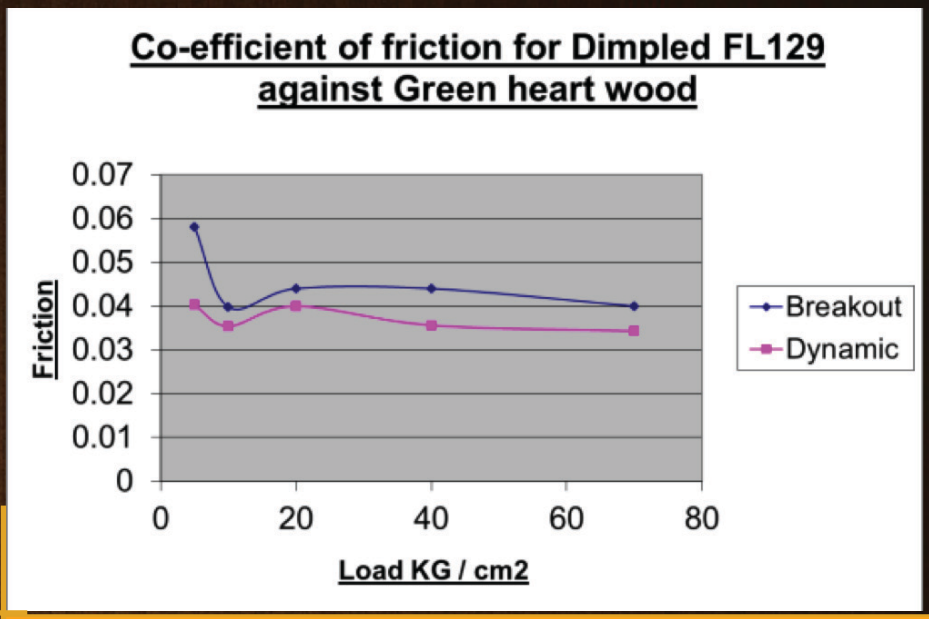
The Technology for the complete range of Fluoroglide Fluorinoid bearings is based on PTFE, originally developed by DuPont. The coefficient of friction values, for slide bearings published 70 years ago, is 0.06 for a typical bearing pressure of 70kgs/cm2. Fluorocarbon has verified these internally and from

independent test-houses, confirming that the Fluorinoid range of virgin and filled PTFE has a coefficient of friction values of 0.06 or, in many cases, lower.

The manufacturing of Fluoroglide slide bearings and skidway plates has been developed over many years. To guarantee a successful load-out with low coefficient of friction, it is essential to have a series of quality control checks in place at each stage of manufacture.

These include:

- Fluorinoid Special grades of virgin and filled (reinforced) PTFE
- Choice of protective corrosion resistant coating on exposed metallic surfaces
- Daily pre-treatment of the metallic backing plates ready for controlled bonding
- Choice of Epoxy bonding systems to suit environment, temperature etc.
- Choice of protective corrosion resistant metals and coatings



A graph of friction for timber skid shoes against fluorinoid PTFE

Subsea Applications

The growth of the offshore subsea market has resulted in the requirement for a range of PTFE slide bearings, which will continue to function at depths of up to 2000 meters for many years.

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Special grades of PTFE, which satisfy the requirements to operate well in subsea, have been developed by Fluorocarbon. The Fluorinoid grades, however, do not support growth of marine life, which is essential for long life subsea.

The evaluation of the Fluorocarbon 'J' Bearings was undertaken by the UK's engineering research centre in conjunction with BP to measure wear and friction in full size test rig using sea water at 2oC. Having passed these tests and be declared up to a certain standard, the large number of bearings have been in service for more than 10 years in deep water, offshore Angola.

A range of Sleeper pad 'T' Bearings has also been developed using alternative polymeric materials for specific subsea applications. Once again, all products have been wear and life tested in seawater containing sand particles.

The 'J' and 'T' bearing systems have been specified by McDermott for the flow line and production lines PLET and Sleeper pads for the INPEX ICHTHYS project 900 KM long subsea pipeline in Australian waters.

Fluorocarbon skidway plates

The failure of PTFE skidway plate, manufactured by a local yard with poor materials and technology

Fluorocarbon engineers are available to discuss Fluoroglide bearing use at all stages of a project, in many cases producing bearings within 24 hours for urgent requirements.

Fluorocarbon Group

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