

TECHTALK DESIGN ADVICE SERIES

THE PROOF IS IN THE PLASTIC



I'm sure you've heard the saying, "The proof is in the pudding." But when it comes to self-lubricating plastic bearings, the proof is definitely in the plastic.

Over the past few decades, there has been a notable shift from recirculating ball bearings and PTFE-lined aluminum shells to high-performance plastic liners. This transition can be attributed to a number of factors, but two of the most important are material composition and the unique geometry of the replaceable liner.

Material Composition

During bearing operation, a wet lubricant is typically applied to reduce friction and minimize wear. However, igus® plastics inherently contain solid lubricant as particles released in small amounts during movement. As a result, all igus® bearings do not require any external lubrication, which virtually eliminates maintenance and lowers costs.



DryLin® R liners Material: iglide® J
Color: yellow Suitable shafting materials: case-hardened steel, stainless steel, soft stainless steel, and anodized aluminum shafting



DryLin® W liners Material: iglide® J200
Color: dark grey Suitable shafting materials: anodized aluminum shafting



YOUR CONTACT



Matt Mowry

Product manager, DryLin® linear bearings and guides

Mmowry@igus.com

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igus Inc.

PO Box 14349

East Providence, RI 02914

P. 1-800-527-2747

F. (401) 438-7270

sales@igus.com

www.igus.com

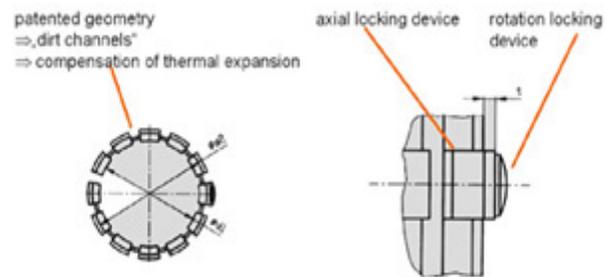


DryLin® T500 liners Material: iglide® T500 (for high-temperature applications up to 482° F) Color: dark grey Suitable shafting materials: chrome-plated and hardened stainless shafts

Geometry

Aside from their material composition, the geometry of the plastic liners also makes them unique. The liner may look deceptively simple, but in fact, it is not.

The part has a lengthwise slit which enables easy installation into a housing bore without any tools; this is also known as “slip-fit”. Unlike press-fit bearings, a slip-fit bearing has raised ridges on the OD of the liner that create a mechanical stop in the housing. This eliminates the risk of the liner shifting due to temperature changes or extreme axial loading. There is also a large pin on the OD of the liner that secures it radially to keep it from rotating.



In addition, because of the slip-fit design, igus® is able to offer additional options. One example is the TJUI adapter, which makes bearing replacement possible without disassembling the shafts. Quick, easy liner replacement isn't an option with a PTFE-lined bearing or ball bearing and is especially helpful in extremely harsh environments.

Lastly, the liner's patented grooves serve two important purposes. First, if thermal expansion occurs, the grooves swell away from the shaft, which prevents the bearing from seizing. Second, in especially aggressive environments, the grooves act as dirt channels so dirt and debris can easily pass through the bearing system.

Are you currently working on an application where DryLin linear bearings or guides could replace PTFE-lined bearings or ball bearings? If so, I would love to help so e-mail me at mmowry@igus.com.

Useful Links and Tools

[Read an archived TechTalk that talks about the tribological properties of plastic bushings](#)

[Learn more: DryLin® R linear bearings](#)

[Learn more: DryLin W linear guides](#)

[Learn more: iglide® plastic bushings](#)

[Expert System: bearing lifetime calculation program](#)

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