

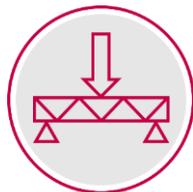
LUVOCOM[®]

High-performance compounds

Introducing:
LUVOCOM[®] EOG
High-Performance
Compounds

LUVOCOM[®] EOG

High-Performance PEEK Compounds
for the Energy Industry



STRUCTURAL



RESISTANT



TRIBOLOGICAL

Lehmann&Voss&Co.



LUVOCOM® EOG

Elevating Performance Over Traditional PEEK Compounds in Energy Applications

Applications in the energy industry require materials with outstanding performance. Key properties are high continuous operating temperatures, high strength to withstand pressures and loads, resistance to chemical attack and dimension stability.

In the early 1980's the high-performance polymer PEEK - today a product within the PAEK family including polymers like PEK and PEKK - was used in the first applications like back-up rings for seals because pressures in operation exceeded the capabilities of rubber and other polymers. This initial success led the expansion into further applications, which included ball valve seats, pump packing, bearings, energized seals, thrust washers, high voltage connectors and valve plates.

Innovation to drive new polymer solutions was limited by speed and resources. This was also due to limited standards in place for material selection and usage. After some catastrophic events, like the Macondo incident in 2010, the quality assurance perspective of the entire industry changed. The use of data to verify the suitability of products for particular applications took higher priority. The industry began focusing on testing standards based on quality assurance like NORSOK, ISO and API. Applications for components have become more challenging since the inception of PEEK in the 1980s.

Our response to industry's call for higher performance and lower risk in material selection

The challenges in energy applications are increasing all the time:

- Higher temperatures and pressures
- Longer service life in sour conditions
- Lower stresses in components to achieve longer service life
- Useful properties in all directions for optimum component design
- Reduced brittleness in components to reduce catastrophic breaks

This drives the need for pre-tested materials to reduce risk and time to market. Lehmann&Voss&Co., a leading manufacturer of made-to-measure material solutions, is offering materials targeted at provide true improvements that will directly raise component performance. By including material testing according to NORSOK M710 and general material properties for historical correlation, LUVOCOM EOG is supplying the answer to these challenges. Each material grade is focused on specific applications and is also a formulation platform for future customization.

Target applications for LUVOCOM EOG

- Bearings, bushings, thrust washers and gears
- Seals, back-up rings, packers and plugs
- Electrical connectors
- Motor and pump components
- Compressor Components
- Instrument housings



LUVOCOM EOG Material Overview and Summary

LUVOCOM EOG materials are made to meet today's requirements in the energy industry. They represent a new generation of PEEK materials. On the basis of these new developments and together with experience derived from extensive testing, we can offer not only the products described but also additional tailor-made solutions. Please contact us for further information and personal support for your project.

LUVOCOM EOG-100 (unfilled modified PEEK)	
Key properties	- Enhanced for compression molding and extrusion - Shorter annealing cycles required
Main test results	- High elongation
Applications	Recommended as a neat compound in oil and gas industry applications
NORSOK M710 Certified	
LUVOCOM EOG-200 (lubricated PEEK)	
Key properties	- 25% reduction in friction compared to unfilled PEEK - 60% reduction in wear compared to PEEK with PTFE
Main test results	- High elongation, reduced wear and good friction
Applications	Recommended for sealing and bearing applications in the oil and gas industry
NORSOK M710 Certified	
LUVOCOM EOG-300 (glass fiber reinforced PEEK)	
Key properties	- Nearly isotropic properties - Reduced internal stress and warpage
Main test results	High elongation, shorter annealing cycles, toughness, improved isotropy
Applications	Recommended for structural applications in oil and gas industry
NORSOK M710 Certified	
LUVOCOM EOG-400 (carbon fiber reinforced PEEK)	
Key properties	- High creep resistance while retaining ductility - Increased strain properties
Main test results	High elongation, toughness, balanced properties, improved isotropic
Applications	Recommended for structural, sealing and bearing applications in oil and gas
NORSOK M710 Certified	

Form of delivery and storage

The material is delivered as 3 mm long pellets in sealed bags on pallets. Micro pellets and grit is available on request. It should be stored preferably in unopened and undamaged original containers. When the material is kept within closed rooms and under normal storage conditions, the shelf life is practically unlimited. Normal storage conditions here include protection against moisture, excessive temperatures, chemicals and UV radiation. After the material has been stored for a period of three years, we recommend that it should undergo a more precise inspection with standardized and relevant test methods.



LUVOCOM EOG for connectors and back-up rings



Our Material Competences



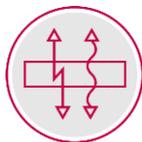
STRUCTURAL



RESISTANT



TRIBOLOGICAL



CONDUCTIVE



WEIGHT



PROTECTION



SURFACE



CUSTOMIZED
POLYMER MATERIALS

Europe & Head Office

Lehmann&Voss&Co. KG
Alsterufer 19
20354 Hamburg
Germany
Tel +49 40 44 197 250
Fax +49 40 44 198 250
E-mail luvocom@lehvoss.de

North America

LEHVOSS North America, LLC
185 South Broad Street
Pawcatuck, CT 06379
USA
Tel +1 855 681 3226
Fax +1 860 495 2047
E-mail info@lehvossllc.com

Asia

LEHVOSS (Shanghai) Chemical Trading Co., Ltd.
Unit 4805 Maxdo Centre
8 Xingyi Road, Changning District
Shanghai 200336
China
Tel +86 21 6278 5186
E-mail info@lehvoss.cn

Lehmann&Voss&Co.



www.luvocom.com

Any recommendations made for use of Seller's materials are made to the best of Seller's knowledge and are based upon prior tests and experience of the Seller believed to be reliable; however, Seller does not guarantee the results to be obtained and all such recommendations are non-binding – also with regard to the protection of third party's rights –, do not constitute any representation and do not affect in any way Buyer's obligation to examine and/or test the Seller's goods with regard to their suitability for Buyer's purposes. No information given by the Seller is to be construed in any way as a guarantee regarding characteristics or duration of use, unless such information has been explicitly given as a guarantee.