Evolving technologies require linear motion rolling guides and bearing products to perform reliably in a range of challenging environments.

Traditionally, lubricants used in special environments, such as under vacuum, in clean environments, or at high temperatures, have utilized fluorine grease to control contamination caused by outgassing, particles and oil evaporation. And more recently, MAC grease with hydrocarbons has been used due to its excellent characteristics under vacuum.
However, these special environment greases have problems in terms of lubrication performance, heat resistance and safety, giving rise to a need for a lubricant with an excellent balance of characteristics to satisfy many requirements simultaneously.

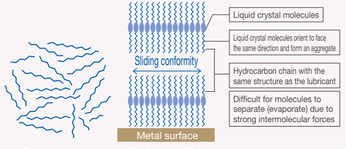
IKO developed a new line of products with a revolutionary liquid crystal lubricant to meet this need.

Patented

IKO developed the world's first **LCL Linear Way** prepacked with Liquid Crystal Lubricant which greatly improved lubrication performance with low dust generation and low evaporation properties, as well as low outgassing characteristics.
Now, IKO expanded the products available with liquid crystal lubricant. Since the structure of the lubricant is completely different from grease, it dramatically improves the performance of linear motion rolling guides and bearing products used in special environments, resulting in increased reliability.

IKO Liquid Crystal Lubricant is neither grease nor oil. A groundbreaking innovation!

Liquid crystal lubricants are completely different from greases composed of base oils and thickeners. They are composed only of liquid crystal compounds, **forming a completely new type of lubricant.**
Conventional grease base oils lubricate using dissimilar molecules, causing difficulties with adhesion to metal surfaces and evaporation. Liquid crystal lubricant forms molecular aggregates, improving adhesion to metal surfaces and minimizing evaporation.
The IKO Liquid Crystal Lubricant used in this Series provides excellent lubrication functionality, even under high contact pressure during rolling contact, which results in extremely high performance.



Manufacturing Support Models

Linear Motion Rolling Guide Series

- Linear Way L Series
- Linear Way E Series
- Linear Way H Series
- Linear Way F Series
- Linear Roller Way Super X Series

Remark: Applicable for stainless steel models from each series.

Needle Roller Bearing Series

- Crossed Roller Bearings Series

Availability

Liquid Crystal Lubricant Series products are made to order.
Mechatronic products and products without manufacturing support model numbers may also be available for manufacture.
Please contact IKO for more information.

⚠ Precautions for Use

- Continuous operating temperature range: 5 to 100°C (maximum operating temperature 120°C)
- The unit must be stored in a dry and clean place with low humidity and unpacked in the same environment before use, as rust prevention oil has not been applied.
- The LCL Linear Way is packed in clean condition and therefore cleaning is not necessary. Do not wipe it down, etc. after opening the package.
- Liquid Crystal Lubricant has fluorescent properties under certain ultraviolet light.
- Use gloves when handling so that the Liquid Crystal Lubricant does not touch the skin directly.
- Respective values used in tables are for reference and are not guaranteed values.

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ISO 9001 Certified ISO 14001 Certified
ISO 9001 & 14001 Quality system registration certificate

https://www.ikont.co.jp/eg/
CAT-2978E

IKO

Low Dust Generation - Low Evaporation - Long Life

Liquid Crystal Lubricant Series

Linear motion rolling guides and bearings prepacked with a high-performance liquid crystal lubricant.

Patented

World's first

NIPPON THOMPSON CO., LTD.

The World's First! Improve machine performance with IKO Liquid Crystal Lubricant Series products.

Environmental Benefits

Liquid Crystal Lubricant generates minimal dust and evaporation, making it highly clean. Because it is composed only of carbon, hydrogen, and oxygen, it does not contain organic fluorine compounds (PFAS) and supports halogen-free use. In addition, it does not emit toxic gases when burned.

Vacuum Characteristics

Characteristics are excellent in vacuum environments as well. With durability more than twice that of conventional fluorine grease, outgassing characteristics at high temperatures are excellent as well.

Superior Lubrication Durability

Whether in room- or high-temperature conditions, lubrication durability is far superior to conventional grease. Load durability tests realize a traveling distance 6 times that of conventional fluorine grease in high temperatures and 70 times at room temperature.

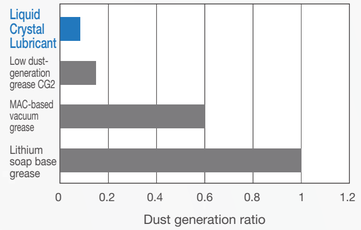
Frictional Characteristics

The liquid crystal compound molecules form aggregates, improving adhesion to metal surfaces and displaying better frictional resistance than conventional grease. Frictional resistance can be suppressed over a wide range of speeds from low to high. Low resistance also contributes to improved performance in high-accuracy positioning equipment such as Linear Motor Tables.

Clean Environment

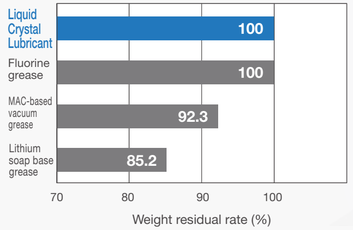
Low dust-generation properties Dust generation is less than 1/10 of lithium soap-based grease.

[Test Conditions] Model Number: LWL9…B/N Load: 80N
Speed: 1m/s Evaluation Time: 45h
Measured Particle Size: 0.5μm or more



Evaporation characteristics There is zero mass loss even at 100°C. Liquid Crystal Lubricants have no loss due to evaporation.

[Test Conditions] Environment: Atmosphere
Temperature: 100°C
Time: 770 hours

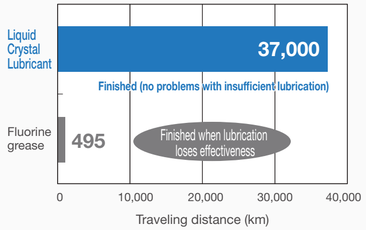


Lubrication Durability*

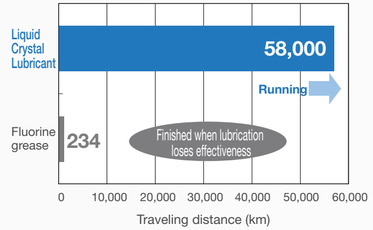
*Evaluation: Traveling distance until insufficient lubrication occurs

Load durability (room temperature) Long-term durability exceeds 70 times that of fluorine grease at room temperature and atmospheric pressure.

[Test Conditions ①] Model Number: LWL9…B
(Ball-type Linear Motion Rolling Guide)
Speed: 1m/s Load: 181N

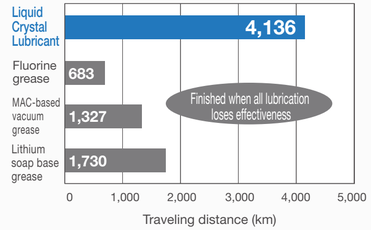


[Test Conditions ②] Model Number: LRXD20SL
(Roller-type Linear Motion Rolling Guide)
Speed: 1m/s Load: 1150N



Load durability (high temperature) 2 to 6 times greater durability than other types of grease.

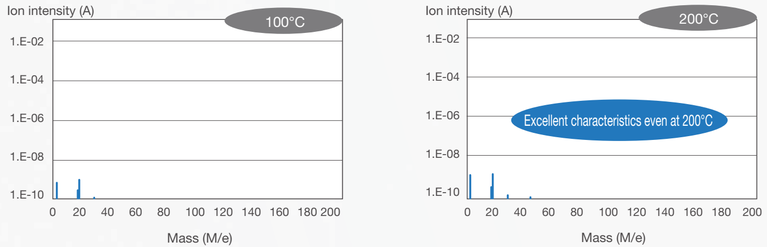
[Test Conditions] Model Number: LWLF18…B
Speed: 1m/s Temperature: 120°C Load: 114 N



Vacuum Characteristics

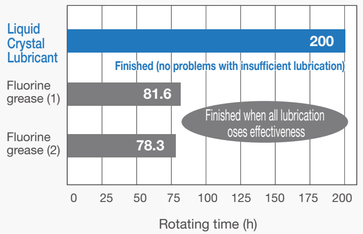
Outgas properties Outgas properties in vacuum environments show excellent performance even at high temperatures.

[Measuring Conditions] Vacuum Degree: 10^{-5}Pa
Status: Liquid Crystal Lubricant only



Durability (vacuum) Excellent durability that exceeds fluorine grease in vacuum environments as well.

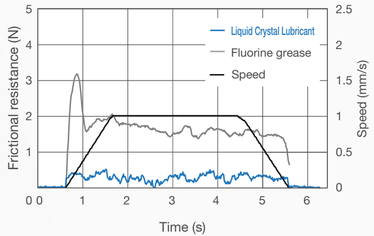
[Test Conditions] Model Number: CRBC4010 T1 (Crossed Roller Bearings)
Vacuum Degree: 10^{-2}Pa Rotational Speed: 300rpm
Evaluation: Rotating time until insufficient lubrication occurs



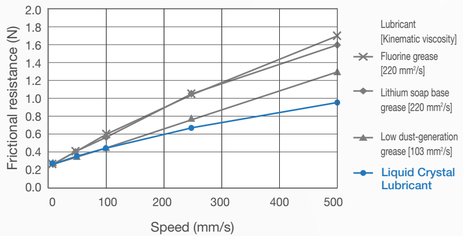
Frictional Characteristics

The frictional resistance is lower than that of fluorinated or lithium soap-based grease.

[Test Conditions]: Model Number: NT88H25
(Linear Motor Table)



[Test Conditions] Model Number: LWL9…B/N
(Ball Type Linear Motion Rolling Guide)



[Test Conditions] Model Number: LRXSG20
(Roller Type Linear Motion Rolling Guide)