



Linde HCF12 compressor oil. For reliable operation of helium liquefaction & refrigeration systems.

Challenge

Cryogenic plants use highly sophisticated, finely tuned process equipment. Fast-rotating machines such as compressors and expansion turbines from Linde Kryotechnik operate at speeds of a few thousand revolutions per minute and per second respectively. This high-performance equipment can thus be extremely sensitive to even trace contaminants from ambient air or compressor oil. Given the sensitivity of these expensive assets, it is essential that all traces of compressor oil in the helium stream exiting the compressor are removed before the gas is fed into the downstream liquefaction coldbox. Standard compressor oils are generally designed for air compressors. Some are based on mineral oil, which can oxidize or crack. Others are hydrophilic, which causes operational issues when the circuits are opened to atmospheric air. Hence standard oils can compromise the functionality and performance of screw-based helium compressors, and more importantly, compromise process safety further downstream.

Solution

The specific properties of helium gas call for a compressor oil capable of accurately lubricating, sealing and cooling the compressor over the entire working temperature and service interval without decomposing thermally over time or absorbing moisture. Linde's HCF12 oil is designed specifically to meet the high performance, temperature and stability demands of helium compressors, as well as the specific requirements of every single component of the cryogenic plant.



Benefits of HCF12

- Extended compressor lifetime as HCF12 is tailored specifically to the needs of helium systems
- No oil pre-treatment step like drying before filling new oil into the compressor because HCF12 does not absorb moisture
- Reliable removal of oil traces in Linde Kryotechnik's downstream oil removal system as HCF12 is easier to separate from the helium gas
- Proven performance – confirmed by extensive testing and experience in the field
- More skin-friendly than other helium-compatible oils
- Enhanced operational safety – also for downstream processes
- Reduced maintenance effort and replacement costs across entire process flow
- Increase in plant availability

End-to-End

A cryogenic plant from Linde Kryotechnik is equipped with HCF12 upon delivery. Depending on individual needs, you may order Linde HCF12 in 19-liter canisters or 208-liter drums.

Compatibility

Linde HCF12 is compatible with the oil removal systems (ORS) supplied by Linde Kryotechnik as well as with most other helium compressors and oil removal systems. Please contact Linde Kryotechnik to check whether your compressor system is suited to an upgrade to HCF12 oil.

HCF12 Technical data: Polyalphaolefin-Type

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|---------------------|-----------|-----------|--------------------|---------------|----------|
| Viscosity at 40 °C | ~44 cSt | ASTM D445 | Pour point | -57 °C | ASTM D97 |
| Viscosity at 100 °C | ~7.5 cSt | D445 | Flash point C.O.C. | 268 °C | D92 |
| Viscosity index | 138 | D2270 | Total acid number | 0.13 mg KOH/g | D974 |
| Density at 20 °C | 0.83 g/ml | D4052 | | | |

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