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Sanyo Chemical Industries, Ltd.

Development of NEOPROVER HBF-101, A Cold Flow Improver for Biodiesel Fuels
—Contributing to Improved Quality and Broader Adoption of Biodiesel Fuels—

Sanyo Chemical Industries, Ltd. is pleased to announce the development of NEOPROVER HBF-101, an innovative cold flow improver designed to enhance the low-temperature flowability of biodiesel fuels.

Biodiesel fuel is a renewable, carbon-neutral alternative to traditional diesel, produced from plant-based oils and used cooking oils. However, compared to fossil diesel, its tends to lose flowability on low-temperature conditions, leading to operational issues in cold climates without proper modification.

The newly developed NEOPROVER HBF-101 significantly enhances the low-temperature performance of biodiesel fuels, helping to prevent engine malfunctions in cold climates. This innovation supports the expanded adoption of biodiesel across diverse regions, contributing to reduced CO_2 emissions and fostering sustainable energy adoption.

[Background of Development]
Biodiesel fuel is a bio-based energy source for diesel engines, manufactured from raw materials such as vegetable oils and used cooking oils. Like fossil fuels, biodiesel emits CO_2 during combustion. However, the CO_2 released is effectively offset by the CO_2 absorbed during the growth of the feedstock plants. This balance results in net-zero emissions, making biodiesel a key carbon-neutral energy source.

The most widely used biodiesel today is Fatty Acid Methyl Ester (FAME), produced via the transesterification of triglycerides—such as those derived from vegetable oils or used cooking oils—with methanol. However, FAME-based biodiesel has higher pour points than fossil diesel, resulting in poor flowability in low-temperature conditions and lead to issues like filter and pump blockages. This is one factor that may limit the widespread use of high-concentration biodiesel in colder climates.

*In Japan, biodiesel is typically blended at 5% with diesel (B5) to meet regulatory standards under the Fuel Quality Control Law. Higher concentrations, such as B100, are restricted to controlled areas such as airports or specific municipal zones, where appropriate measures are implemented to mitigate risks.

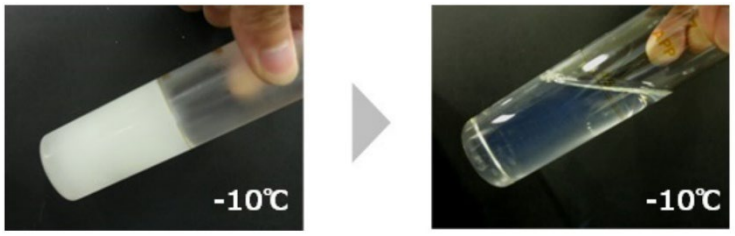
[Technical Overview]
NEOPROVER HBF-101 is highly effective in lowering the Cold Filter Plugging Point (CFPP) of biodiesel fuels, significantly improving their low-temperature flowability. (CFPP is an index that evaluates the fluidity and freezing point of fuel.)

It works effectively with biodiesel fuels derived from diverse feedstocks, including soybean oil, palm oil, rapeseed oil, and used cooking oils. Its versatile performance ensures seamless application across diverse feedstocks and regions, enabling reliable operation in cold climates and during winter months.

<Key Benefits of NEOPROVER HBF-101>
The following advantages position NEOPROVER HBF-101 as a vital contributor to the widespread use of biodiesel fuels and the realization of a decarbonized society:

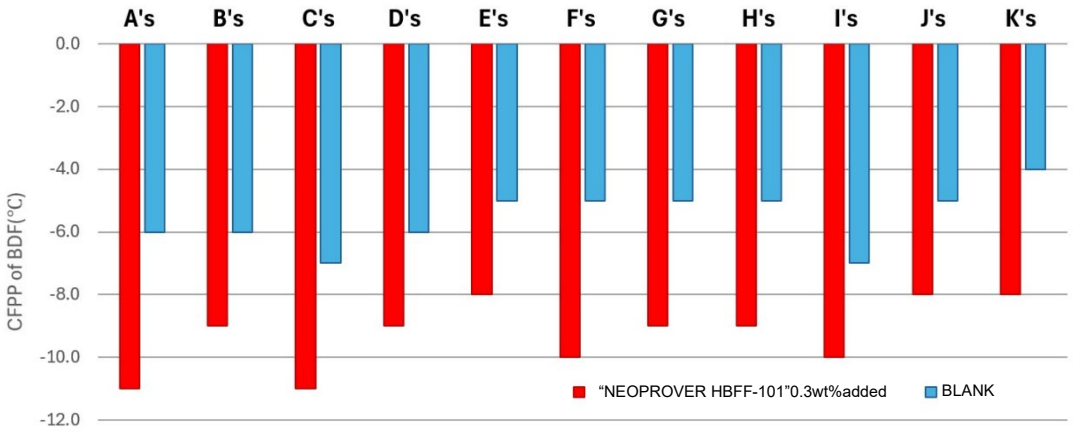
1) Enhanced Fuel Performance in Cold Climates
   Maintains fuel flowability, supporting stable operation of vehicles and machinery.
2) Reduced Maintenance Costs
   Prevents filter and pump clogging, minimizing engine troubles and lowering upkeep expenses.
3) Expanded Utilization Regions
   Facilitates biodiesel use even in cold climates, reducing the need for customized measures tailored to feedstock variations. This ensures efficient and consistent operation across diverse areas.

＜Effect of adding NEOPROVER HBF-101 to BDF＞
1) Effect to improve low-temperature flowability at -10℃



Without NEOPROVER　　With NEOPROVER

2) Effect of adding “NEOPROVER HBF-101” to various Japanese biodiesel fuel (BDF)



[Future Plan]
By addressing the challenges of low-temperature biodiesel performance, NEOPROVER HBF-101 offers a practical solution to enhance the viability of biodiesel as a sustainable energy source, paving the way for broader adoption. Through these advancements, NEOPROVER HBF-101 is expected to accelerate widespread use and contribute to a sustainable, low-carbon future.

<Related Link>
For more information about NEOPROVER, please visit the dedicated product page on the website of our U.S. subsidiary, Sanyo Chemical America Incorporated:
https://sanyochemicalamerica.com/product/cold-flow-improver-for-biodiesel-neoprover-in-development/

About Sanyo Chemical

Sanyo Chemical established in 1949 in Kyoto, Japan, is a global manufacturer and seller of performance chemicals. Beginning as a manufacturer of soap and texture agents we have since diversified our product portfolio to meet the needs of the market, Today, we feature over 3,000 diverse types of products and have established an international presence. Our portfolio of chemicals spans a variety of industries and types, from automotive components to daily-use electronics, as well as cosmetics and medical equipment, all with the aim of creating ore safe and environmentally friendlier offerings, improving lives and societies across the world. We aim to contribute to realize a sustainable society through our corporate activities

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