

Solution Spotlight: Environmentally Considerate Lubricants

Written by MT Staff

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Increased awareness of the environment and tighter legislation have led to increased use of environmentally considerate lubricants. When operating in environmentally sensitive areas such as mines, forests, lakes, rivers, harbors and ski-slopes, equipment may require lubricants that help reduce environmental risks. Environmentally considerate lubricants should combine a number of important properties, including high biodegradability, which means it is rapidly removed from the environment by natural processes in the event of a leak or spill (fate) and low ecotoxicity (effects). Furthermore, such lubricants should provide effective lubrication with performance meeting the needs of operators (function).

Biodegradability: Lubricants and other organic materials are broken down in the environment by micro-organisms in a process called ‘biodegradation’—biodegradability is the ease with which this can occur. There are a number of ways in which biodegradability can be measured. To meet the internationally recognized requirement for ‘ready biodegradability,’ lubricants must be at least 60% CO₂ evolved after 28 days when tested according to OECD guideline 301B.

Ecotoxicity: The effect that a material may have on the environment usually is assessed by measuring its toxicity toward plants and animals that represent different levels of the food-chain (‘ecotoxicity’). For example, in the aquatic food chain there is determination for toxicity towards algae, water fleas (*Daphnia*) and rainbow trout. Lubricants must meet the limits for ‘not harmful’ when tested by independent laboratories using OECD 201, 202 & 203 Test Guidelines for ecotoxicity.

A considerate solution Shell Lubricants has been working to develop environmentally

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considerate lubricants that are formulated and tested to the highest standards to help keep equipment running efficiently while protecting against premature wear and breakdowns. Shell Naturelle is a range of lubricants specially developed for applications operating in environmentally sensitive areas. Their biodegradable qualities mean that any accidental spillages or leaks are readily broken down by natural processes in soil or water; their low eco-toxicity means that their impact on the environment is reduced should a spillage or leak occur. Shell Naturelle lubricants offer a more environmentally acceptable alternative to conventional industrial lubricants without compromising performance. In the U.S., Shell currently offers Shell Naturelle HF-E and HF-M hydraulic fluids, which are well suited for use in environmentally sensitive areas. Both formulations are readily biodegradable (1) with low ecotoxicity (2).

- Shell Naturelle HF-E uses a special blend of synthetic esters and a tailored additive system. It offers multi-grade performance, good shear stability and good oxidation resistance.
- Shell Naturelle HF-M is blended with a mixture of synthetic ester and vegetable oil. Shell Naturelle HF-M has low deposit-forming tendency and stable low-temperature viscosity, providing benefits over products formulated from natural based esters only.

In the future, Shell Lubricants is planning to introduce additional products to its portfolio in the United States. Currently, Shell Lubricants is considering adding a gear oil, expanding the viscosity grades for the hydraulic fluids, and possibly adding a grease. Dates are not yet set for distribution. **MT**

(1) as measured by OECD 301B test (2) as measured by OECD 201-203 test

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