

NREL updates cetane data used for development of energy efficient fuels and engines

September 9 2014

The Energy Department's National Renewable Energy Laboratory (NREL) has released a long-anticipated update to the source-of-record for cetane number data. This information is vital to the development of new, energy-efficient, low-carbon fuels and compatible engines. Researchers, as well as members of the engine, vehicle, and fuel industries, rely on these numbers to target compounds for development of new fuels capable of greater energy efficiency, cleaner emissions, and maximum performance in diesel engines.

A cetane number is a relative ranking of fuels based on the amount of time between [fuel](#) injection and ignition (ignition delay) in a diesel engine. A minimum cetane number is specified in the ASTM standard that defines the quality of diesel fuel sold in the United States. The recently published Compendium of Experimental Cetane Numbers PDF compiles cetane number data from 62 sources for readers to use in selecting potential compounds and formulas for development of models, tools, and fuels.

In addition to updating information, the new edition provides additional measurements on a larger number of compounds, along with assessment of data quality.

The updated report includes all available single-compound cetane number data found in the scientific literature published prior to March

2014, including:

- Information on 389 pure compounds
- 584 measurements, including more than 250 new measurements
- Expanded discussion of the accuracy and precision of the methods most commonly used for determining cetane numbers
- Extensive annotation allowing readers to judge the relative reliability of individual results.

"The original report has been cited more than 130 times," NREL Principal Engineer Robert McCormick said. "We expect that the new edition will continue be used extensively to develop models, target [compounds](#) for new fuels, and tools to help predict cetane numbers in the future."

Provided by National Renewable Energy Laboratory

Citation: NREL updates cetane data used for development of energy efficient fuels and engines (2014, September 9) retrieved 12 May 2024 from <https://phys.org/news/2014-09-nrel-cetane-energy-efficient-fuels.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.