

## TrusTec™ Reference Fluids

### Octane Reference Fuels

Chevron Phillips Chemical produces high purity primary reference fuels (PRF's) to measure the motor octane number (MON) and research octane number (RON) of gasoline fuels. All products meet the requirements outlined in the ASTM D-2699 and D-2700 test methods for use in a CFR test engine to determine knock ratings. PRF isooctane (2,2,4 trimethylpentane) has an assigned MON and RON octane rating of 100 and PRF n-heptane an assigned rating of 0. Both can be utilized for test engine calibration requirements as well as actual sample fuel octane ratings through the bracketing procedures as outlined in the two noted ASTM test methods. Chevron Phillips Chemical also has available blends of PRF isooctane and PRF n-heptane equivalent to octane numbers between 80-98 in increments of two instead of self-blending. PRF isooctane + 6.0 mls/gal tetraethyl lead (TEL) is available for testing and calibration needs between octane numbers of 100 and 120. In addition, Chevron Phillips Chemical offers toluene reference fuel grade, which has an octane rating of 116, for fit for use qualification testing. All toluene standardization fuel (TSF) blends of reference fuel grade toluene, PRF isooctane, and PRF n-heptane are also available for all octane number accepted reference value ranges noted in the test methods instead of self-blending.

### Cetane Reference Fuels

Chevron Phillips Chemical produces secondary reference fuels of known high and low cetane numbers for measuring the ignition quality of diesel fuel as specified in ASTM D-613 for use in a CFR test engine. Secondary reference fuels T and U are produced to meet the specifications noted in Table 3 of the test method. These fuels are used to obtain the interval between the start of injection and actual ignition of a sample diesel through the bracketing procedure detailed in the test method to determine its cetane number. Chevron Phillips Chemical also produces check fuels low and high for fit for purpose testing and checking engine conditions at one point only.

Specification results for all four secondary reference fuels noted above are determined by a qualified round robin program through the National Exchange Group and ASTM subcommittee D02.01. These results are determined by comparing each secondary reference fuel performance against primary reference fuels n-cetane and heptamethylnonane. For secondary reference fuels T and U, each pair is assigned an identifying batch number and a blend chart of cetane values is created from the statistically compiled round robin program results. Utilizing secondary reference fuels to determine cetane generally provides improved usability compared to using primary reference fuels. On average they are lower cost compared to primary reference fuels and as actual diesel fuel blends, have properties that potentially provide better ease of use and shelf-life stability.

### Other TrusTec™ Reference Fluids

- ASTM D-2887 Reference Gas Oil #1 – ASTM D-2 D-IV study group on boiling range distribution by gas chromatography
- Sulfur Calibration Standard – ASTM D-2622, D-4045, and D-4294 for determining sulfur content in petroleum products
- Reference Material A and D – ASTM D-471 standards for the evaluation of vulcanized rubbers response to liquid exposure

If you have a need for a reference fluid currently not manufactured by Chevron Phillips Chemical or are interesting in developing a new product, we would like to hear from you. Please contact Jonathan VanScoyoc at [vansci@cpchem.com](mailto:vansci@cpchem.com)

Specifications for all TrusTec™ Reference Fluids can be found at our website: [www.cpchem.com/specialtychemicals](http://www.cpchem.com/specialtychemicals)

## About Chevron Phillip Chemical Company LP

Chevron Phillips Chemical has been a reliable manufacturer of reference fluids for analytical testing protocols for more than 50 years. Our experienced research and development team offers unparalleled support and technical expertise. Collaborating with Chevron Phillips Chemical means you can be confident that you will receive the highest quality and reliability of supply for any critical reference fluids needed for equipment calibration and quantification. Why put your trust in Chevron Phillips Chemical?

- Chevron Phillips Chemical is a member of ASTM International, with expertise in developing and certifying materials for published laboratory testing methods.
- All Chevron Phillips Chemical operations, including production, laboratory, and shipping, are ISO 9001:2015 certified and adhere to the most stringent quality processes.
- Chevron Phillips Chemical's products are made in the United States with manufacturing and blending expertise in high purity fluids, governed by our process safety management oversight program.
- As a member of the American Chemistry Council (ACC), Chevron Phillips Chemical's culture focuses on improved health, safety, and environmental performance in the industry through the Responsible Care program.
- Chevron Phillips Chemical is member of the OSHA Voluntary Protection Program and is recognized in the industry for implementing effective safety and health management systems.
- Chevron Phillips Chemical offers top-in-class global supply chain management and localized warehousing and e-commerce capabilities through our distribution partner ChemPoint.
- Chevron Phillips Chemical is committed to sustainability and supports a circular economy, which is reflected in our strategy, processes, and products.

## Safety and Handling

Gasoline and diesel fuels are extremely volatile and flammable liquids. These products have the potential to cause fires if exposed to an ignitable source. Electrostatic charge can accumulate and create a hazardous condition when handling these materials. Due to their inherent characteristics, there are specific requirements for handling, storage, transportation, labeling and disposal. Gasoline and diesel fuels are also described as being hazardous to human health and the environment. Therefore, use only in well vented areas, wear proper protective equipment, and care should be taken to avoid releases to sewage and drainage systems and water bodies.

Gasoline and diesel fuels are compatible and should be stored in carbon or stainless steel, aluminum, fluorinated polyethylene, fluorinated polypropylene, and most fiberglasses. Gaskets should be Teflon® or Viton® fluoroelastomer; diesels are not compatible with nitrile elastomers, EPDM, butyl, or silicone materials. Both fuels should be kept away from oxygen and strong oxidizing agents.

Gasoline and diesel fuels are not appreciably soluble in water. Neither fuel should be allowed to enter drains, water courses or the soil. Spillage collected with non-combustible absorbent material such as sand should be placed in containers using spark resistant tools for disposal according to local/national regulations.

Please reference the appropriate TrusTec™ Reference Fluid Safety Data Sheet for handling and safety recommendations. Safety Data Sheets are available upon request and on our website: [www.cpchem.com/specialtychemicals](http://www.cpchem.com/specialtychemicals).

Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question and is further advised against relying on the information contained herein as it may relate to any specific use or application. It is the ultimate responsibility of the user to ensure that the product is suited and the information is applicable to the user's specific application. Chevron Phillips Chemical Company LP does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or the product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself. Further, information contained herein is given without reference to any intellectual property issues, as well as federal, state or local laws which may be encountered in the use thereof. Such questions should be investigated by the user.