

UL Evaluation of B-20 Pumps with Nitrile *November, 2021*



Oil burners for use in homes are “listed” or approved for use from a safety perspective by certification laboratories following the procedures defined by Underwriters Laboratories in the UL 296 Standard. This standard defines very rigorous construction and operating requirements including, for example, low voltage, cold oil ignition and head coking tests in simulated use.

Burners are approved for a specific range of fuels. A burner, for example, approved for use with No. 2 and lighter fuels would not be approved for use with a heavy No. 6 fuel.

Until recently, UL 296 did not include procedures to evaluate B20 which is now defined as a heating fuel in the ASTM D396 Standard. In the Fall of 2020 this changed when a modification to the UL 296 burner standard was updated to include B20 heating fuel. The added requirements for B20 testing included definition of the test fuel with an elevated acid number, simulating degraded fuel. This addition to the new standard allowed for components and materials to be tested independently to determine structural strength and integrity. The seal materials and components after long exposure to the test fuel could then be approved for use based on the deterioration or swelling of that material.

In a NORA-sponsored study, UL conducted testing and evaluation of seal materials used in legacy pumps against these new materials test requirements. The tested legacy seal materials passed the current standard indicating that it would be acceptable to use the older version pumps rated only for B0 up to the B20 levels.

This result is consistent with prior elastomer laboratory studies with biodiesel blends and indicates that legacy pumps installed on legacy burners are not incompatible with B20 heating fuel.

