

STANDARD INFORMATION

Standard: UL 343

Standard ID: Pumps for Oil-Burning Appliances [UL 343:2008 Ed.9+R:06Dec2021]

Previous Standard ID: Pumps for Oil-Burning Appliances [UL 343:2008 Ed.9+R:14Dec2017]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **December 6, 2023**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: Per our accreditation, Intertek is required to review reports against the standard revisions to confirm compliance. Once compliance is confirmed, the standard reference in the report is updated to show continued compliance to the technical requirements of the standard. Reports not updated to this version by the effective date above will be withdrawn.

Overview of Changes: Addition of biodiesel (B6-B20) requirements for pumps for oil-burning appliances. Specific details of new/ revised requirements are found in table below.

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.



STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
Supplement SA		<i>New supplement added;</i> PUMPS FOR OIL-BURNING APPLIANCES INTENDED FOR USE WITH BIODIESEL BLENDS B6-B20
SA1		General This supplement shall be used to evaluate pumps for oil-burning appliances intended for use with biodiesel blends B6-B20 as defined in ASTM D396. All requirements of UL 343 apply unless modified or deleted by this supplement. This supplement also adds additional requirements for B6-B20 blends.
SA2		Construction – Mechanical, General Replace 7.3 and 7.4 in UL 343 with the following:
SA7.3		Non-metallic materials The following materials shall not be used to construct parts in contact with the fuel:
SA7.4.1		a) Polysulfide rubber; b) Ethylene propylene diene monomer (EPDM) rubber; c) Methyl-Methacrylate; d) Polyvinyl Chloride (PVC); e) Polyurethane as elastomer.
SA7.4.1.1		Static seals Static seals shall be evaluated in accordance with the Standard for Gaskets and Seals, UL 157, modified as indicated in SA7.4.1.2 – SA7.4.1.4. If a specific material complies with these requirements, the material can be considered to be qualified for system testing.
SA7.4.1.2		A static seal shall be constructed of a material that is acceptable in accordance with the scope of Standard for Gaskets and Seals, UL 157.
SA7.4.1.3		Static seals shall be subjected to the Volume Change and Extraction Test in accordance with the Standard for Gaskets and Seals, UL 157, except for the following modifications: a) The test duration shall be 1000 hours; b) The applicable test fluids shall be FB25a as described in Supplement SB; and c) For all materials, the average volume change shall not exceed 40% swell (increase in volume) or 1% shrinkage (decrease in volume). In addition, the weight loss shall not exceed 10%. For coated fabrics, alternate limits can be used with the average volume change not exceeding 60% swell or 5% shrinkage, and the weight loss shall not exceed 20%. There shall be no visual evidence of cracking or other degradation as a result of the exposure for any material including coated fabrics.



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SA7.4.1.4		<p>Static seals shall be subjected to the Compression Set Test in accordance with the Standard for Gaskets and Seals, UL 157, except for the following modifications:</p> <p>a) The test duration shall be 1000 hours. b) The samples shall be immersed, at room temperature, in the test fluids [see (c)] while compressed for the entire test duration. No oven conditioning is required. c) The applicable test fluids shall be FB25a as described in Supplement SB. d) The recovery period shall consist of removing the sample from the compression device and immersing it in the applicable test fluid for 30 minutes at room temperature. The sample shall not be allowed to dry out due to exposure to air. The 30-minute immersion should use the same fluid as the test fluid for each sample. e) For all materials, the average compressions set is calculated and shall not exceed 35 percent. For coated fabrics, alternate limits can be used with the average compression set not exceeding 70%.</p> <p>Exception: This requirement does not apply to composite gasket materials as defined in accordance with the Standard for Gaskets and Seals, UL 157.</p>
SA7.4.2		Dynamic seals
SA7.4.2.1		Dynamic seals shall be evaluated in accordance with the Standard for Gaskets and Seals, UL 157 modified as indicated in SA7.4.2.2 – SA7.4.2.4. If a specific material complies with these requirements, the material can be considered to be qualified for system testing.
SA7.4.2.2		A dynamic seal shall be constructed of a material that is acceptable in accordance with the scope of the Standard for Gaskets and Seals, UL 157.
SA7.4.2.3		<p>Dynamic seals shall be subjected to the Volume Change and Extraction Test in accordance with the Standard for Gaskets and Seals, UL 157, except for the following modifications:</p> <p>a) The test duration shall be 1000 hours; b) The applicable test fluids shall be FB25a as described in Supplement SB; and c) For all materials, the average volume change for a gasket or seal material shall not exceed 40% swell (increase in volume) or 1% shrinkage (decrease in volume). In addition, the weight loss shall not exceed 10%. For coated fabrics, alternate limits can be used with the average volume change not exceeding 60% swell or 5% shrinkage, and the weight loss shall not exceed 20%. There shall be no visual evidence of cracking or other degradation as a result of the exposure for any material including coated fabrics.</p>
SA7.4.2.4		<p>Dynamic seals shall be subjected to the Tensile Strength and Elongation Test in accordance with the Standard for Gaskets and Seals, UL 157, except for the following modifications:</p> <p>a) The test duration shall be 1000 hours; b) The applicable test fluids shall be FB25a as described in Supplement SB; and</p>



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		<p>c) For all materials, the average tensile strength and the average elongation of materials shall not be less than 60 percent of the as-received values. For coated fabrics, alternate limits can be used with the average tensile strength and the average elongation not less than 30% of the as-received values.</p>
		<p>Materials</p> <p>Modify 7.6 in UL 343 by adding the following:</p> <p>Metallic parts in contact with the fuel shall be constructed from materials containing not more than 10% lead, and not more than 40% zinc by weight and shall not have a coating or exposed plating containing such lead or zinc, and the use of threads or fasteners shall not expose metallic parts or plating containing such lead or zinc. Parts shall not deteriorate and shall perform their intended function, as identified by requirements and tests in this standard, when in contact with the pumped liquid.</p> <p>Exception: Coating and plating containing lead or zinc are permitted to be used on internal parts, provided that the base metal complies with the requirements of this standard.</p>
Supplement SB		<p><i>New supplement added;</i></p> <p>TEST FLUIDS</p> <p>Representative Aggressive Combustible Test Fuel Mixture</p> <p>The test fluid designations represent the following:</p> <p>FB25a – An aggressive test fluid containing 25 percent biodiesel with aggressive elements:</p> <p>F = Reference Fuel F (No. 2 Grade S500) in accordance with the Standard Specification for Standard Test Method for Rubber Property – Effects of Liquids, ASTM D471.</p> <p>B = Biodiesel (100 percent Soy feedstock) in accordance with the Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels, ASTM D6751.</p> <p>a = Aggressive components to be mixed with B to form B100 as an aggressive Biodiesel Stock.</p> <p>The aggressive biodiesel containing <0.5 percent volume combined water and decanoic acid shall be based on the approximate formula below (*) to achieve a final 1.00 ± 0.02 acid number of the mixture when measured in accordance with the Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration, ASTM 664.</p>
SA3		



CLAUSE	VERDICT	COMMENT
		<p data-bbox="467 306 1422 373">0.2 percent volume acid water [2.60 g decanoic acid crystals/1000 g of deionized water](†)</p> <p data-bbox="467 415 1451 548">The resulting solution, after mixing the above elements, shall have an acid number of 1.0 ± 0.02. After the measurement is determined, an acid number not within the specification of 1.0 ± 0.02 shall be adjusted with additional biodiesel fuel or decanoic acid added until the acid number is 1.0 ± 0.02.</p> <p data-bbox="467 590 1455 722">This fluid shall be used to condition samples when a test indicates this fluid is to be used. The test fluid shall be prepared just prior to use to minimize changes resulting from exposure to air and moisture and from interactions with storage and transfer containers.</p> <p data-bbox="467 764 1419 869">Products intended to be rated for use with diesel fuel or diesel/biodiesel fuel blends with nominal biodiesel concentrations up to 20 percent (B0-B20) shall be evaluated using the FB25a test fluid as the only applicable test fluid.</p> <p data-bbox="467 911 1446 1010">(*) Note: The formula is approximate since each source of biodiesel may have variations in specific gravity and initial acid number that require measurement and final adjustment as specified.</p> <p data-bbox="467 1016 1443 1115">(†) Note: Decanoic acid crystals are insoluble in water, so are recommended to be finely ground and thoroughly mixed in the overall solutions before acid number measurements are taken.</p>
