

ENGINEERING REPORT

TOPIC: Changes to UL Standards 555 and 555S

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Underwriter's Laboratories (UL) is probably the most recognized testing organization in the world. The testing they perform is based on "Standards for Safety" which have been developed under a procedure which provides for participation from the industry which is affected. The "Standards for Safety" take into consideration existing standards and the needs and opinions of anyone concerned with the subject the "Standard" addresses. These "Standards" contain the basic construction requirements for products tested in accordance with the "Standard."

The "Standards," once developed and published, become "public domain." They can be used by other testing organizations to evaluate products or they can be used as a basis for performance by organizations who develop

and publish building codes. UL publishes many different standards dealing with many different subjects. The "Standards" this report is concerned with are 555 and 555S. These "Standards" pertain to products intended for use in heating, ventilating and air conditioning systems. UL555 covers fire dampers and UL555S covers leakage rated (smoke) dampers.

The purpose of this "paper" is to report on the significant changes scheduled for these "Standards." These changes are to be incorporated into the "Standards" by June 1999. Manufacturers who build products in accordance to these "Standards" and want to maintain their "UL listing" will have 2 years, until June 1, 2001 to comply.

UL555

UL555 was first published in 1968. The only significant changes until now have been the inclusion of Ceiling Dampers in 1979 (which now have their own Standard, UL555C) and the differentiation between "dynamic" and "static" dampers in 1992. Listed below are some of the present requirements of 555 and the proposed changes.

Present - Fifth Edition	New - Sixth Edition
Fire Endurance Test (for flame exposure) 1792°F for 1½ hours 1925°F for 3 hours	Fire Endurance Test No change No change
Hose Stream Test (to simulate the explosive forces of a fire) 30 psi for 1½ hour dampers 45 psi for 3 hour dampers	Hose Stream Test No change No change
Cycling Test (to certify operation reliability) 1000 (when equipped with an actuator) 250 (when no actuator)	Cycling Test 20,000 No change
Dynamic Closure Test (to certify closure against airflow) Closure against ambient temperature airflow Closure against any velocity Closure at 4 in. wg pressure	Dynamic Closure Test Closure against elevated temperature airflow Closure against minimum 2400 fpm Closure against 4.5 in. wg pressure

UL555S

UL555S was first published in 1984. Its official UL title is "Leakage Rated Dampers for Use in Smoke Control Systems." The current edition is the second edition. Prior to the development and publication of 555S there were no leakage guidelines for "smoke" dampers. A fire damper with seals qualified as a "smoke" damper. Realization that smoke causes more fatalities than fires led to its development. Listed below are some of the present requirements of 555S and the proposed changes.

Present - Third Edition	New - Fourth Edition
Cycling Test 5,000 (when 2 position actuator used) 100,000 (when modulating actuator used) 250 (when no actuator)	Cycling Test 20,000* No change No change
Temperature Degradation Test (to certify operation reliability during the initial stages of a fire for evacuation purposes) Operate 3 cycles after a 30 minute exposure and while at an elevated temperature of 250°F or 350°F with no airflow	Temperature Degradation Test No change
Operation Test (to certify operation against airflow) Operate 3 cycles against ambient temperature airflow (any velocity) at 4 in. wg closure pressure	Operation Test Operate 3 cycles at ambient temperature. Close and open within 75 seconds after 15 minute exposure to 250°F or 350°F elevated temperature airflow of 2400 fpm and 4.5 in. wg
Leakage Test Class I, II, III or IV leakage at ambient temperature at 1 in. wg and 4 in. wg	Leakage Test Class I, II or III leakage at 250°F or 350°F temperature at 1 in. wg and 4 in. wg
Actuators Can be field installed in accordance with appropriate field installation instructions	Actuators Must be factory installed

*Ruskin currently exceeds the "new" requirements by testing all actuators to 100,000 cycles.

SUMMARY

The changes to the UL standards are significant changes. They present a challenge to manufacturers of fire and smoke dampers. The result, however, will be a better "life safety" product. A couple of changes which require special mention are:

1. Elimination of Leakage Class IV from 555S.
2. Actuators will have to be installed in the factory (no field installed actuators).
3. The Operation Test against heated airflow

of 2400 fpm and 4.5 in. wg minimum may mean more and larger actuators.

4. Two position actuators will require 4 times the number of cycles to qualify.

As the industry leader, Ruskin is committed to meeting all current and future UL requirements. For more information regarding the changes to the UL "Standards" or for more information on the innovative products we offer to meet all your fire, smoke, combination fire/smoke and ceiling damper requirements, contact Ruskin.