

UL 746

TOP 10 FAQs

Answers to some of your most frequently asked questions about UL 746

The UL 746 standard series sets the safety, reliability, and performance benchmarks for polymer materials used in electrical equipment and applications. These standards provide testing requirements and evaluation criteria for mechanical, electrical, thermal, flammability, safety related properties and performance of these materials.



1. What tests do you need to verify f1 status?

Both weathering exposure testing and water immersion exposure testing are both needed for f1 rating. An f2 rating only requires weathering exposure, water immersion, or partial testing.

2. What is the typical battery of tests performed for UL 746?

Tensile, flammability and pendulum impact testing are the typical battery of tests performed. Flexural testing may be performed instead of tensile testing if also performing impact testing.

3. How many and what type of specimens are needed?

It varies by application, and plastic type, ex. impact modified. Including spare specimens if performing the typical battery of tests for all exposures including heat aging and RTI, about 270 ASTM D638 Type I tensile bars, ASTM D256 notched Izod impact bars and UL 94V flammability test bars are needed for each sample material and for the control material.

4. Can the testing be done on parts instead of molded test specimens?

UL specifications that refer to UL 746 testing may allow for specimens cut from parts to be tested. If not, then the specimens should be injection molded test specimens.

5. How long does it take to finish the f1 rating testing?

It can take up to 50 calendar days to complete depending on the means of UV exposure.

6. How long does it take to complete Relative Thermal Index (RTI) testing?

This can take up to 14 months to complete.

7. How do you choose UL 746B RTI test temperatures?

Four temperatures at a minimum are to be selected. T4 is the desired RTI. T3, T2 and T1 are higher than T4 by increasing by at least 10°C per interval but are below the melting temperature of the material, ex. T4 = 100°C, T3 = 110°C, T2 = 120°C, T1 = 130°C.

8. How do you select UL 746B RTI control sample materials?

There are reference materials stated in UL 748B table 7.1. One should be selected that is the same generic type as the material under test and with an RTI close to the desired RTI.

9. Can the ISO test method equivalents be done instead of the ASTM test methods?

Yes, ISO equivalent test methods can be done instead of the ASTM.

10. Is there a screening test that can be done to determine what RTI our candidate material can meet?

Yes, perform the exposure for the associated T1 temperature for the desired RTI for the most desired property. It requires seven (7) sets of the applicable specimens and takes 500 hours (approximately 21 days) to complete. If the material has retained more than 50% of the desired property at the end of this time, a higher RTI can be set. If it does not, lower the RTI.

FOR MORE INFORMATION