

STANDARD INFORMATION

Standard: UL 746B

Standard ID: Polymeric Materials - Long Term Property Evaluations [UL 746B:2018 Ed.5+R:02Aug2019]

Previous Standard ID: Polymeric Materials - Long Term Property Evaluations [UL 746B:2018 Ed.5+R:18Apr2019]

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **December 6, 2021**

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes: Addition of requirements for Handling Low Correlation Times. Specific details of new/revised requirements are found in table below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).

Client Action:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

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 – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records.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
		<i>Additions to existing requirements are <u>underlined</u> and deletions are shown lined out below.</i>

13	Info	Selection of Oven Temperatures
13.1		At least four oven temperatures are to be selected. The lowest oven temperature (T4) selected is to produce an anticipated end point of the material's property at this temperature in not less than 5,000 hours <u>and shall not be lower than the Relative Thermal Index (RTI) ultimately assigned</u> . The highest oven temperature (T1) selected is to produce an anticipated end point of the material's property at this temperature in not less than 500 hours. The minimum aging time criterion is applicable for each primary property evaluated. See Table 13.1.

Selection of oven temperatures

		Test temperature (°C)	t1 (highest)	t2	t3	t4 (lowest)
Table 13.1		End Point (Hours)	500 min.	1,500 approx.	3,000 approx.	5,000 min.
		Cycle Period ^a Day	3	7	14	28
		^a See 15.2.				

19	Info	Analysis and Evaluation
19.14		<u>Since the correlation time of the Control material at which the RTI of the Candidate material is determined can vary for different material types and for different properties, the criteria mentioned in Table 19.1 shall be used to assign RTI ratings for the candidate material.</u>

New table added;

Criteria for assigning candidate RTIs based on control correlation time

		Control correlation time (hours)	Candidate RTI assigned at
Table 19.1		< 5000	5000 hours
		5000 – 60000	Corresponding Correlation Time
		> 60000	60000
		No Control (only candidate)	60000 hours (or 20000 hours for TI) ^a
		^a Requires data linearity validation according to Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics, IEC 60216-3.	



CLAUSE	VERDICT	COMMENT
19.15		<p><u>In the absence of comparison data for a control material, it might be difficult to correlate the longtime-endurance program with actual service conditions. There is some evidence to show that an arbitrary life of 60,000 hours under this long-time program can be assumed when determining a relative thermal index. Examination of correlation factors from prior RTI determinations indicate 60,000 hours to be a reasonable upper bound on correlation time. In place of applicable control data, an extrapolated life of 60,000 hours or an extrapolated life of 20,000 hours (applicable only to the method for Electrical insulating materials – Thermal endurance properties – Part 3: Instructions for calculating thermal endurance characteristics, IEC 60216-3) is to be used to assign the relative thermal index (RTI) or thermal index (TI) respectively. In cases where the correlation time for the control material is higher than 60,000 hours, an extrapolated life of 60,000 hours is to be used to assign the relative thermal index.</u></p>
19.16		<p><u>In considering the usefulness of the relative thermal index in the example given in Figure 19.1, consideration is to be given to the properties that are evaluated in the program. If the properties being stressed in the end-product are also considered in arriving at the general-use thermal index, the relative thermal index resulting from this analysis is valid and can be used in the evaluation of the material in the end product. If the property being stressed in the end product is not evaluated in the long-term-aging program, the relative thermal index might not be applicable to the use of the material in that particular application.</u></p>
19.17		<p><u>In considering the example shown in Figure 19.1, it is possible that more than one temperature rating can result from analysis of the data accumulated during the long-time investigation. In the example described in 19.11 the most critical property being investigated is impact strength and the general-use relative thermal index of 140° C (284° F) is applicable to all applications involving all of the properties investigated, including impact strength. However, there can be applications of this material in which impact strength is not a critical property, such as in an application in which the material is shielded from mechanical abuse as is the case for some insulating materials, terminal boards, wire connectors, etc. In that event, a time-temperature plot could be made for the unknown material considering all properties except impact strength. In such an example, it might be possible to have a relative thermal index of, say 155°C (311°F), for applications in which impact strength is not a critical property and 140°C (284°F) for applications in which impact strength is required.</u></p>
19.18		<p><u>Care is to be exercised in the use of any general-use relative thermal index achieved by the method of analysis described in this standard. If it is felt that the end-product application of the material involves unusual service conditions, the acceptability of the material at the relative thermal index is judged by this method is to be reviewed. If service conditions associated with an end-product application are less severe than those considered in arriving at the relative thermal index, higher operating temperatures may be acceptable.</u></p>



CLAUSE	VERDICT	COMMENT
		CUSTOMERS PLEASE NOTE: This Table and column "Verdict" can be used in determining how your current or future production is or will be in compliance with new/revised requirements.