FIG. 4 shows a comparison of the deteriorated condition of the samples used in a practical condition and the deteriorated condition from accelerated deterioration of the samples tested by the method according to the present invention. What is indicated by the reference letters in FIG. 4 is similar to what is indicated by those in FIG. 3. Namely, in FIG. 4, x1–x4 represent the measurement results obtained after 6 months, 12 months, 18 months and 24 months use of the samples in a practical condition, y1–y4 the measurement results obtained after 200 hours, 400 hours, 600 hours and 800 hours testing of the samples by the method according to the present invention, and z1–z4 the measurement results obtained after 200 hours, 400 hours, 600 hours and 800 hours testing of the samples by a conventional method, these results of measurement indicating the differences (ΔE^*) between the colors of the deteriorated samples and the original color thereof. Consequently, according to the method of the invention, by providing a substantially still or currentless condition of the air contacting the surfaces of the samples, accelerated deterioration tests can be conducted such that the deterioration condition of samples tested correlate well with the deteriorated condition of samples of the same material used under practical conditions, thereby improving the reliability of the accelerated deterioration test.

EXAMPLE II

Tests were conducted under the same conditions as in Example I on a laminated compound material, which was lined with a 10 mm thick foamed urethane sheet, and which consisted of soft vinyl. FIG. 5B is a sectional view of this sample, in which the reference letters a–c denote temperature measuring points. FIG. 5A shows a graph of the results of measurement made at the points 1–3, in which the temperatures of the samples used in a practical condition, samples deteriorated by the test method according to the present invention, and samples deteriorated by a conventional test method are shown.

It will be understood from this graph that a sample tested by the method according to the present invention has a temperature gradient similar to that of a sample used in a practical condition, and in which the temperature is high at the surface of the sample and decreases the deeper into the sample the measurement is taken, and that the sample tested by the conventional method has a temperature gradient indicating that the temperature of the sample becomes higher the deeper into the sample the measurement is made. The data for the evaluation of the deterioration of the samples in this experiment was not graphed. The deterioration of the samples in this experiment actually had a tendency almost identical with that of the samples in Example I.

EXAMPLE III

A test was conducted under the same conditions as in Example I except that the same filter as was used in Example I was mounted so that the filter was spaced at 20 mm from the surfaces of the samples. The results are shown in Table 3 and 4

TABLE 3

Item	Measuring position		
	a	b	c
Surface temperature (°C.) of sample	95.2	94.8	94.1

TABLE 4

Item		Measuring position		
		p1, q1, r1	p2, q2, r2	p3, q3, r3
Air velocity (m/sec)	p	0.3	0.3	0.4
	q	1.2	1.1	1.2
	r	1.3	1.2	1.2

The following observations can be clearly made from these tables. The air velocity in the positions q1–q3 at the front side of a filter and in the positions r1–r3 at the rear side of the filter was 1.1–1.3 m/sec which was equal to the air velocity in the corresponding positions in Example I. The air velocity p1–p3 in the space between the surfaces of samples 2 and the opposed surface of the filter 3 was 0.3–0.4 m/sec which was indicative that there was only a slight air current in this space. The surface temperature of the samples was maintained at 95±1° C. The irradiance of the light which the surfaces of the samples received was equal to that shown in Table 1, although this is not shown in Table 3. Although the deterioration accelerating capability of the method of Example III was slightly inferior to that of Example I, the test results as a whole of this Example were substantially identical with the results of Examples I and II.

EFFECT OF THE INVENTION

The method of the invention thus improves the conventional accelerated light fastness test by providing a layer of air over the irradiated surface of the sample which has at the most only a slight current. This is preferably done by positioning a light filter between the sample and the light source and spaced at a predetermined distance from the surface of the sample so that the air in the space between the surface of the sample and the opposed surface of the filter has at the most an extremely low velocity of flow. This enables the surface temperature of the sample to be maintained at a predetermined level at all times, and the deterioration of raised fibers and a laminated compound material, such as urethane-lined fiber and urethane-lined vinyl, which are used as interior finishing materials, especially, for automobiles, under practical conditions of use can be reproduced in a short period of time. The test results have excellent correlation with the results of use under natural conditions, which makes the method of the invention advantageous over conventional test methods of this kind.

I claim:

1. A method of carrying out an accelerated light fastness test on a sample of a material to be used under certain conditions of air convection along a surface thereof which is exposed to light during intended conditions of use of the material, comprising:

positioning the sample to be tested with said surface thereof spaced at a distance from a light source having a constant intensity of light radiated therefrom for causing the said surface of the sample to receive a desired intensity of light; and

positioning a filter between said surface of said sample and said light source at a position spaced at distance from said surface of said sample for causing air in the space between said filter and said sample to be substantially currentless, whereby the temperature conditions of the material at the surface facing the source of light are made to corresponding to the temperature conditions during the intended use of the material.

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