



KEPITAL Resistance to light and weather

With exposure to sunlight, plastics become very sensitive to ultraviolet rays. UV radiation causes discoloration and surface chalking resulting in decomposition, and finally serious deterioration of mechanical properties.

KEPITAL UV-stabilized formulations can prolong the service life of applications with specially formulated UV-packages.

Resistance to light and weather is usually evaluated through accelerated weathering tests and outdoor exposures for specific times.

In general OEM specification recommends the outdoor testing be conducted by means of weather-o-meter or outdoor exposure in Florida and Arizona.

| Weather | Florida | Arizona |
|-------------------------------|------------------------|------------------------|
| Rate of annual sunny days | 69 % | 85 % |
| Annual UV radiation (385 nm) | 280 MJ/m ² | 334 MJ/m ² |
| Annual sunlight radiation | 6588 MJ/m ² | 8004 MJ/m ² |
| Average temperature in summer | 32 °C | 40 °C |
| Annual rainy days | 111 | 32 |

Table 1. Outdoor exposure test environment

The accelerated weathering equipment can have three light sources such as: carbon arcs, xenon lamps, and UV lamps.

Recently, the xenon lamp, with a spectrum similar to that of sunlight, is generally used.

Radiation intensity and other conditions; filter combinations, temperature, cycle configuration, are specifically set up according to the test method.

The SAE (Society of Automotive Engineers) standards prescribe that different conditions which reflect the outdoor environment be applied to the accelerated weathering test depending upon the interior or exterior application.

For interior applications, the cyclic conditions take day and night into account, while for the exterior applications, a water shower has been used to simulate raining.

For light resistance and weather resistance of plastics, changes in colorfastness, surface gloss or mechanical properties are measured after exposure to outdoor or accelerated weathering.

1. Light resistance grade

KEPITAL Fxx-52 and Fxx-52G are products with light resistance and are intended for interior applications.

In addition to natural colors, they are processed with various colors.

The color changes of F20-52 in beige, gray and red are less than that of F20-52 in natural color after accelerated weathering according to SAE J2412 in Figure 1.

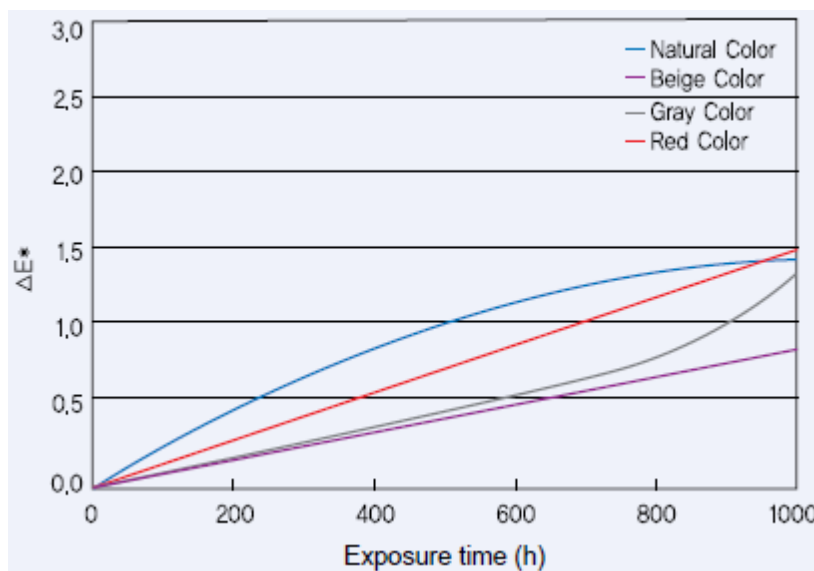


Figure 1. Color changes of F20-52 and F30-52

2. Weather resistance grade

KEPITAL Fxx-51 and Fxx-51U are products in black with UV-stabilization and were developed for exterior applications.

The weather resistance of F20-51U in colorfastness was measured according to accelerated weathering SAE J2527 in Figure 2.

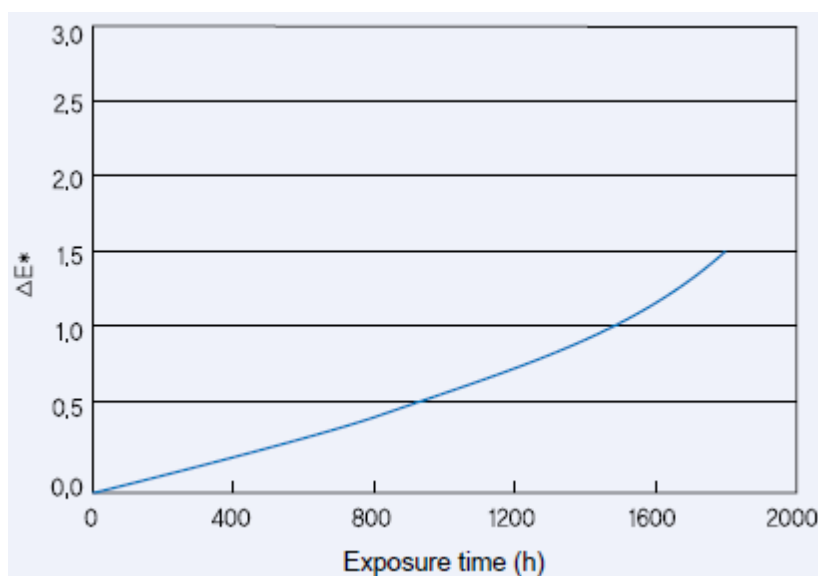


Figure 2. Color changes of F20-51U

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