



**mighty mac**

it's beary clean

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## COLOR CHANGES

Dyes are chemical compounds that are added to fibers to give them color. Sometimes these dyes react with chemicals or gases and changes in the color occur.



**Fume Fading** is a reaction to gaseous pollutants, such as oxides of nitrogen or sulfur, in the air. It is a gradual change, accelerated by sunlight, heat, high humidity and the presence of acid on the fiber. The most common color changes are blues to pink, greens to yellow and browns to red. The color change usually starts at the tips of the tufts and progresses toward the backing. In this picture the tan area is where a hope chest was placed on the carpet. Since it was not subject to fume fading, it represents the original color of the carpet.

**Ozone Fading** is caused by ozone gas in the atmosphere. It is also accelerated by high humidity and heat. Ozone is more prevalent around electric motors, fluorescent lights and during lightning storms. It is also formed by a reaction between light and pollutants in the air. Fibers subjected to ozone fading may lighten, turn white, or change from one color to another as in fume fading.

**Spotting Agents**, such as Resolve<sup>®</sup> can cause the displacement of dyes, particularly on Nylon fibers. It uses a photo-optical brightener that masks the stain. Unfortunately, it is a type of dye and replaces the original dyes in the dye sites. When the site is cleaned, the brighteners break down and are cleaned away leaving a gray area where the Resolve<sup>®</sup> was applied. The Carpet and Rug Institute has been trying for years to get it removed from the market without success. Oxy Clean<sup>®</sup> is another product that can strip dyes out of some carpets despite their 'color safe' claims. It should be noted that these spotting agents do not affect some bleach resistant fibers such as 100% Olefin or PET and PTT Polyester carpets.

**Benzyl Peroxide** is a common ingredient used in acne and athletes foot medications. Like Resolve<sup>®</sup> it displaces the dyes. When the area is cleaned, it breaks down and is removed, leaving a lighter color than the surrounding carpet.

Some carpet fibers are have **Indicator Dyes** used during the manufacturing process. These dyes are sensitive to either acid or alkaline chemicals. An alkaline-sensitive dye will change color if exposed to ammonia or high alkaline (high pH) detergent. The color often can be changed back with an acid such as white vinegar. An acid-sensitive dye will change color when exposed to vinegar or other mild acids (low pH) used in cleaning. The original color often can be restored with ammonia. These color changes may not be permanent and often can be reversed. Other color changes due to strong chemicals are not a result of this indicator effect, and may not be reversible.

Color changes that become apparent after cleaning are sometimes incorrectly blamed on the cleaner or the cleaning process. In many cases, however, the color change is due to the aging of dyes and fibers. Many times cleaning reveals the true color by removing dirt and loosened dyes.