

# “Tek” Newsletter

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Traffic Lane Discoloration/Yellowing

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Changes in the appearance of a carpet due to the forces imposed on it by normal use (shear, torsion, compression) is eventually accompanied by changes in apparent color. According to extensive research by major universities and research institutes, changes in the color of a carpet consistently increase with wear. In many instances a carpet may eventually appear to be lighter or brighter in color in the traffic lanes due to the flatter, more reflective surfaces of the crushed fibers. Conversely, when soiling is present a reduction in brightness occurs. The fibers tend to appear dark, dull, and delustered, but typically respond favorably to cleaning. In some instances the soils may contain coarse elements (such as aluminum, silicon, calcium) which can

abrade the fibers and permanently alter their light reflectance characteristics and the colors they were designed to project. When this occurs there can be a noticeable contrast between light reflection from the smooth fibers compared to light reflection from the small asperities on the fiber in the soil abraded areas. As a result, blues and grays may appear yellow and earth tones may appear brown or gray. For years this condition was often referred to as traffic lane gray, although in recent times our palate for more radiant colors may explain why there are more instances of traffic lane yellowing. Essentially, traffic lane yellowing occurs by either increasing the red and green reflectance in a carpet (crushed fibers) or by decreasing the blue reflected light (soiled/abraded fibers).

The most exasperating aspect of traffic lane discoloration from soil abrasion (other than its typically permanent nature) is the tendency of the traffic lanes to appear to be restored to their original color immediately following cleaning, only to return to their discolored appearance once the carpet dries. This is because when the carpet is cleaned the water fills the abrasions on the fiber, recreating a smooth fiber which temporarily restores appearance by providing a uniform reflective surface. Unfortunately, as the carpet dries and the water evaporates the smooth surface it created on the abraded fibers is gone and the light reflection differences between the trafficked and non-trafficked areas are again apparent. Traffic lane yellowing should not be confused with yellowing due to BHT found in carpet cushions and floor covering adhesives, optical brightener degradation, etc . . . , which will not be isolated to the traffic pattern and will not improve or disappear when wet.

Tracked on asphalt is another source of yellowing. Here yellowing occurs when the amber tinged oils in the asphalt leach onto the carpet. This same effect can be seen by placing asphalt on a paper towel, which will turn yellow

once these oils separate from the asphalt. Due to the tenacious nature of asphalt, complete carpet restoration from this form of traffic lane yellowing should not be expected.

Although traffic lane discoloration may not be entirely avoidable, it certainly can be moderated. Changing light sources can help. As an example, incandescent light is rich in red and deficient in blue. Because of this a carpet may show more red and yellow since it is lacking in blue. The same carpet would show less yellow under fluorescent lighting since it emits more blue. In some cases applying a topical protector such as Scotchgard or Teflon to the carpet **after cleaning** may help reduce the effects of traffic lane discoloration by leveling out the light reflection characteristics of the abraded fibers; however, these treatments are only temporary and their benefits will be diminished with use. Walk-offs mats should be used to arrest tracked on soils. Altering traffic lanes will help. Vacuuming regularly with a commercial grade upright vacuum will help remove abrasive soils, (which may not be visible but can do significant damage to the fiber). Deep cleaning (**with hot water extraction**) should be a systematic and preventative function, rather than only a response to visible soiling. Color selection is vital! Certain colors just don't work well under heavy use.

The most common reason for complaints due to traffic lane discoloration in carpet is due to the consumers lack of knowledge or misunderstandings concerning a carpet's capabilities and limitations. Many consumers feel that carpet should wear like wood or concrete, and their colors display similar resistance to soiling and abrasion. With a basic knowledge of color and an understanding of the demands that will be placed on a carpet it is possible to predict with a high degree of certainty if traffic lane discoloration will be a concern, and select a color most suited for the end-use.

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