Print Permanence Rating Notes…

In typical indoor situations, the “Displayed Prints Framed Under Glass” test condition is considered the single most important of the three display conditions listed. All prints intended for long-term display should be framed under glass or plastic to protect them from staining, image discoloration, and other deterioration caused by prolonged exposure to cigarette smoke, cooking fumes, insect residues, and other airborne contaminants; the precaution applies to traditional silver-halide black-and-white and color photographs, as well as inkjet, dye-sub, and other types of digital prints.

“Displayed prints framed with ultraviolet filtering glass” or ultraviolet filtering plastic sheet generally lasts longer than those framed under ordinary glass. How much longer depends upon the specific print material and the spectral composition of the illuminate, with some ink/paper combinations befitting a great deal more than others. Some products may even show reduced life when framed under a UV filter because one of the image dyes or pigments is disproportionately protected from fading caused by UV radiation and the can result in more rapid changes in color balance than occur with the glass-filtered and/or the bare-bulb illumination conditions. For example, if a UV filter protects the cyan and magenta inks much more than it protects the yellow ink in a particular ink/media combination, the color balance of the image may shift toward blue more rapidly than it does when a glass filter is used (in which case the fading rates of the cyan, magenta, and yellow dyes or pigments are more balanced in the neutral scale). Keep in mind, however, that the major cause of fading with most digital and traditional color prints indoor display conditions is visible light and although a UV filter may slow fading, it will not stop it. For the display permanence data reported here, Acrylite OP-3 acrylic sheet, a “museum quality” UV filter supplied by Cyro Industries, was used.

Illumination from bare-bulb fluorescent lamps (with no glass or plastic sheet between the lamp and print) contains significant UV emissions at 313nm and 365nm which, with most print materials, increases the rate of fading compared with fluorescent illumination filtered by ordinary glass (which absorbs UV radiation with wavelengths below about 330nm). Some print materials are affected greatly by UV radiation in the 313-365nm region, and others very little. “Gas fading" is another potential problem when prints are displayed unframed, such as when they are attached to kitchen refrigerator door with magnets, pinned to office walls, or displayed inside of fluorescent illuminated glass display case in schools, stores and offices.

Field experience has shown that, as a class of media, microporous "instant dry'' papers used with dye-based Inkjet inks can be very vulnerable to gas fading when displayed unframed and/or stored exposed to the open atmosphere where even very low levels of ozone and certain other air pollutants are present. In some locations, displayed unframed prints made with microporous papers and dye-based inks have suffered from extremely rapid image deterioration. This type of premature ink fading is not caused by exposure to light. Polluted outdoor air is the source of most ozone found indoors in homes, offices and public buildings. Ozone can also be generated indoors by electrical equipment such as electrostatic air filters ("electronic dust precipitators") that may be part of heating and air conditioning systems in homes, office buildings, restaurants, and other public buildings to remove dust, tobacco smoke, etc. Electrostatic air filtration units are also supplied as small ''tabletop'' devices. Potentially harmful pollutants may be found in combination products from gas stoves; in addition, microscopic droplets of cooking oil and grease in cooking fumes can damage unframed prints. Because of the wide range of environmental condition in which prints may be displayed or stored, Display Performance Ratings for the bare-bulb illumination condition will not be listed for paper/ink combinations of known susceptibility to gas fading. For all of the reasons cited above, prints made with microporous papers and dye-based inks should always be displayed framed under glass or plastic.

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