INTERNATIONAL WINDOW FILM ASSOCIATION

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California Energy Commission
Dockets Office, MS-4
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Sacramento CA 95814-5512
Via email: [docket@energy.state.ca.us]

To: Mazi Shirakh

**SUBJECT:** **Docket number: 12-BTSD-06**
**Proposed Residential Manual Language**

The following comments are submitted on behalf of the International Window Film Association, IWFA, which represents the manufacturers of 80% of the window film sold in California. Our members manufacture window film that reduces the solar heat gain coefficient of windows for both residential and non-residential buildings. These products are NFRC certified and a cost effective means of energy reduction.

**Line by line changes**

The IWFA recommends the following changes to the window film section () of the Residential Manual for clarity and accuracy (represented by the standard underline and strikethrough convention):

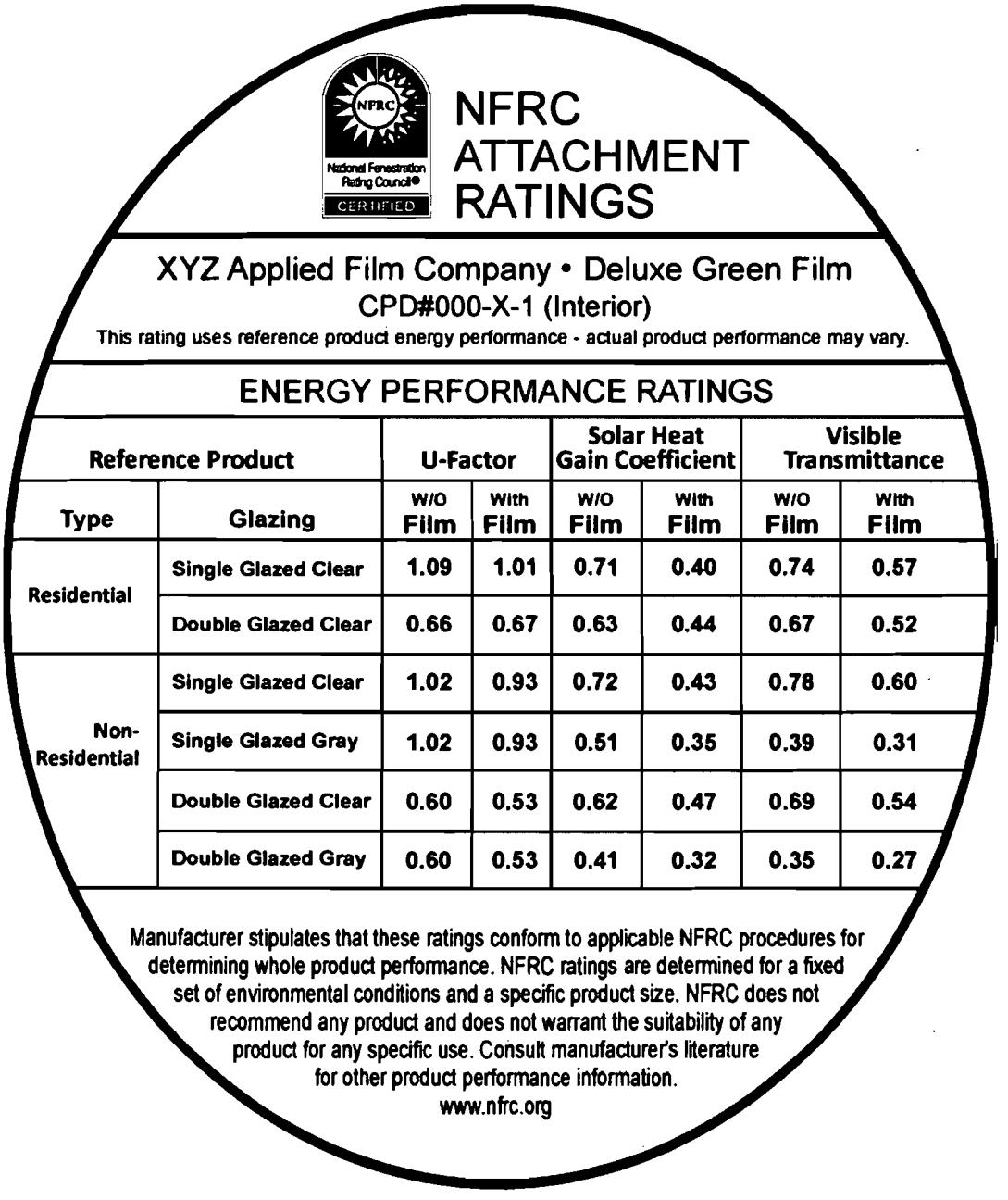
Developed in the early 1950's, window films are mostly made of polyester substrate that is durable, tough, and highly flexible. It absorbs little moisture and has both high arid and low temperature resistances. Polyester film offers crystal clarity and can be pre-treated to accept different types of coatings for energy control and long term performance ~~such as adhesives~~. Window films are made with a special scratch resistant coating on one side and with a mounting adhesive layer on the other side. The adhesive is normally applied to the interior surface (room side) of the glass, unless it is a film specifically ~~specially~~ designed to go on the exterior or outside window surface.

Polyester film offers crystal clarity and can be pre-treated to accept different types of coatings. Polyester film can also be metalized and easily laminated to other layers of polyester film. It can be tinted or dyed, or metalized ~~by either a~~ through vacuum coating, sputtering, or reactive deposition to produce an array of colored and spectrally selective films, either clear or in color, many times with the color coming from the metallic coating rather than from tinting or dying. There are three basic categories:

1. Clear (Non-Reflective);
2. Tinted or Dyed (Non-Reflective); and
3. Metalized ~~Vacuum Coated~~ (Reflective), which can be metalized through vacuum coating, sputtering, or reactive deposition ~~or sputtered~~, and may be clear or colored.
   - Clear films are used as safety or security films and to reduce ultraviolet (UV) light which contributes greatly to fading ~~damaging rays~~; however, they are not normally used for solar control or energy savings.
   - Tinted or ~~D~~dyed films reduce both heat and light transmission, mostly through increased absorptance and can be used in applications where the primary benefit desired is glare control with energy savings secondary ~~is desired~~.
   - Metalized (r~~R~~eflective) films are the preferred film in most energy savings applications, since they reduce transmission primarily through reflectance, and are manufactured to selectively reflect heat more than visible light through various combinations of metals.

**Updated NFRC label example**

The NFRC label example shown in the published version of the Residential Manual is not the most recent version of NFRC label. This could cause confusion. The most recent version is below:



NFRC
ATTACHMENT
RATINGS

XYZ Applied Film Company • Deluxe Green Film

CPD#000-X-1 (Interior)

This rating uses reference product energy performance - actual product performance may vary.

ENERGY PERFORMANCE RATINGS

| Reference Product | | U-Factor | | Solar Heat Gain Coefficient | | Visible Transmittance | |
|---|---|---|---|---|---|---|---|
| Type | Glazing | W/O Film | With Film | W/O Film | With Film | W/O Film | With Film |
| Residential | Single Glazed Clear | 1.09 | 1.01 | 0.71 | 0.40 | 0.74 | 0.57 |
| | Double Glazed Clear | 0.66 | 0.67 | 0.63 | 0.44 | 0.67 | 0.52 |
| Non-Residential | Single Glazed Clear | 1.02 | 0.93 | 0.72 | 0.43 | 0.78 | 0.60 |
| | Single Glazed Gray | 1.02 | 0.93 | 0.51 | 0.35 | 0.39 | 0.31 |
| | Double Glazed Clear | 0.60 | 0.53 | 0.62 | 0.47 | 0.69 | 0.54 |
| | Double Glazed Gray | 0.60 | 0.53 | 0.41 | 0.32 | 0.35 | 0.27 |

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.

www.nfrc.org