

3M Technical News

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Window Film and Low-E Windows

There are many varieties of Low-E windows available today, and the general concept is the same for all of them: reduce the amount of heat loss and heat gain. To do this, these windows typically have a thin coating of metals on one or more of the panes to reflect the heat energy.

In cold weather, Low-E windows help to keep the heat in the home. In warm weather, they help to keep the outside heat from transferring to the air conditioned inside space. Low-E windows are a definite improvement over older IG units made with un-coated glass.

INTRODUCTION

In this newsletter, you will find the following:

- Window Film and Low-E Windows
- Ultraflex Training Schedule
- Security Film Installation Techniques
- Method for Seams

	Shading Coefficient	Shading coefficient improvement	Solar heat gain coefficient	Relative heat gain, BTU/hr/ft ²	Maximum summertime glass temp degrees F	Air temp inside unit degrees F
Standard IG Unit	.83		.722	173	99	97
w/P18ARL	.37	56%	.315	80	124	116
w/RE35NEARL	.60	27%	.519	128	126	117
w/NV25	.53	36%	.459	113	129	119
w/NV15	.42	49%	.363	91	127	118
Low-E IG Unit	.43		.378	91	111	99
w/P18ARL	.23	47%	.199	50	115	111
w/RE35NEARL	.35	20%	.302	74	114	112
w/NV25	.32	25%	.281	69	114	113
w/NV15	.27	39%	.230	57	115	112

A feature of Low-E windows is a reduction in the solar radiation that enters the home. The best windows can have a shading coefficient as low as 0.40. Even with the advances in Low-E technology, our 3M Scotchtint™ and Scotchshield™ products can significantly improve the performance of these windows (see above chart).

Other ways that 3M films enhance the performance of Low-E windows are:

1. Low-E windows do not block UV radiation as effectively as filmed windows. A well made Low-E window can block up to 90% of the UV radiation. The same window with Scotchtint or Scotchshield film will block more than 99%.

2. Low-E windows do not typically protect against broken or flying glass unless they are tempered. Scotchshield films improve the Safety & Security performance of glass by holding the broken shards together.

3. Low-E windows do not typically reduce glare. Most Low-E windows have a visible light transmission greater than 70%, which does little for glare reduction. Scotchtint and Scotchshield films can reduce glare up to 80%, depending on the film used.

As you can see, the addition of 3M films can greatly enhance the performance of Low-E windows and give the customer greater energy savings, fade reduction and comfort.

Ultraflex Training

The 3M™ Ultraflex Sealant System is the best and strongest safety and security installation we offer. This system combines the strength and elasticity of the 3M™ Scotchshield Ultra Safety and Security Window Film and Dow Corning™ 995 Silicone Structural Sealant. This combination of products creates a flexible membrane that captures and absorbs the impact energy. 3M's Ultraflex Window System allows the frame to bend and twist to accommodate a variety of impact stresses, increasing personal safety from flying glass. For ease of use, the Ultraflex System offers a simple, more cost effective attachment system when compared to more bulky mechanical attachment alternatives. The Ultraflex System will replace the window gasket and blend with the frame system to look as good as the gasket it replaces.

Ultraflex offers tested, enhanced protection against violent weather, bomb blasts, crime, and accidents. Recently, we conducted training at our Los Angeles and Houston Service Centers with great participation and success. If you want to offer the best of the best to your customers, you need Ultraflex training. Contact your 3M distributor for the 2005 training schedule.

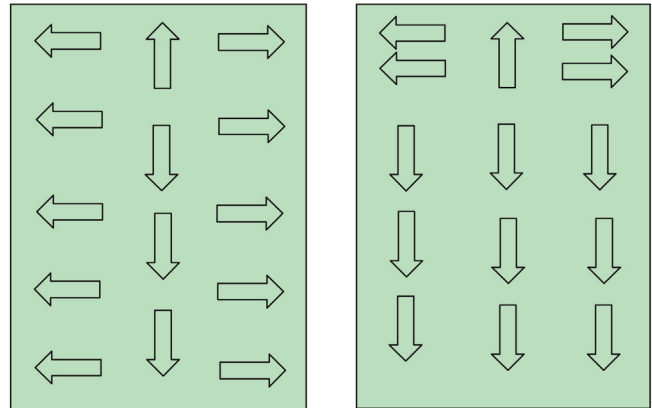
Security Film Installation Techniques

(continued from previous issue)

In the previous issue of this newsletter, we presented a squeegee technique aimed at producing the highest quality installation in the shortest amount of time. In this issue, we illustrate another technique that produces the same results with some of our thicker films, like Ultra600.

It is critical to remove as much water as possible on the first pass. Thicker films compound the difficulty of removing the maximum amount of water on the first pass. For these films, we have found that the following technique works better.

Illustrated (right) are the two techniques. The one on the left is the technique we presented previously. The one on the right is the recommended technique for thicker films: By allowing gravity to work with you to remove the water, you get a high quality installation with minimal effort.



Method for Seams

Seams can cause real worry and justifiably so. It appears that no matter how good a seam looks when the job is complete, inevitably the seam separates or buckles with time. This is due to heat cycling of the film and the film stretching during installation. To combat this problem, we recommend the following: always squeegee parallel to the seam. When you squeegee with the seam, you prevent stretching the film toward the seam. Instead, the water is removed without inducing perpendicular stresses at the seam.

If the seam is horizontal, perform ALL squeegee strokes in a horizontal motion. If the seam is vertical, perform ALL squeegee strokes in a vertical motion. See illustrations at right: While this installation technique may not remove all worry from a seamed installation, it should minimize installation effects on the long-term appearance of the seam.

