



SECTION 08 87 00 – 3M COUNTER INTELLIGENCE –EMI/RF SIGNAL SHIELDING FILMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

- 1. Surface applied counter intelligence and signal shielding films for interior glass or interior face of exterior glass. Film is designed to contain radio frequency and electro-magnetic impulses from penetrating inside glass windows and from escaping glass windows.

1.2 SYSTEM DESCRIPTION

A. Performance Requirements:

- 1. Provided counter intelligence and signal shielding films that comply with the following:

SPECIFIER NOTE: RETAIN APPROPRIATE PRODUCT REQUIREMENTS BELOW. DELETE REQUIREMENTS NOT REQUIRED FOR PROJECT.

Product: CI100B – 6 mm

Glass Configuration	<u>1/4 in. Clear</u>	<u>1/4 in. Tinted</u>	<u>1 in. IGU Clear</u>	<u>1 in. IGU Tinted</u>
Glare Reduction	23%	23%	23%	24%
UV Blocked	99%	99%	99%	99%
Shading Coefficient	0.47	0.43	0.55	0.42
Vis. Light - Exterior Reflection	11%	7%	17%	9%
Vis. Light – Interior Reflection	11%	9%	15%	14%
Vis. Light Transmitted	68%	41%	61%	36%
Emissivity	0.73	0.73	0.73	0.73
U-Value	0.96	0.96	0.46	0.46

RF Attenuation: 35 dB from 30 MHz to 1.5 GHz.

Tvis: 67 percent.

IF Attenuation:

- 86.6 percent at 800 mm
- 95.5 percent at 900 mm
- 98.3 percent at 1000 mm
- 99.5 percent at 1300 mm
- 99.5 percent at 1550 mm to 2500 mm

UV Attenuation:

- 63 percent at 400 mm
- 99.9 percent at 375 mm

Product: CI100T – 6 mm

Glass Configuration	<u>1/4 in. Clear</u>	<u>1/4 in. Tinted</u>	<u>1 in. IGU Clear</u>	<u>1 in. IGU Tinted</u>
Glare Reduction	21%	21%	20%	22%
UV Blocked	100%	100%	100%	100%
Shading Coefficient	0.48	0.44	0.55	0.42



Vis. Light - Exterior Reflection	8%	6%	15%	8%
Vis. Light – Interior Reflection	9%	7%	13%	12%
Vis. Light Transmitted	70%	42%	63%	37%
Emissivity	0.73	0.73	0.73	0.73
U-Value	0.97	0.97	0.46	0.46

RF Attenuation: 35 dB from 30 MHz to 1.5 GHz.

Tvis: > 60 percent.

IF Attenuation:

- > 80 percent at 800 mm
- > 90 percent at 900 mm
- > 94 percent at 1000 mm
- > 97 percent at 1300 mm
- > 98 percent at 1550 mm to 2500 mm

UV Attenuation:

- > 70 percent at 400 mm
- > 90 percent at 375 mm

### 1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data including installation instructions and cleaning methods.
- B. Warranty: Manufacturer's standard 3-year limited warranty indicating warranty coverage.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer will ensure proper quality control during production, shipping, and inventory, clearly identify and label each film core with product designation and run number.
- B. Deliver materials to Project site with manufacturer's labels intact and legible.

### 1.5 QUALITY ASSURANCE

- A. Dealer and Applicator Qualifications: Provide documentation that dealer and applicator are authorized by manufacturer of window film to install window films.
  - 1. Provide reference list of 3 projects of similar size on which applicator has installed window films. Include on the list the following:
    - a. Name of building.
    - b. Name and telephone number of management contact.
    - c. Type of glass.
    - d. Type of film.
    - e. Amount of film installed.
    - f. Date of completion.

### 1.6 WARRANTY

- A. Warrant materials and workmanship for 3 years against defects after completion and final acceptance of Work.
  - 1. Repair defects from faulty materials or workmanship developed during guarantee period, or replace with new materials, at no expense to Owner.



2. Warranty covers the following:
  - a. Film will maintain shielding protective properties without cracking, crazing, delaminating, peeling, or discoloration.
  - b. Glass failure due to thermal shock fracture of glass (maximum value \$500.00 per window) provided film is applied to recommended types of glass and failure occurs within 60 months from start of application. Glass failures shall reviewed by film manufacturer prior to replacement.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Subject to compliance with requirements, provide products from f the following manufacturer:
  1. 3M Building & Commercial Services Division (B&CSD).
  2. 3M Center Building 223-2S-24.
  3. St. Paul, MN 55144-1000.
  4. 3M B&CSD Point of Contact: Michael Hassenauer, 651-737-1053.

### 2.2 MATERIALS

- A. Film Material: Film material consists of a durable polyester with a decorative matte surface, manufactured with a silicone liner to protect clear pressure-sensitive adhesive. Films contain no metals, but so contain infrared-absorbing carbon, metal oxide particles, or both.
  1. Film Color: Clear, containing no metal coatings or dyed polyesters.
  2. Provide uniform film, without noticeable pin holes, streaks, thin spots, scratches, banding, or other optical defects. Variation in total transmission across width, at any portion along length, shall not exceed 2 percent over average. Provide film with no evidence of coating voids.
  3. Film Thickness: Nominal thickness of between 3.0 mils and 3.5 mils (0.003 and 0.0035 inches).
  4. Acceptable Product: Counter Intelligence Films.

### 2.3 ACCESSORIES

- A. Edge Sealant: Film manufacturer's sealant for edges of film.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

**SPECIFIER NOTE: RETAIN APPROPRIATE PROJECT OPTION IN PARAGRAPH BELOW. DELETE OPTION NOT REQUIRED.**

- A. Examine glass surfaces to receive film and verify that they are free from defects and imperfections, which will affect final appearance. Correct and note such deficiencies to [Owner] [Architect] prior to commencing film application.

### 3.2 PREPARATION

- A. Use protective tarps and drop cloths to cover interior finishes near window.
- B. Turn off or cover heating and air conditioning ventilation ducts.



- C. Clean window and window framing thoroughly with cleaning solution consisting of 90 percent water and 10 percent ammonia. Blade inside surface of window glass with industrial razors to insure removal of foreign contaminants.
  - 1. Tape and seal cracked and deteriorating window sealant.
- D. Place towel or other absorbent material on window sill or sash to absorb moisture accumulation generated by film application.
- E. Thoroughly rinse glass from top to bottom with pressure spray tank.
- F. Squeegee entire glass surface.
- G. Dry glass edges and window frames using a lint-free towel.

### 3.3 INSTALLATION

- A. Install window films per manufacturer's written instructions.
  - 1. Cut film edges neatly and square at a uniform distance of 1/8 inch (3 mm) to 1/16 inch (1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.
  - 2. Spray slip solution, composed of one capful of Johnson® Baby Shampoo or Joy® Dishwashing Liquid to 1 gallon of water, on window glass and adhesive to facilitate proper positioning of film.
  - 3. Apply film to glass and lightly spray film with slip solution.
  - 4. Squeegee to remove water. Squeegee from top to bottom of window.
  - 5. Spray slip solution to film and squeegee a second time.
  - 6. Bump film edge with lint-free towel wrapped around edge of a 5-way tool.
  - 7. Wipe frame edge dry
  - 8. Inspect installation to insure proper application.
  - 9. Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

**SPECIFIER NOTE:** [RETAIN EDGE SEALANT PARAGRAPH BELOW IF SPECIFYING C.](#)

- B. Edge Sealant:
  - 1. Allow CI100T/CI100B film to dry for 2 to 3 days.
  - 2. Wipe edges of film with damp towel and allow to dry for 5 minutes.
  - 3. Apply approximately 1/8 inch (3 mm) bead of sealant covering exposed edge of applied film. Take caution in applying too much sealant too quickly which may cause bubbles in film.
  - 4. Make certain that sealant covers both a portion of the film and glass.

### 3.4 CLEANING

- A. After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.
- B. After installation, remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.

END OF SECTION