

SECTION 08871 (08 87 13)

SOLAR CONTROL WINDOW FILMS

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\*\* NOTE TO SPECIFIER \*\* Madico Incorporated; Commercial and residential solar control and safety films,

This section is based on the products of Madico, Inc., which is located at:

9251 Belcher Road North

Pinellas Park, FL, 33782

Toll Free: 888-887-2022

Phone: 727-327-2544

Email: contact@madico.com

Web: www.madico.com

[[Click Here] for additional information.](https://www.arcat.com/arcatcos/cos9533/arc33948.html)

Headquartered in Tampa Bay, Florida, Madico, Inc. manufactures and distributes high performance window films for automotive, architectural, and safety and security applications through seven company owned distribution centers in the United States as well as an extensive international distributor network.

Since 1903, Madico has pioneered industry-first products with an unrivaled commitment to quality and dedication to its customers. Madico is a fully-owned subsidiary of Lintec USA Holdings, Inc. For more information, visit [www.madico.com](http://www.madico.com).

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

Madico, Inc. manufactures several types of polyester, transparent glazing films that can be either factory or field applied to glazed doors, sidelights, transoms, windows, and curtain walls to improve solar control, increase comfort, protect against fading, control glare, or improve the look of the building.

* + 1. Solar Control Films: Transparent film applied to glass for control of solar energy and to reflect radiant heat
			1. Sunscape® Designer Series:
				1. MAC 4000
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 08400 – Entrances, Storefronts, and Curtain Walls.
		2. Section 08500 – Windows.
		3. Section 08600 – Roof Windows and Skylights.
		4. Section 08800 – Glazing.
		5. Section 08800 – Glass.
		6. Section 08870 – Window Films.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
			1. ASTM D882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
			2. ASTM D1044 – Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
			3. ASTM D3330 – Standard Test Method for Peel Adhesion at 180 Degree Angle.
			4. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
		2. American National Standards Institute (ANSI):
			1. ANSI/NFRC 100 – Procedure for Determining Fenestration Product U-factors.
			2. ANSI/NFRC 200 – Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
		3. International Window Film Association (IWFA):
			1. Architectural Visual Inspection Standard for Applied Window Film.
	1. SUBMITTALS
		1. Submit under provisions of Section 01300.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.
		3. Verification Samples: 4 by 6 inches (102 by 152 mm) minimum sample of glazing film.
		4. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
		5. Sustainability Submittals: Refer to Division 01 for requirements regarding VOC limits, recycled content, regional materials, and required documentation.
	2. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum ten years successful documented experience.
		2. Installer Qualifications:
			1. Installer: Glazing film shall be applied by installers with a minimum of five years successful experience installing products of the same type and scope as specified.
			2. Provide documentation that the installer is certified by glazing film manufacturer to perform the work specified.
			3. Provide references of three projects where the installer has applied film of similar nature and size.
		3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

Delete if not required.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect’s review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
			1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
			3. Retain mock-up during construction as a standard for comparison with completed work.
			4. Do not alter or remove mock-up until work is completed or removal is authorized.
	1. PRE-INSTALLATION CONFERENCE
		1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
		2. Protect from damage due to weather, excessive temperature, and construction operations.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
		2. Surface temperature: Do not apply glazing film when surface temperature is less than 40 degrees Fahrenheit
		3. Prior to installation, the glass and frames shall be inspected for surface contamination, damage, or other defects that may adversely affect the performance of the glazing film
	4. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	5. WARRANTY
		1. Manufacturer's Warranty: Provide manufacturer's standard limited warranty.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Madico Incorporated which is located at: 9251 Belcher Road North; Pinellas Park, FL, 33782; ASD Toll Free: 888-887-2022; Tel: 727-327-2544; Email: windowfilm@madico.com; Web: www.madico.com.
		2. Substitutions: Not permitted.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. PERFORMANCE REQUIREMENTS
		1. Abrasion Resistance: Film must have a surface coating that is resistant to abrasion such that, less than 5 percent increase of transmitted light haze will result in accordance with ASTM D1044 using 50 cycles, 500 grams weight, and the CS10F Calibrase Wheel.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. SOLAR CONTROL FILMS

 \*\* NOTE TO SPECIFIER \*\* By rejecting up to 86 percent of the sun’s heat, our window films dramatically lower air conditioning costs in warmer months and retain heat in winter to reduce heating bills. Today's modern office buildings feature attractive, floor-to-ceiling windows that bring in natural sunlight and offer a portal to the outside world. Since the sun's UV rays travel through windows and can lead to skin cancers, it is important that building owners provide protection to their occupants. Madico window film blocks up to 99 percent of the sun's damaging UV rays, while adding energy savings, temperature control, and privacy to your building. Delete options not required.

* + 1. Sunscape Designer Series:
			1. Basis of Design: MAC 4000 as manufactured by Madico, Inc.
				1. Film Type: Transparent, polyester, micro-thin film bonded to glass for solar control and to reflect radiant heat from the sun.
				2. Performance attributes for film applied to 1/4 inch (6 mm) thick clear glass tested in accordance with ANSI/NFRC 100 and ANSI/NFRC 200:

Visible light transmittance: 46 percent.

Visible light reflected: 14 percent.

Glare reduction: 49 percent.

Ultraviolet light transmittance: Less than 1 percent.

U-Value: 1.04.

Solar energy transmittance: 33 percent.

Solar energy reflected: 14 percent.

Solar energy absorbed: 53 percent.

Shading Coefficient (SC): 0.58.

Solar Heat Gain Coefficient (SHGC): 0.50.

Emissivity: 0.88.

* + - * 1. Physical Properties.

Thickness: 0.0015 inch (0.038 mm).

Color: Neutral Tone Shade.

Construction: Multi-ply laminate.

Adhesive Type: Pressure sensitive acrylic.

1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly constructed and prepared.
			1. Examine glass and frames. Verify that existing conditions are adequate for proper application and performance of film.
			2. Verify glass is not cracked, chipped, broken, or damaged.
			3. Verify that frames are securely anchored and free of defects.
		2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Comply with manufacturers recommendations for surface preparation.
		2. Clean glass of dust, dirt, paint, oil, grease, mildew, mold, and other contaminants that would inhibit adhesion.
		3. Immediately prior to applying film, thoroughly wash glass with neutral cleaning solution.
		4. Protect adjacent surfaces.
	3. GLAZING FILM APPLICATION
		1. Field apply glazing film to the following items in accordance with manufacturer’s instructions:

\*\* NOTE TO SPECIFIER \*\* Modify list below as required to convey Project requirements. Delete items not required.

* + - 1. Steel framed glazed doors, sidelights, transoms, and windows.
			2. Aluminum framed glazed doors, sidelights, transoms, and windows.
			3. Aluminum curtain wall framing system.
			4. Other curtain wall framing system.
			5. Manufactured wood windows.
			6. Manufactured steel windows.
			7. Manufactured aluminum windows.
			8. Manufactured windows.
		1. Do not apply glazing film when surface temperature is less than 40 degrees F (4 degrees C).
			1. Do not proceed until unsatisfactory conditions have been addressed.
		2. General Film Installation:
			1. Install in accordance with manufacturers written instructions and approved shop drawings.
			2. Accurately cut film with straight edges to required sizes allowing 1/16 to 1/8 inch (2 to 3 mm) gap at perimeter of glazed panel.
			3. Remove release liner immediately prior to adhering film to glass.
			4. Apply mounting solution to film and glass.
			5. Apply film to glass and removed air bubbles, wrinkles, and other defects using a squeegee. Three to five complete passes are required to completely remove mounting solution from between film and glass.
	1. FIELD QUALITY CONTROL
		1. Inspect installation. Verify that it is complete and complies with requirements and manufacturer’s instructions to provide specified anti-intrusion requirements. Correct deficiencies.
		2. After installation, view film from a distance of 10 feet (3 meters) against a light colored background. Ensure appearance is uniform without streaks, bands, thin spots, and pinholes in accordance with the IWFA Architectural Visual Inspection Standard for Applied Window Film.
		3. If installed film does not meet these requirements remove and replace with new film.
	2. CLEANING AND PROTECTION
		1. Clean glass following installation. Remove excess sealants and other glazing materials from adjacent finished surfaces.
		2. Remove labels and protective covers.

END OF SECTION