

ELIOSOLAR HYBRID SHADES

Specification Data Sheet

PRODUCT NAME:

eliosolar Hybrid Shades

MANUFACTURER:

eliosolar

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PRODUCT DESCRIPTION:

Basic uses: eliosolar Hybrid Shades are architectural sun control and shading structures (sun shades, sun shields, Canopies, Trellis, Carport...) that contain a fully integrated solar thermal collector.

This architecturally integrated patented design solution combine the advantages of both a passive and an active solar system.

Eliosolar Hybrid Shades, by creating shade, lower inside temperature of the building and the needs for A/C, reducing cooling energy consumption. At the same time, Eliosolar Hybrid Shades collect solar energy to heat or pre-heat the water of the building, for domestic, commercial or industrial usage, lowering heating energy needs.

Energy savings generated depend on several factors such as energy distribution systems in the building, orientation and location of the building, climate and length of heating season, and finally local utility rates.

This system, depending on location can use domestic water or a glycol solution to collect and transfer solar energy to building systems using closed loop or open loop heat exchange technology.

Ideal applications include:

* Vertically mounted wall applications such as brise-soleil, facade sun shields or louvers

* Horizontally mounted wall mounted applications such as sunshades.

* Free standing structures such as trellis, patio awnings, covered walkway, car ports, fences or guardrails.

These applications are suitable for all types of single or multi family residential buildings as well as any commercial, hospitality, institutional, government or industrial buildings....

PART 1 - GENERAL

1.01 Summary

A. Section includes: The work specified in this Section includes, but shall not be limited to aluminum exterior sun control assemblies.

B. Scope: Provide design, manufacturing and fabrication for exterior sun control devices with fully integrated unglazed solar thermal collectors.

1.02 References

American Architectural Manufacturers Association (AAMA)
American Society for Testing and Materials (ASTM)
American Welding Society (AWS)
Air Movement and Control Association International (AMCA)

1.03 Performance requirements

A. Structural Performance: Provide exterior sun control assemblies capable of withstanding the effects of loads and stresses from dead loads, live loads, snow loads, wind loads, and normal thermal movement without evidencing permanent deformation of assembly or components including blades, frames, and supports; or permanent damage to fasteners and anchors.

1. Dead Load: As required by applicable building code.
2. Live Load: As required by applicable building code.
3. Snow Load: As required by applicable building code.
4. Wind Load: As required by applicable building code.
5. Thermal Movements: Allow for thermal movement resulting from the following maximum change (range) in ambient and surface temperatures in engineering, fabricating, and installing exterior metal fabrications to prevent buckling, opening of joints, over stressing of components and connections, and other detrimental effects. Base engineering calculation on actual surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

1.04 Submittals

A. General: Submit the following in accordance with "conditions of contract" & Division 1 Submittals Sections 0133 00

B. Product data: Product data shall include, but shall not be limited to, manufacturer's technical and descriptive data on exterior sun control components and assemblies.

C. Shop drawings: Submit shop drawings for each product and accessory required. Include information not fully detailed in manufacturer's standard product data, including, but not limited to, plans; elevations; and sections and details showing profiles, angles, and spacing of blades, frames and supports. Show unit dimensions related to supporting and adjoining structures and construction. Indicate anchorage details and locations.

D. Samples: Submit samples for initial color selection. Submit samples of each specified finish. Submit samples in form of manufacturer's color charts showing full range of colors and finishes available. Color samples not necessary if colors preselected and specified or scheduled.

E. Maintenance data in the form of manufacturer's printed instructions for cleaning and maintaining sun control device

F. Test reports: Submit certified performance results from an independent and accredited laboratory testing facility, capable of testing an unglazed solar collector.

1.05 Quality Assurance

A. Qualifications:

1. Manufacturer qualification: Manufacturer capable of providing field service representation during construction process if or when required. Able to offer Solar collectors independently tested and accredited by SRCC.
2. Installer qualifications: Installer shall be a firm that shall have a minimum of five years of successful installation experience with projects utilizing exterior sun control devices similar in type and scope to that required for this Project.

3. Welder qualifications: Qualify welding processes and welding operators in accordance with AWS standard qualification procedures.

4. Engineer Qualifications: The engineer shall be a professional engineer legally authorized to practice in the jurisdiction where the Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of products similar to this Project in material, design, and extent, and that have a record of successful in-service performance.

B. Regulatory Requirements:

Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction.

C. Pre-Installation Conference:

Conduct pre-installation conference in accordance with Section 01 31 19 - Project Meetings. Prior to commencing the installation, meet at the Project site to review the material selections, installation procedures, and coordination with other trades. Pre-installation conference shall include, but shall not be limited to, the Contractor, the Installer, and any trade that requires coordination with the work. Date and time of the pre-installation conference shall be acceptable to the Owner and the Architect.

1.06 Delivery, storage and handling

A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with supplier's or manufacturer's name, material or product brand name, and lot number, if any.

B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.07 Project conditions

A. Field Measurements: Take field measurements prior to fabrication of the work and preparation of shop drawings, to ensure proper fitting of the work. Show recorded measurements on final shop drawings. Notify the Owner and the Architect, in writing, of any dimensions found which are not within specified dimensions and tolerances in the Contract Documents, prior to proceeding with the fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the work.

B. Established Dimensions: Where field measurements can not be made without delaying the work, guarantee dimensions and proceed with fabricating of exterior sun control assemblies without field measurements. Coordinate construction to ensure that exterior sun control assemblies correspond to established dimensions.

1.08 Warranty

A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

C. Warranty Period: Manufacturer's Standard Warranty is commencing on Date of Substantial Completion

D. Beneficiary: Issue warranty in the legal name of the Project Owner.

PART 2 - PRODUCTS

2.01 Manufacturers

A. Basis of Design: Products specified are those as manufactured by Eliosolar, 2658 Griffith Park Blvd.#167 Los Angeles CA 90039; Phone (323) 963-3308 Fax (323) 822-0742. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by other manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent.

B. Substitutions: In accordance with section [01 25 13- product Substitution Procedures] no substitutions permitted.

2.02 Materials

1. Structures, shading devices:

A. General: Metal shall be free from defects impairing strength, durability or appearance, and of the best commercial quality for purposes specified.

B. Aluminum:

*Aluminum Extrusions: ASTM B 221/B 221M, Alloy 6063-T5 and 6063-T6.

*Aluminum Sheet: ASTM B 209/B 209M, Alloy 3003-H14 or Alloy 5052 -H32

*Aluminum outriggers: ASTM B 209/B 209M, Alloy 6061-T6

C. Fasteners:

300 Series stainless steel unless otherwise indicated. Use types and sizes to suit unit installation conditions.

2. Thermal solar collector tubing and fittings:

Made of cross linked polyethylene Pexcel tubing that meets the requirements of ASTM F876, F877 and P171 chlorine resistance rating as well as ANSI/NSF 61-14. Maximum pressure 160 psi and temperature range of 0 F to 200 F. Bronze pex fittings meet ASTM F877, maximum pressure of 180 psi.

2.03 Fabrication

A. Assemble exterior sun control assemblies in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitation. Clearly mark units for reassembly & coordinated installation.

B. Exterior sun control assemblies shall be assembled in accordance with manufacturer recommendations.

C. Include supports, anchorage, and accessories required for complete assembly.

2.04 Finishes

Comply with NAAMM MFM for architectural metal products for recommendations for applying and designating finishes. Finish exterior sun control devices after assembly if welded.

A. High Performance Organic Coating: AA-C12-C42-R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: chemical conversion coating, acid chromate-fluoride-phosphate pretreatment; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions. Provide color to match the Architect's sample, or, if no sample, as selected by the Architect from manufacturer's standard choices for color and gloss.

B. Class I Clear Anodized Finish: AA-M12-C22-A41 (Mechanical Finish: as fabricated, non-specular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, clear film thicker than 0.7 mil [0.018 mm]) complying with AAMA 611.

C. Class I Color Anodized Finish: AA-M21-C22-A42/A44 (Mechanical Finish: as fabricated, non-specular; Chemical Finish: etched, medium matte; Anodic Coating: Class I Architectural, film thicker than 0.7 mil [0.018 mm] with integral color or electrolytically deposited color) complying with AAMA 611. Provide color to match the Architect's sample, or, if no sample, as selected by the Architect from within full range of industry colors and color density range.

D. Standard Two-Coat Polyvinylidene Fluoride (PVDF) Finish Coating: Manufacturer's standard thermocured system, complying with AAMA 2605, composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent PVDF resin by weight, as produced by Arkema, Inc. ("Kynar 500") or by Solvay Solexis, Inc. ("Hylar 5000"). Provide minimum 1.2 mil (0.030 mm) total dry film thickness.

PART 3 - EXECUTION

3.01 Examination

A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.02 Preparation

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the Project Site.

B. Surface preparation: Prior to installation, clean substrate to remove, dirt, debris, and loose particles.

C. Protection: Take all necessary steps to prevent damage to material during installation and protect adjacent work areas and finish surfaces from damage during product installation.

3.03 Installation

A. Install exterior sun control devices in accordance with reviewed product data, final shop drawings, engineering calculations, within specified tolerances and per manufacturer's instructions and recommendations.

B. Locate and place exterior sun control assemblies level, plumb, at indicated alignment with adjacent work.

C. Protect aluminum members in contact with masonry, steel, concrete, or dissimilar materials using nylon pads or butiminous coating.

D. Do not cut or trim components parts during erection without the approval of the manufacturer and in accordance with his recommendations

E. Coordinate mechanical to ensure system is properly connected with plumbing.

3.04 Cleaning

A. Periodically clean exposed surfaces of exterior sun control devices that are not protected by temporary covering to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.

B. Before final inspection, clean exposed surfaces with water and a mild soap not harmful to finishes.

C. Clean-up and touch-up minor abrasions in finishes with air-dried coating that matches color and gloss and is compatible with, factory-applied finish coating.

D. Protection: The General Contractor shall protect installed product's finish surfaces from damage during construction

END OF SECTION