

1.0 General

Solar collectors shall be Oventrop model OV 5-16 (540 00 16).

Solar collectors shall be evacuated tube type.

The tube shall have a minimum outside diameter of 4 inches (100 mm).

The tube shall have an internal absolute pressure no greater than 75^{-7} torr (10^{-5} mbar).

The maximum stagnation temperature should be no less than 374 degrees F (190 C).

The collector shall be rated by the Solar Rating and Certification Corporation (SRCC) under the OG-100 rating protocol.

The solar collector efficiency shall have a Y-intercept of no less than .4916 [BTUH/ft²] and a minimum slope of -0.339 [BTUH/ft²*deg.F].

The Clear Day Category C SRCC rating shall be no less than 36,000 [BTU/Day].

The solar collector's SRCC certification number shall be 100-2006-027B.

Vacuum tube solar collectors shall have a total absorber surface area of 38.75ft².

The collector construction shall consist of vacuum tubes based on the heat pipe principle, single pass copper heat exchange manifold box, non-degrading thermal insulation, and stainless steel mounting rails.

Each collector shall have a total gross area of 44.67 ft².

The height of each collector shall be 83" (2110 mm) and the width shall be 76" (1920 mm).

The solar collector shall consist of 16 vacuum glass tubes.

1.1 Glazing

Glazing shall be single-wall borosilicate glass.

Glazing shall have a minimum thickness of 0.098 inches (2.5 mm).

Glazing shall have a minimum hailstone resistance of 1.378 inches (35 mm).

1.2 Absorber

The absorber cross section shall be convex in shape and be made of aluminum.

The absorber coating shall be selective coating aluminum nitride.

The absorber coating shall have a minimum absorptivity of 0.92 and a maximum emissivity of 0.08.

1.3 Mounting

Solar collectors shall be mounted using the Oventrop adjustable tilt mounting system. The Oventrop adjustable tilt mounting system shall be Oventrop part number 540 00 28-16.

The mounting system shall contain flashing for structural penetrations made to mount the collectors.

The mounting system shall be able to provide any collector tilt from 0 to 70 degrees with reference to the mounting area.

The mounting system's bolts and nuts shall be made of 18-8 stainless steel.

The mounting system's base brackets shall be made of 304 stainless steel.

1.4 Installation

The solar collectors shall be installed according to Oventrop installation manual Section 5.

The collectors shall be piped in accordance with Oventrop installation manual Section 5.

The solar collector supply and return connections shall be 22 mm copper.

The solar collectors shall have a minimum inclination angle of 25 degrees and a maximum inclination angle of 90 degrees with respect to the horizontal.

1.5 Commissioning and Operation

System commissioning shall be carried out in accordance with Oventrop installation manual Section 9.

The collectors shall have a maximum operating pressure of 87 psi (6 bar).

The collectors shall have a design flow rate of 0.75 GPM.

1.6 Collector Array Circulation

Collector arrays with fewer than 6 collectors shall use Oventrop pumping and transmission station Regusol 130 EL (Oventrop part number 168 80 65).

Collector arrays with greater than 5 and less than 16 collectors shall use the Oventrop pumping and transmission station with integrated flat plate heat exchanger Regusol-X.

All pumping and transmission stations must have an integrated differential controller.

All pumping and transmission stations shall be fully insulated with hard foam enclosures.

Oventrop OV 5-16 Evacuated Tube Solar Thermal Collector

