

Sizing

Some of the things you need to do before making an evaluation of the number of solar collectors required:

1. **Measure the pool for surface square footage (length x width).** Delete spa when making this calculation. The spa is heated on a separate basis, spa has a smaller capacity of water, when circulating spa only its turnover rate through the solar collectors is much quicker delivering higher temperatures at a faster rate.

2. **Now that you have determined the square footage of the pool,** check the sizing chart, below, to determine the minimum number of collectors.

Now that we've established base, evaluate what other factors may increase the size of the collector area to insure a good working system.

1. **Does roof angle exceed 30 degrees?** If so, add 10% more solar collector area per every 10 degree rise in angle away from 30 degrees.

2. **If the pool is unusually deep.** Note that all these sizing guidelines are based on 3' to 8' pool depths only. If depths exceed 8', add 10% more collector area per foot of additional depth.

3. **What temperature range are you comfortable with?** If additional temperature is required, add 10% coverage for each 2% of temperature above 82 degrees desired.

Remember that as the pool temperature exceeds the ambient temperature the heat losses of the pool surface will be greater making it more difficult to accomplish temperatures in the upper 80s or low 90s. A pool cover is recommended for this application to stop nighttime heat losses.

4. **Is the pool shaded?** If so, what percentage of the surface area is shaded and for how long throughout the day. When a pool is shaded it has two drawbacks that are detrimental to the performance of the solar system.

- a. The pool loses its heat absorption gain from the sun.
- b. The pool has heat losses of the surface due to the lower temperature in the shade.

If the pool is shaded, add amount of shaded area to the area of solar collectors required. FOR EXAMPLE: 25% of pool area is shaded, add 25% to the collector area. If the pool is shaded but for a limited time of the day, take the percentage of the day shaded X the area shaded and add to the collector area required. FOR EXAMPLE: 25% of pool shaded X 50% of the day = 12.5% additional panel area required. Pool covers are an advantage in more cases over increased panel area.

5. **Is this an unusually high wind area (10-20 mph winds constant?)** Loss of heat of the surface of the pool and the solar collectors due to high winds can be compared to the way a fan in a swamp cooler moves air across a water coil to cool down a room.

When sizing add 25 % more coverage to collector area and install a pool cover.

6. **Is an extended pool season a requirement?** If so, add 15% more collector area to extend the season from April to October. Because of the cooler night time temperatures in the months of April and October, use of a pool cover is a must to extend your swimming season.

7. **When pipe runs exceed 100'** from equipment to roof, add 5% more collector area.

Sizing Chart for Solar Pool Heating Systems

Sizing Chart is based on the use of 4'x10' Solar Collectors.

Above Ground Pool	In ground Pool	Exposure		
Diameter (feet)	sq. ft.	S & SW (170°-225°) 60% Coverage	W & SE (225°-270°, 150°-160°) 70% Coverage	E & Flat (090°-150°) 80% Coverage
18-21	310-360	5	6	8
22	370-420	6	7	8
23	430-480	7	8	9
24-26	490-550	8	9	11
27-28	560-620	9	11	12
29-30	630-680	10	12	14
31	690-740	11	13	15
32	750-800	12	14	16