

23 56 Solar Energy Heating Equipment

23 56 19 – Solar Heating Components

			Daily	Labor-			2022 Bare Costs			Total
23 56 19.50 Solar Heating Ancillary			Crew	Output	Hours	Unit	Material	Labor	Equipment	Incl O&P
3010	Wall or roof mount									
3040	Flat black, plastic glazing									
3080	4' x 8'	G	Q-9	6	2.667	Ea.	690	162		1,000
3200	Flush roof mount, 10' to 16' x 22" wide	G	"	96	.167	L.F.	182	10.15		216
3300	Collector panels, liquid with copper absorber plate									
3330	Alum. frame, 4' x 8', 5/32" single glazing	G	Q-1	9.50	1.684	Ea.	1,050	106		1,300
3390	Alum. frame, 4' x 10', 5/32" single glazing	G		6	2.667		1,200	168		1,575
3450	Flat black, alum. frame, 3.5' x 7.5'	G		9	1.778		765	112		1,000
3500	4' x 8'	G		5.50	2.909		930	183		1,300
3520	4' x 10'	G		10	1.600		1,150	101		1,425
3540	4' x 12.5'	G		5	3.200		1,250	201		1,675
3600	Liquid, full wetted, plastic, alum. frame, 4' x 10'	G		5	3.200		330	201		665
3650	Collector panel mounting, flat roof or ground rack	G		7	2.286		267	144		510
3670	Roof clamps	G		70	.229	Set	3.57	14.35		25.50
3700	Roof strap, teflon	G	1 Plum	205	.039	L.F.	25	2.72		31.50
3900	Differential controller with two sensors									
3930	Thermostat, hard wired	G	1 Plum	8	1	Ea.	115	70		231
4100	Five station with digital read-out	G	"	3	2.667	"	278	186		585
4300	Heat exchanger									
4580	Fluid to fluid package includes two circulating pumps									
4590	expansion tank, check valve, relief valve									
4600	controller, high temperature cutoff and sensors	G	Q-1	2.50	6.400	Ea.	785	400		1,475
4650	Heat transfer fluid									
4700	Propylene glycol, inhibited anti-freeze	G	1 Plum	28	.286	Gal.	24.50	19.95		56.50
8250	Water storage tank with heat exchanger and electric element									
8300	80 gal. with 2" x 2 lb. density insulation	G	1 Plum	1.60	5	Ea.	1,800	350		2,500
8380	120 gal. with 2" x 2 lb. density insulation	G		1.40	5.714		1,750	400		2,525
8400	120 gal. with 2" x 2 lb. density insul., 40 S.F. heat coil	G		1.40	5.714		2,600	400		3,450

23 57 Heat Exchangers for HVAC

23 57 16 – Steam-to-Water Heat Exchangers

23 57 16.10 Shell/Tube Type Steam-to-Water Heat Exch.

0010	SHELL AND TUBE TYPE STEAM-TO-WATER HEAT EXCHANGERS									
0016	Shell & tube type, 2 or 4 pass, 3/4" OD copper tubes,									
0020	C.I. heads, C.I. tube sheet, steel shell									
0100	Hot water 40°F to 180°F, by steam at 10 psi									
0120	8 GPM	Q-5	6	2.667	Ea.		2,975	169		3,525
0140	10 GPM		5	3.200			4,475	203		5,225
0160	40 GPM		4	4			6,925	253		7,975
0180	64 GPM		2	8			28,000	505		31,600
0200	96 GPM		1	16			50,500	1,025		57,000
0220	120 GPM	Q-6	1.50	16			67,500	1,050		76,000

23 57 19 – Liquid-to-Liquid Heat Exchangers

23 57 19.13 Plate-Type, Liquid-to-Liquid Heat Exchangers

0010	PLATE-TYPE, LIQUID-TO-LIQUID HEAT EXCHANGERS									
3000	Plate type,									
3100	400 GPM	Q-6	.80	30	Ea.		51,000	1,975		59,000
3120	800 GPM	"	.50	48			88,000	3,150		101,500
3140	1,200 GPM	Q-7	.34	194.118			131,000	6,300		153,500
3160	1,800 GPM	"	.24	133			173,500	8,925		204,500