

How to Calculate DCFM Charge

Example:
 System: 9.5 tons, R-404A
 Evaporator Temperature: 25°F
 Condensing Temperature: 115°F

Example:

$$0.618 \frac{\text{DCFM}}{\text{ton}} \times 9.5 \text{ ton} = 5.871 \text{ CFM}$$

Oil Separator selected: AF-58877

DCFM = Cubic feet per minute

In the table for R-404A, search for the value corresponding to the temperatures of evaporation and condensation. This is the DCFM/ton factor. At 25°F evaporator temperature and 115°F condensing temperature, the DCFM/ton is .618. Multiply this by the system tonnage. Use the resulting value to select the proper oil separator. DCFM values can be found on the oil separator catalog pages. Select an oil separator with a capacity greater than or equal to the value obtained.

Note: The connection of the separator must never be less than the diameter of the discharge line.

		R-22								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.633	0.659	0.687	0.717	0.750	0.786	0.824	0.865	0.910
	-35	0.626	0.652	0.680	0.710	0.743	0.778	0.816	0.857	0.902
	-30	0.619	0.645	0.673	0.704	0.736	0.771	0.809	0.850	0.894
	-25	0.613	0.639	0.667	0.697	0.729	0.764	0.802	0.843	0.887
	-20	0.607	0.633	0.660	0.690	0.723	0.758	0.795	0.836	0.880
	-15	0.601	0.626	0.654	0.684	0.716	0.751	0.788	0.829	0.873
	-10	0.595	0.621	0.648	0.678	0.710	0.745	0.782	0.822	0.866
	-5	0.589	0.615	0.642	0.672	0.704	0.739	0.776	0.816	0.859
	0	0.584	0.609	0.637	0.666	0.698	0.733	0.770	0.809	0.853
	5	0.578	0.604	0.631	0.661	0.693	0.727	0.764	0.803	0.846
	10	0.573	0.599	0.626	0.656	0.687	0.721	0.758	0.797	0.840
	15	0.568	0.594	0.621	0.650	0.682	0.716	0.752	0.792	0.834
	20	0.564	0.589	0.616	0.645	0.677	0.710	0.747	0.786	0.828
	25	0.559	0.584	0.611	0.640	0.672	0.705	0.742	0.781	0.823
	30	0.555	0.580	0.607	0.636	0.667	0.700	0.736	0.775	0.817
	35	0.550	0.575	0.602	0.631	0.662	0.696	0.732	0.770	0.812
40	0.546	0.571	0.598	0.627	0.658	0.691	0.727	0.765	0.807	
45	0.542	0.567	0.594	0.623	0.653	0.687	0.722	0.761	0.802	

		R-404A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.751	0.759	0.771	0.787	0.807	0.830	0.856	0.885	0.918
	-35	0.731	0.740	0.753	0.770	0.790	0.814	0.840	0.870	0.903
	-30	0.712	0.722	0.736	0.754	0.775	0.798	0.825	0.855	0.888
	-25	0.694	0.705	0.720	0.738	0.760	0.784	0.811	0.841	0.874
	-20	0.677	0.689	0.705	0.724	0.745	0.770	0.797	0.827	0.860
	-15	0.661	0.674	0.691	0.710	0.731	0.756	0.783	0.814	0.847
	-10	0.646	0.660	0.677	0.696	0.718	0.743	0.771	0.801	0.834
	-5	0.632	0.646	0.664	0.683	0.706	0.731	0.758	0.789	0.822
	0	0.618	0.633	0.651	0.671	0.694	0.719	0.747	0.777	0.810
	5	0.605	0.621	0.639	0.659	0.682	0.708	0.735	0.766	0.799
	10	0.593	0.609	0.628	0.648	0.671	0.697	0.725	0.755	0.788
	15	0.581	0.598	0.617	0.638	0.661	0.686	0.714	0.745	0.778
	20	0.570	0.587	0.606	0.628	0.651	0.676	0.704	0.735	0.768
	25	0.560	0.577	0.596	0.618	0.641	0.667	0.695	0.725	0.758
	30	0.550	0.568	0.587	0.609	0.632	0.658	0.686	0.716	0.749
	35	0.540	0.558	0.578	0.600	0.623	0.649	0.677	0.707	0.740
40	0.532	0.550	0.570	0.591	0.615	0.641	0.669	0.699	0.732	
45	0.523	0.542	0.562	0.583	0.607	0.633	0.661	0.691	0.723	

		R-407C								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.669	0.695	0.722	0.753	0.786	0.822	0.862	0.905	0.952
	-35	0.659	0.684	0.712	0.743	0.776	0.812	0.851	0.894	0.941
	-30	0.649	0.674	0.702	0.733	0.766	0.802	0.841	0.884	0.930
	-25	0.640	0.665	0.693	0.723	0.756	0.792	0.831	0.874	0.920
	-20	0.630	0.656	0.684	0.714	0.747	0.782	0.821	0.864	0.910
	-15	0.621	0.647	0.675	0.705	0.738	0.773	0.812	0.854	0.900
	-10	0.613	0.638	0.666	0.696	0.729	0.764	0.803	0.845	0.891
	-5	0.605	0.630	0.658	0.688	0.720	0.756	0.794	0.836	0.882
	0	0.597	0.622	0.650	0.680	0.712	0.748	0.786	0.828	0.873
	5	0.589	0.614	0.642	0.672	0.704	0.740	0.778	0.819	0.864
	10	0.582	0.607	0.635	0.664	0.697	0.732	0.770	0.811	0.856
	15	0.575	0.600	0.627	0.657	0.689	0.724	0.762	0.803	0.848
	20	0.568	0.593	0.620	0.650	0.682	0.717	0.755	0.796	0.840
	25	0.561	0.586	0.614	0.643	0.675	0.710	0.748	0.788	0.833
	30	0.555	0.580	0.607	0.637	0.669	0.703	0.741	0.781	0.825
	35	0.549	0.574	0.601	0.631	0.662	0.697	0.734	0.774	0.818
40	0.543	0.568	0.595	0.625	0.656	0.691	0.728	0.768	0.812	
45	0.537	0.563	0.590	0.619	0.650	0.685	0.722	0.762	0.805	

		R-448A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.662	0.684	0.709	0.736	0.766	0.799	0.835	0.875	0.917
	-35	0.651	0.673	0.698	0.725	0.756	0.788	0.824	0.863	0.906
	-30	0.640	0.663	0.688	0.715	0.745	0.778	0.814	0.853	0.895
	-25	0.630	0.652	0.677	0.705	0.735	0.768	0.803	0.842	0.885
	-20	0.620	0.642	0.668	0.695	0.725	0.758	0.793	0.832	0.874
	-15	0.610	0.633	0.658	0.686	0.716	0.748	0.784	0.822	0.864
	-10	0.601	0.624	0.649	0.677	0.706	0.739	0.774	0.813	0.855
	-5	0.592	0.615	0.640	0.668	0.698	0.730	0.765	0.804	0.845
	0	0.583	0.607	0.632	0.659	0.689	0.722	0.757	0.795	0.836
	5	0.575	0.599	0.624	0.651	0.681	0.713	0.748	0.786	0.828
	10	0.568	0.591	0.616	0.643	0.673	0.705	0.740	0.778	0.819
	15	0.560	0.583	0.609	0.636	0.666	0.698	0.732	0.770	0.811
	20	0.553	0.576	0.601	0.629	0.658	0.690	0.725	0.762	0.803
	25	0.546	0.569	0.594	0.622	0.651	0.683	0.718	0.755	0.796
	30	0.539	0.563	0.588	0.615	0.644	0.676	0.711	0.748	0.788
	35	0.533	0.556	0.581	0.609	0.638	0.670	0.704	0.741	0.781
40	0.527	0.550	0.575	0.602	0.632	0.663	0.697	0.734	0.774	
45	0.521	0.544	0.569	0.596	0.626	0.657	0.691	0.728	0.768	

		R-507A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.747	0.753	0.763	0.777	0.795	0.816	0.841	0.869	0.900
	-35	0.726	0.733	0.745	0.760	0.778	0.800	0.825	0.853	0.884
	-30	0.707	0.715	0.727	0.743	0.762	0.784	0.810	0.838	0.869
	-25	0.688	0.698	0.711	0.727	0.747	0.770	0.795	0.824	0.855
	-20	0.671	0.681	0.695	0.712	0.733	0.755	0.781	0.810	0.841
	-15	0.654	0.666	0.680	0.698	0.719	0.742	0.768	0.797	0.828
	-10	0.638	0.651	0.666	0.685	0.705	0.729	0.755	0.784	0.816
	-5	0.624	0.637	0.653	0.672	0.693	0.716	0.743	0.772	0.803
	0	0.610	0.624	0.640	0.659	0.681	0.705	0.731	0.760	0.792
	5	0.596	0.611	0.628	0.647	0.669	0.693	0.720	0.749	0.780
	10	0.584	0.599	0.617	0.636	0.658	0.682	0.709	0.738	0.770
	15	0.572	0.588	0.606	0.625	0.647	0.672	0.698	0.727	0.759
	20	0.561	0.577	0.595	0.615	0.637	0.662	0.688	0.718	0.749
	25	0.550	0.567	0.585	0.605	0.628	0.652	0.679	0.708	0.740
	30	0.540	0.557	0.576	0.596	0.619	0.643	0.670	0.699	0.731
	35	0.531	0.548	0.567	0.587	0.610	0.634	0.661	0.690	0.722
	40	0.528	0.545	0.564	0.585	0.607	0.632	0.659	0.688	0.719
45	0.513	0.531	0.550	0.571	0.594	0.618	0.645	0.674	0.705	

		R-410A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.397	0.415	0.433	0.453	0.475	0.498	0.523	0.549	0.578
	-35	0.392	0.410	0.429	0.449	0.470	0.493	0.518	0.544	0.573
	-30	0.388	0.405	0.424	0.444	0.465	0.488	0.513	0.539	0.568
	-25	0.383	0.401	0.419	0.439	0.461	0.484	0.508	0.535	0.563
	-20	0.379	0.397	0.415	0.435	0.456	0.479	0.504	0.530	0.559
	-15	0.375	0.392	0.411	0.431	0.452	0.475	0.500	0.526	0.554
	-10	0.371	0.388	0.407	0.427	0.448	0.471	0.495	0.522	0.550
	-5	0.367	0.385	0.403	0.423	0.444	0.467	0.491	0.518	0.546
	0	0.364	0.381	0.400	0.420	0.441	0.463	0.488	0.514	0.542
	5	0.360	0.378	0.396	0.416	0.437	0.460	0.484	0.510	0.538
	10	0.357	0.374	0.393	0.413	0.434	0.456	0.480	0.506	0.534
	15	0.354	0.371	0.390	0.410	0.431	0.453	0.477	0.503	0.531
	20	0.351	0.368	0.387	0.406	0.427	0.450	0.474	0.500	0.527
	25	0.348	0.365	0.384	0.404	0.425	0.447	0.471	0.496	0.524
	30	0.345	0.363	0.381	0.401	0.422	0.444	0.468	0.494	0.521
	35	0.343	0.360	0.379	0.398	0.419	0.441	0.465	0.491	0.518
	40	0.340	0.358	0.376	0.396	0.417	0.439	0.463	0.488	0.516
45	0.338	0.356	0.374	0.394	0.414	0.437	0.460	0.486	0.513	

		R-449A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.622	0.648	0.676	0.707	0.739	0.774	0.812	0.853	0.898
	-35	0.614	0.640	0.668	0.698	0.730	0.765	0.803	0.844	0.888
	-30	0.606	0.632	0.659	0.689	0.722	0.757	0.794	0.835	0.879
	-25	0.598	0.624	0.651	0.681	0.713	0.748	0.785	0.826	0.869
	-20	0.590	0.616	0.644	0.673	0.705	0.740	0.777	0.817	0.860
	-15	0.583	0.608	0.636	0.666	0.697	0.732	0.769	0.808	0.851
	-10	0.576	0.601	0.629	0.658	0.690	0.724	0.760	0.800	0.843
	-5	0.569	0.594	0.621	0.651	0.682	0.716	0.753	0.792	0.835
	0	0.562	0.587	0.615	0.644	0.675	0.709	0.745	0.784	0.827
	5	0.556	0.581	0.608	0.637	0.668	0.702	0.738	0.777	0.819
	10	0.549	0.575	0.601	0.630	0.661	0.695	0.731	0.769	0.811
	15	0.543	0.568	0.595	0.624	0.655	0.688	0.724	0.762	0.804
	20	0.538	0.563	0.589	0.618	0.648	0.682	0.717	0.755	0.797
	25	0.532	0.557	0.583	0.612	0.642	0.675	0.711	0.749	0.790
	30	0.527	0.551	0.578	0.606	0.636	0.669	0.704	0.742	0.783
	35	0.521	0.546	0.572	0.600	0.631	0.663	0.698	0.736	0.777
	40	0.516	0.541	0.567	0.595	0.625	0.658	0.692	0.730	0.771
45	0.512	0.536	0.562	0.590	0.620	0.652	0.687	0.724	0.765	

		R-134A								
		Oil Separator DCFM/Ton Factor								
		Condensing Temperature (°F)								
		130	125	120	115	110	105	100	95	90
Evaporating Temperature (°F)	-40	0.998	1.032	1.070	1.113	1.159	1.210	1.266	1.328	1.395
	-35	0.980	1.015	1.053	1.095	1.141	1.192	1.248	1.310	1.377
	-30	0.963	0.998	1.036	1.078	1.124	1.175	1.231	1.292	1.359
	-25	0.946	0.981	1.019	1.062	1.108	1.158	1.214	1.275	1.341
	-20	0.930	0.965	1.004	1.046	1.092	1.142	1.197	1.258	1.324
	-15	0.915	0.950	0.988	1.030	1.076	1.126	1.181	1.241	1.307
	-10	0.900	0.935	0.973	1.015	1.061	1.111	1.166	1.226	1.291
	-5	0.886	0.921	0.959	1.001	1.047	1.096	1.151	1.210	1.275
	0	0.872	0.907	0.945	0.987	1.032	1.082	1.136	1.195	1.260
	5	0.859	0.894	0.932	0.973	1.019	1.068	1.122	1.181	1.245
	10	0.846	0.881	0.919	0.960	1.006	1.055	1.108	1.167	1.231
	15	0.834	0.869	0.906	0.948	0.993	1.042	1.095	1.153	1.217
	20	0.822	0.857	0.894	0.936	0.980	1.029	1.082	1.140	1.203
	25	0.810	0.845	0.883	0.924	0.968	1.017	1.070	1.127	1.190
	30	0.799	0.834	0.871	0.912	0.957	1.005	1.057	1.115	1.177
	35	0.789	0.823	0.861	0.901	0.945	0.993	1.046	1.103	1.165
	40	0.778	0.813	0.850	0.890	0.934	0.982	1.034	1.091	1.153
45	0.768	0.803	0.840	0.880	0.924	0.971	1.023	1.080	1.141	