

TABLE 12.9 Approximate Overall Heat Transfer Coefficients [16]

Hot Fluid	Cold Fluid	U (W/m ² °C)	U (Btu/h ft ² °F)
<i>Sensible heat transfer (no change of phase)</i>			
Water	Water	850–1700	150–300
Organic solvents	Water	280–850	50–150
Gases	Water	20–280	3–50
Light oils	Water	340–900	60–160
Heavy oils	Water	60–280	10–50
Organic solvents	Light oil	110–400	20–70
Water	Brine	570–1140	100–200
Organic solvents	Brine	170–510	30–90
Gases	Brine	20–280	3–50
Organic solvents	Organic solvents	110–340	20–60
Heavy oils	Heavy oils	50–280	8–50
<i>Heaters</i>			
Steam	Water	1400–4300	250–750
Steam	Light oils	280–850	50–150
Steam	Heavy oils	60–450	10–80
Steam	Organic solvents	570–1140	100–200
Steam	Gases	30–280	5–50
Dowtherm	Gases	20–230	4–40
Dowtherm	Heavy oils	50–340	8–60
Flue gas	Aromatic HC and Steam	30–85	5–15
<i>Evaporators</i>			
Steam	Water	2000–4300	350–750
Steam	Light oils	450–1000	80–180
Steam	Heavy oils (vacuum)	140–430	25–75
Steam	Organic solvents	570–1140	100–200
Water	Refrigerants	430–850	75–150
Organic solvents	Refrigerants	170–570	30–100
<i>Condensers</i>			
Steam (pressure)	Water	2000–4300	350–750
Steam (vacuum)	Water	1700–3400	300–600
Saturated organic solvents near atmos.	Water	570–1140	100–200
Saturated organic solvents with some noncondensable	Water, brine	280–680	50–120
Organic solvents, atmospheric, and high noncondensable	Water, brine	280–680	50–120
Aromatic vapors, atmospheric with noncondensables	Water	30–170	5–30
Organic solvents, vacuum, and high noncondensables	Water, brine	60–280	10–50
Low boiling hydrocarbon, atmospheric	Water	450–1140	80–200
High boiling hydrocarbon, vacuum	Water	60–170	10–30