

# Electrical Data

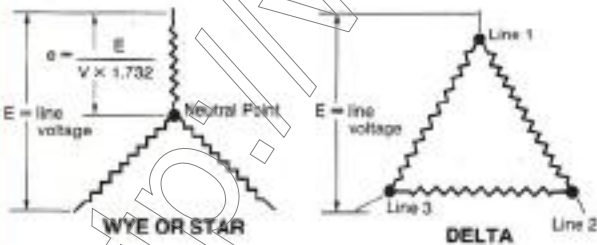
## Amperage Conversion Table

Watts	Volts, Single Phase			Volts 3 Phase Balanced Load		Watts
	120	240	480	240	480	
100	.83	.42	.21	.24	.13	100
150	1.25	.63	.31	.36	.18	150
200	1.67	.83	.42	.49	.25	200
250	2.08	1.04	.52	.61	.30	250
300	2.50	1.25	.63	.73	.37	300
350	2.92	1.46	.73	.85	.43	350
400	3.33	1.67	.84	.97	.49	400
450	3.75	1.88	.93	1.10	.55	450
500	4.17	2.08	1.04	1.20	.60	500
600	5.00	2.50	1.25	1.45	.73	600
700	5.83	2.92	1.46	1.70	.85	700
750	6.25	3.13	1.56	1.81	.91	750
800	6.67	3.33	1.67	1.93	.97	800
900	7.50	3.75	1.87	2.17	1.09	900
1000	8.33	4.17	2.10	2.41	1.21	1000
1100	9.17	4.58	2.30	2.65	1.33	1100
1200	10.0	5.00	2.51	2.90	1.45	1200
1250	10.4	5.21	2.61	3.10	1.55	1250
1300	10.8	5.42	2.71	3.13	1.57	1300
1400	11.7	5.83	2.91	3.38	1.69	1400
1500	12.5	6.25	3.12	3.62	1.82	1500
1600	13.3	6.67	3.34	3.86	1.93	1600
1700	14.2	7.08	3.54	4.10	2.05	1700
1750	14.6	7.29	3.65	4.22	2.10	1750
1800	15.0	7.50	3.75	4.34	2.17	1800
1900	15.8	7.92	3.96	4.58	2.29	1900
2000	16.7	8.33	4.17	4.82	2.41	2000
2200	18.3	9.17	4.59	5.30	2.66	2200
2500	20.8	10.4	5.21	6.10	3.05	2500
2750	23.0	11.5	5.73	6.63	3.32	2750
3000	25.0	12.5	6.25	7.23	3.62	3000
3500	29.2	14.6	7.30	8.45	4.23	3500
4000	33.3	16.7	8.33	9.64	4.82	4000
4500	37.5	18.8	9.38	10.84	5.42	4500
5000	41.7	20.8	10.42	12.1	6.1	5000
6000	50.0	25.0	12.50	14.50	7.25	6000
7000	58.3	29.2	14.59	16.9	8.5	7000
8000	66.7	33.3	16.67	19.3	9.68	8000
9000	75.0	37.5	18.75	21.7	10.85	9000
10000	83.3	41.7	20.85	24.1	12.1	10000

## Watt Density Guidelines

MATERIAL BEING HEATED	MAXIMUM OPERATING TEMP. °F	MAXIMUM WATTS PER SQUARE INCH
Acid Solutions	180	40
Alkaline Solutions and Oakite	212	40
Asphalt, Tar & Similar Products	200	8
	300	7
	400	6
	500	5
Caustic Soda 2%	210	45
10%	210	25
75%	180	25
Dowtherm A		
Liquid Phase	750	20
Vapor Phase	750	12
Dowtherm E	400	12
Ethylene Glycol	300	30
Freon	300	3
Fuel Oil		
Grades 1 & 2 (Distillate)	200	22
Grades 4 & 5 (Residual)	200	13
Grades 6 & Bunker C	150	8
Gasoline	300	2-5
Heat Transfer Oils	600	20
	600	15
Linseed Oil	150	50
Machine Oil	250	20
Metal Melting Pot	500-900	20-25
Molasses	100	3-5
Molten Salt Bath	800-900	25-30
Paraffin or Wax	150	15
Steel Tubing cast into		
Aluminum	500-750	50
Steel Tubing cast into		
Iron	750-1000	55
Trichloroethylene	150	20
Vapour Degreasing Solutions	275	20
Vegetable Oil and Shortening		
in Liquid State	400	30
Water (Process)	212	60
Water (Washroom)	140	80-90

## Three Phase Circuits



If elements are designed for 3-phase Delta connection, wattage output may be reduced to 1/3 by reconnecting to 3-phase WYE.

For current in 3-phase circuits  $I = \frac{W}{V \times 1.732}$

**NOTE:** The watt densities in this table are suggested only. Adjustment may be required when variations occur in heat take-away, flow rates, and operating temperature. Caution must be exercised in applying these values in some circumstances. In some cases, extended heater life will be obtained by using a lower watt density.



OHMS LAW

## PERCENT RATED WATTS ON REDUCED VOLTAGE

- 230-volt heater on 208 volts — 82%
- 240-volt heater on 208 volts — 75%
- 480-volt heater on 277 volts — 33%
- 480-volt heater on 440 volts — 84%
- 480-volt heater on 318 volts — 44%
- 550-volt heater on 480 volts — 76%