

# FLUID POWER DATA

## OIL HEATING INFORMATION/ PROPERTIES OF MATERIALS



### KILOWATT HOURS TO HEAT OIL

AMOUNT OF OIL		TEMPERATURE RISE (°F)					
CUBIC FEET	GALLONS	50	100	200	300	400	500
.5	3.74	.3	.5	1	2	2	3
1	7.48	.5	1	2	3	4	6
2	14.96	1	1	2	4	6	11
3	22.25	2	3	6	9	12	16
4	29.9	2	4	8	12	16	22
5	37.4	3	4	9	15	20	25
10	74.8	5	9	18	29	40	52
15	112.5	7	14	28	44	60	77
20	149.6	9	18	37	58	80	102
25	187	11	22	46	72	100	127
30	222.5	13	27	56	86	120	151
35	252	16	31	65	100	139	176
40	299	18	36	74	115	158	201
45	336.5	20	40	84	129	178	226
50	374	22	45	93	144	197	252
55	412	25	49	102	158	217	276
60	449	27	54	112	172	236	302
65	486	29	58	121	186	255	326
70	524	32	62	130	200	275	350
75	562	34	67	140	215	294	375

ADD 5% FOR UNINSULATED TANKS.

FOR OIL:  
USE EQUATION OR TABLE.

$$KW = \frac{GALLONS \times TEMPERATURE RISE (°F)}{800 \times HEAT-UP TIME (HRS)}$$

Fluid Power Data

### PROPERTIES OF MATERIALS

NON-METALLIC SOLIDS					METALLIC SOLIDS				
MATERIAL	DENSITY @ROOM TEMP LB/(FT) <sup>3</sup>	SPECIFIC HEAT BTU LB-°F	THERMAL CONDUCTIVITY BTU-IN HR-FT <sup>2</sup> -°F	MELTING POINT °F (LOWEST)	MATERIAL	DENSITY @ROOM TEMP LB/(FT) <sup>3</sup>	SPECIFIC HEAT BTU LB-°F	THERMAL CONDUCTIVITY BTU-IN HR-FT <sup>2</sup> -°F	MELTING POINT °F (LOWEST)
ASPHALT	65	0.4	1.2	250	ALUMINUM 11	169	0.24	1536	1190
BEESWAX	60	0.20	1.67	144	ALUMINUM 20	173	0.24	1344	935
CARBON	138	0.224	165	6700	BRASS 80-20	535	0.091	82	1700
CLAY	90 (±10%)	0.156	9	3160	BRASS 70-30	525	0.10	672	1700
CONCRETE	144	0.35	9.5		BRASS YELL.	529	0.096	828	1710
DELRIN	88	0.147	1.56		BRONZE				
DIAMOND	219	0.243	13872		(75%CU, 25%SN)	541	0.082	180	1832
FIREBRICK	137-150	0.20	6.6	2900	CHROMIUM	450	0.11	484	2822
GLASS	165	0.70	5.4	2200	COPPER	559	0.10	2688	1981
PARAFFIN	56	0.3-0.5	1.56	133	GOLD	1203	0.030	2082	1945
PHENOLIC (LAMINATED)	78	0.35	2.4		IRON	450	0.13	396	2300
PLASTIC (ABS)	69-76	0.35	1.32		LEAD	708	0.032	240	620
PLASTIC (PHENOLIC)	85-124	0.27-0.31	1.02		MERCURY	844	0.033	60.8	-38
PLASTIC (POLIMIDES)	90	0.191	2.5-6.8		NICKEL	554	0.11	468	2615
SAND (DRY)	88-100	0.40	2.26		SILVER	655	0.057	2904	1760
SOIL (DRY)	127	0.22	3.6		STEEL (MILD CARB.)	490	0.12	456	2760
SANDSTONE	130-150	0.25			STAINLESS STEEL (304/316)	500	0.12	105.6	2550
TEFLON	135	0.57	1.7		TIN	455	0.056	432	450
WOOD (OAK)	50	0.67	1.2		ZINC	455	0.095	112	787
WOOD (PINE)	34	0.24	0.9						