TABLE 1: PROPERTIES OF LIQUIDS

Substance	Specific Heat	Heat of Vaporization	Boiling Point	Density	Thermal Conductivity	Substance	Specific Heat	Heat of Vaporization	Boiling Point	Density	Thermal Conductivity
Acetic Acid, 100%	0.48	175	245	65.4	1.14	Lard	0.64	***	***	57.4	***
Acetone	0.514	225	133	49	1.15	Linseed Oil	0.44	***	552	57.9	***
Allyl Alcohol	0.665	293	207	55		Maple Syrup	0.48	***	***	***	***
Ammonia, 100%	1.1	589	-27	47.9	3.48	Mercury	0.033	117	675	845	59.6
Amyl Alcohol	0.65	216	280	55	***	Methyl Acetate	0.47	176.5	133	54.8	***
Aniline	0.514	198	63	64.3	1.25	Methyl Chloroform	0.26	95	165	82.7	***
Arochlor Oil	0.28	***	650	89.7	***	Methylene Chloride	0.288	142	104	82.6	***
Asphalt	0.42	***	***	62.3	5.04	Milk 3.5%	0.9	***	***	64.2	***
Benzene	0.42	170	175	56	1.04	Molasses	0.6	***	220	87.4	***
Brine - Sodium Chloride, 25%	0.786	730	220	74.1	2.88	Napthalene	0.396	103	424	54.1	***
Butyl Alcohol	0.687	254	244	45.3	***	Nitric Acid 95%	0.5	207	187	93.5	***
Butyric Acid	0.515	***	345	50.4	***	Nitric Acid, 7%	0.92	918	220	64.7	***
Carbon Tetrachloride	0.21	***	170	98.5	***	Nitrobenzene	0.35	142.2	412	***	***
Caustic Soda 30%	0.84	***	***	82.9	***	Olive Oil	0.47	***	507	58	***
Caustic Soda 50%	0.78	***	***	95.4	***	Paraffin Melted (150F)	0.69	70	572	56	1.68
Corn Syrup, Dextrose	0.65	***	231	87.8	***	Perchlorethylene	0.21	90	250	101.3	***
Cottonseed Oil	0.47	***	***	59.2	1.2	Phenol (Carbolic Acid)	0.56	***	346	66.6	***
Ether	0.503	160	95	46	0.95	Phosphoric Acid 10%	0.93	***	***	65.4	***
Ethyl Acetate	0.475	183.5	180	51.5	***	Phosphoric Acid 20%	0.85	***	***	69.1	***
Ethyl Alcohol, 95%	0.6	370	***	50.4	1.3	Polyoil Resin	0.7	***	***	74.8	1.32
Ethyl Bromide	0.215	108	101	90.5	***	Potassium (1000F)	0.18	893	1400	44.6	260.4
Ethyl Chloride	0.367	166.5	54	57	***	Propane (Compressed)	0.576	***	-48.1	0.13	1.81
Ethyl Lodide	0.161	81.3	160	113	***	Propionic Acid	0.56	177.8	286	61.8	***
Ethylene Bromide	0.172	83	270	120	***	Propyl Alcohol	0.57	295.2	208	50.2	***
Ethylene Chloride	0.299	139	240	71.7	***	SAE 10-30	0.43	***	***	55.4	***
Ethylene Glycol	0.55	***	387	70	***	SAE 40-50	0.43	***	***	55.4	***
Fatty Acid, Aleic	0.7	***	547	55.4	1.1	Sea Water	0.94	***	***	64.2	***
Fatty Acid, Palmitic	0.653	***	520	53.1	0.996	Sodium (1000F)	0.3	1810	1638	51.2	580
Fatty Acid, Stearic	0.55	***	721	52.8	0.936	Soybean Oil	0.3	***	***	57.4	***
Formic Acid	0.525	216	213	69.2	***	Starch		***	***	95.4	***
Freon 11	0.208	***	74.9	92.1	0.6	Sucrose, 40%	0.66	***	214	73.5	***
Freon 12	0.232	62	-21.6	81.8	0.492	Sucrose, 60%	0.74	***	218	80.4	***
Freon 22	0.3	***	-41.4	74.53	0.624	Sulfur, Melted (500F)	0.24	120	832	112	***
Fresh Fruit (Avg)	0.88	***	***	55	***	Sulfuric Acid 20%	0.84	***	218	71	***
Fuel Oil #2	0.44	***	***	53.9	0.96	Sulfuric Acid 60%	0.52	***	282	93.5	2.88
Fuel Oil Heavy #5 #6	0.41	***	***	58.9	0.852	Sulfuric Acid 98%	0.35	219	625	114.7	1.8
Fuel Oil Med #3 #4	0.425	67	580	55.7	0.918	Toluene	0.42	***	***	53.7	1.032
Gasoline	0.53	116	280	42	0.936	Transformer Oils	0.42	***	***	56.3	0.9
Glycerine	0.58	***	556	78.7	1.97	Trichloroethylene	0.23	103	188	91.3	0.84
Heptane	0.49	137.1	210	38.2	***	Trichoro-Trifluoroethane	0.21	63	118	94.6	***
Hexane	0.6	142.5	155	38.2	***	Turpentine	0.42	133	319	54	***
Honey	0.34	***	***		***	Vegetable Oil	0.43	***	***	57.5	***
Hydrocloric Acid, 10%	0.93	***	221	66.5	***	Water	1	965	212	62.5	4.08
Isocyanate	0.6	***	***	77	1.14	Xylene	0.411	149.2	288	53.8	***
Kerosene (Fuel Oil #1)	0.47	86	440	50.5	1.01						

TABLE 2: PROPERTIES OF SOLIDS

Substance	Specific Heat	Heat of Vaporization	Boiling Point	Density	Thermal Conductivity	Substance	Specific Heat	Heat of Vaporization	Density	Boiling Point	Thermal Conductivity
ABS Plastic	0.35	***	***	76	1.32	Lithium	0.79	59	367	367	516
Acrylic	0.34	***	***	74	1	Magnesia, 85%	0.222	***	5070	19	***
Aluminum 1100-0	0.24	169	1190	169	1536	Magnesium	0.27	160	1202	109	1092
Aluminum 2024-T3	0.24	167	935	173	1344	Manganese	0.115	116	2268	463	80.6
Antimony	0.049	69	1166	423	131	Mercury	0.033	5	-38	844	60.8
Asbestos Cement Board	0.25	***	***	121	5.2	MgO (Compacted)	0.209	***	***	194	20
Asphalt	0.4	40	250	65	1.2	Mica	0.21	***	***	176	3
Bakelite Resin, Pure	0.35	***	***	78	***	Molybdenum	0.061	126	4750	638	***
Barium	0.068	***	1562	225	***	Monel 400	0.11	***	2370	551	151
Beeswax	***	75	144	60.5	1.67	Nichrome	0.11	***	2550	522	104.4
Beryllium	0.052	***	2345	113.5	***	Nickel 200	0.12	133	2615	555	468
Bismuth	0.031	23	520	612	59	Nylon	0.5	***	***	72	1.68
Boron	0.309	***	4172	144	***	Paper	0.45	***	***	58.8	0.82
Brass, Yellow	0.096	***	1710	529	828	Paraffin	0.69	63	133	55.3	1.6
Brickwork & Masonry	0.22	***	***	131	5	Phenolic	0.35	***	***	124	1.02
Bronze	0.082	75	1832	541	180	Pitch (Hard)	***	300	83	***	***
Cadmium	0.055	23.8	610	540	660	Platinum	0.035	49	3225	1339	492
Calcium	0.149	140	1564	96.7	912	Poluimides	0.31	***	***	90	6.8
Calcium Chloride	0.17	72	1422	157	***	Polycarbonate	0.3	***	***	78	1.38
Carbon	0.28	***	6700	138	173	Polyester	0.35	***	***	92	5
Cellulose Acetate	0.5	***	***	83	2.3	Polyethylene	0.54	***	***	60	2.3
Cellulose Acetate Butyrate	0.4	***	***	74	2.3	Polypropylene	0.46	***	***	57	1.72
Cement, Portland Loose	0.19	***	***	94	2.04	Polystyrene	0.32	***	***	66	1
Cerafelt Insulation (1000F)	25	***	3	***	1.22	Polyvinyl Chloride Acetate	0.3	***	***	99	1.2
Ceramic Fiber	0.27	***	***	7	***	Porcelain	0.26	***	***	155	10
Chalk	0.215	***	***	175	5.76	Potassium Chloride	0.17	***	1454	124	***
Chromium	0.11	***	2822	450	484	Potassium Nitrate	0.26	***	633	132	***
Clay	0.224	***	3160	90	9	Quartz	0.26	***	***	138	***
Coal	0.32	***	***	80	11	Rhodium	0.059	***	3570	776	636
Coal Tar	0.45	***	***	78	***	Rubber	0.44	***	***	76	1.1
Cobalt	0.099	115.2	2696	554	499	Rubber, Synthetic	0.4	***	***	58	1
Coke	0.265	***	***	88	***	Silicon	0.162	***	2570	14.5	***
Concrete, Cinder	0.16	***	***	100	5.3	Silicone Rubber	0.45	***	***	78	***
Concrete, Stone	0.156	***	***	144	9.5	Sodium	0.295	49.3	207	60	972
Copper	0.095	91.1	1981	556	2688	Solder (50/50)	0.051	17	420	558	336
Cork	0.5	***	***	13.5	0.36	Stainless Steel 304	0.12	***	2550	494	105.6
Cotton	0.31	***	***	92.4	0.41	Stainless Steel 430	0.11	***	2650	475	150
Delrin	0.35	***	***	88.1	1.6	Steatite	0.2	***	***	162	23
Epoxy	0.3	***	***	88	2.4	Steel Mild	0.122	***	2760	491	456
Firebrick, fireclay	0.243	***	2900	150	6.6	Sugar	0.3	***	320	105	***
Firebrick, Silica	0.258	***	3000	162	7.2	Sulfur	0.175	17	246	130	1.9
Fluoroplastics	0.28	***	***	150	1.68	Tallow	***	90	60	***	***
Glass	0.2	***	2200	164	5.4	Tantalum	0.035	***	5425	1036	372
Gold	0.032	29	1945	1206	2028	Teflon	0.25	***	***	135	1.7
Granite	0.192	***	***	175	28	Tin	0.065	26.1	450	454	432
Graphite	0.2	***	***	130	1.25	Titanium 99%	0.13	***	3035	283	111.6
Ice	0.53	144	32	56	11	Tungsten	0.0321	79	6170	1200	1130
Incolnel 600	0.126	***	2500	525	109	Type Metal (85%Pb 13%Sb)	0.04	14	500	669	180
Incoloy 800	0.13	***	2500	501	97	uranium	0.028	***	3075	1170	193.2
Invar (36% Ni)	0.126	***	2600	506	73	Vinyl	0.5	***	***	79.5	20
Iron, Cast	0.12	***	2150	449	396	Wood, Oak	0.57	***	***	50	1.1
Iron, Wrought	0.12	***	2800	480	432	Wood, Pine	0.45	***	***	34	0.9
Isoprene, Rubber	0.48	***	***	58	1	Zinc	0.096	43.3	264	445	7.4
Lead, Solid	0.032	11.3	620	708	240	Zirconium	0.066	108	3350	400	145
Limestone	0.217	***	***	175	9						

MATERIAL PROPERTIES AND EMISSIVITIES

TABLE 3 : Properties of Gases & Vapors

Substance	Thermal Conductivity	Specific Heat	Density	Specific Gravity
Acetylene (Ethyne)	0.129	0.35	0.0682	0.907
Air	0.18	0.24	0.075	1
Ammonia	0.16	0.523	0.0448	0.596
Argon	0.12	0.124	0.1037	1.379
Butane	0.0876	0.395	0.1554	2.067
Carbon Dioxide	0.12	0.199	0.115	1.529
Carbon Monoxide	0.18	0.248	0.0727	0.967
Chlorine	0.06	0.115	0.1869	2.486
Ethane	***	0.386	0.0789	1.049
Ethylene	0.1212	0.4	0.0733	0.975
Helium	1.1	1.25	0.0104	0.1381
Hydrogen Chloride	***	0.191	0.0954	1.268
Hydrogen Chloride	0.13	3.42	0.0052	0.0695
Hydrogen Sulphide	0.091	0.243	0.0895	1.19
Methane	0.21	0.593	0.0417	0.554
Methyl Chloride	***	0.24	0.1342	1.785
Natural Gas	***	0.56	0.0502	0.667
Nitric Oxide	0.1656	0.231	0.078	1.037
Nitrogen	0.19	0.247	0.0727	0.967
Nitrous Oxide	0.1056	0.221	0.1151	1.53
Oxygen	0.18	0.217	0.0831	1.105
Propane	***	0.393	0.1175	1.562
Propane (propylene)	***	0.358	0.1091	0.1451
Sulphur Dioxide	0.07	0.154	0.1703	2.264
Water Vapor 212F	0.16	0.482	0.037	0.489

TABLE 4 : Properties of Metals in Liquid State

Substance	Specific Heat	Heat of Fusion	Melting Point	Temperature	Density	Thermal Conductivity
Aluminum	0.26	173	1220.4	1220	148.6	***
	0.26			1292	147.7	717
	0.26			1454	***	842
Bismuth	0.034	21.6	520	572	626.2	119
	0.0354			752	618.7	107.4
	0.0376			1112	603.1	107.4
Cadmium	0.0632	23.8	609	626	500	***
	0.0632			662	498.8	307.7
	0.0632			680	***	305
	0.0632			752	495	***
Gold	0.0355	26.9	1945	2012	1076	***
Lead	0.038	10.6	621	700	655.5	111.6
	0.037			932	648.7	107.4
Lithium	1	284.4	354	392	31.7	262
	1			752	31	***
Magnesium	0.317	148	1204	1204	98	***
	***			1328	94.3	***
	0.321			1341	***	***
Mercury	0.0334	5	-38	32	***	57
	0.03279			212	833.6	***
	***			320	***	81
	0.3245			392	818.8	***
Potassium	0.1901	26.3	147	300	50.6	312
	0.1826			752	46.6	277.5
Silver	0.0692	44.8	1761	1961	580.6	***
	0.0692			1832	578.1	***
	0.0692			2000	574.4	***
Sodium	0.331	48.7	208	212	57.9	596.5
	0.32			400	56.2	556.8
	0.301			752	53.3	493.8
Solder (50/50)	0.0556	17	421	***	***	***
Solder (60/40)	0.0584	28	375	***	***	***
Tin	0.58	26.1	449	482	***	***
	***			768	426.6	***
	***			783	***	229.3
Zinc	0.12	43.9	787	787	432	***
	***			932	***	400.6
	0.177			1112	425	394.8

TABLE 5 : Material Emissivity

Substance	Emissivity		
	Polished	Medium Oxide	Heavy Oxide
Aluminum	0.09	0.11	0.22
Blackbody	***	0.75	1
Brass	0.04	0.35	0.6
Copper	0.04	0.03	0.65
Incoloy 800	0.2	0.6	0.92
Incoloy 600	0.2	0.6	0.92
Iron, Cast	***	0.8	0.85
Lead, Solid	***	0.28	***
Steel, Mild	0.1	0.75	0.85
SS 304	0.17	0.57	0.85
SS 430	0.17	0.57	0.85
Zinc	***	0.25	***