

TABLE 4 (continued)

Name	Formula	Minimum ignition temperatures					
		In air			In oxygen		
		° F.	° C.	Ref. no.	° F.	° C.	Ref. no.
Dimethyl ether	C ₂ H ₆ O	662	350	73	468	252	73
2,3-Dimethylpentane	C ₇ H ₁₆	639	337	30	495	257	30
2,2-Dimethylpropane	C ₅ H ₁₂	842	450	30	552	289	30
Dimethyl sulfide	C ₂ H ₆ S	403	206	31	374	190	31
Divinyl ether	C ₄ H ₆ O	680	360	29	331	166	30
Ethane	C ₂ H ₆	959	515	75	943	506	10
Ethyl alcohol	C ₂ H ₅ O	738	392	80	624	329	82
Ethylamine	C ₂ H ₅ N	723	384	31	633	334	31
Ethyl butyrate	C ₈ H ₁₆ O ₂	865	463	73	664	351	73
Ethyl chloride	C ₂ H ₅ Cl	921	494	30	874	468	73
Ethylcyclobutane	C ₆ H ₁₂	414	212	75	390	199	30
Ethylcyclohexane	C ₈ H ₁₆	504	262	75	487	253	30
Ethylcyclopentane	C ₇ H ₁₄	504	262	75	462	242	30
Ethylene	C ₂ H ₄	914	490	96	905	485	96
Ethylenechlorohydrin	C ₂ H ₄ OCl	797	425	73	752	400	73
Ethyleneimine	C ₂ H ₅ N	612	322	30	559	293	30
Ethyl ether	C ₄ H ₁₀ O	345	174	38	336	169	38
Ethyl mercaptan	C ₂ H ₅ S	570	299	51	502	261	51
Ethyl propionate	C ₅ H ₁₀ O ₂	824	440	38	601	316	38
Furfural alcohol	C ₄ H ₆ O ₂	736	391	73	687	364	73
Gasoline, motor		691	366	38	500	260	38
Heptane	C ₇ H ₁₆	433	223	75	408	209	38
Hexane	C ₆ H ₁₄	453	234	75	437	225	38
Hydrazine	N ₂ H ₄	518	270	45	399	204	45
Hydrazine hydrate	N ₂ H ₄ ·H ₂ O	558	292	31	424	218	31
Hydrogen	H ₂	1062	572	97	1067	575	97
Hydrogen sulfide	H ₂ S	558	292	98	428	220	92
Isophorone	C ₈ H ₁₆ O	864	462	73	612	322	73
Methane	CH ₄	1103	595	97	1033	556	92
Methyl alcohol	CH ₃ O	867	464	21	862	461	73
Methylamine	CH ₃ N	806	430	10	752	400	10
Methyl isobutyl ketone	C ₆ H ₁₂ O	869	465	30	541	283	30
Methylene chloride	CH ₂ Cl ₂	1188	642	73	1123	606	73
2-Methylpentane	C ₆ H ₁₄	583	306	30	464	240	30
Methyl propionate	C ₅ H ₁₀ O ₂	876	469	30	804	429	30
Naphthalene	C ₁₀ H ₈	959	515	100	918	492	100
Neohexane	C ₆ H ₁₄	797	425	30	520	271	30
Nicotine	C ₁₀ H ₁₄ N ₂	471	244	49	455	235	49
Octane	C ₈ H ₁₈	428	220	75	406	208	73
Isocetane	C ₇ H ₁₆	813	434	10	541	283	10
Paraldehyde	C ₃ H ₄ O ₃	460	238	11	410	210	82
Pentane	C ₅ H ₁₂	549	287	75	496	258	73
Isopentane	C ₅ H ₁₂	788	420	10	561	294	10
Phthalic anhydride	C ₈ H ₆ O ₃	1076	580	38	1033	556	38

TABLE 4 (continued)

Name	Formula	Minimum ignition temperature					
		In air			In oxygen		
		° F.	° C.	Ref. no.	° F.	° C.	Ref. no.
Propane	C ₃ H ₈	920	493	73	874	468	73
Propyl acetate	C ₅ H ₁₀ O ₂	842	450	73	730	388	73
Isopropyl acetate	C ₅ H ₁₀ O ₂	881	476	10	838	448	73
Propyl alcohol	C ₃ H ₇ O	822	439	73	622	328	86
Propylamine	C ₃ H ₇ N	604	318	31	540	282	31
Isopropylamine	C ₃ H ₇ N	756	402	30	698	370	30
Propyl bromide	C ₃ H ₇ Br	914	490	73	491	255	73
Propylene	C ₃ H ₆	856	458	42	793	423	30
Propylene glycol	C ₃ H ₈ O ₂	790	421	73	738	392	73
Isopropyl ether	C ₆ H ₁₄ O	781	416	10	306	152	10
Propyl formate	C ₄ H ₈ O	851	455	10	594	312	10
Isopropyl formate	C ₄ H ₈ O	905	485	10	774	412	10
Styrene	C ₈ H ₈	914	490	73	842	450	73
Trichloroethylene	C ₂ HCl ₃	865	463	73	786	419	73
Triethylamine	C ₆ H ₁₅ N	450	232	31	388	198	31
Triethylene glycol	C ₆ H ₁₄ O ₃	700	371	31	471	244	31
Trimethylamine	C ₃ H ₉ N	374	190	31	347	175	31
2,2,4-Trimethylpentane	C ₈ H ₁₈	813	434	10	542	283	10
Turpentine	C ₁₀ H ₁₆	491	255	21	464	240	107

is not the only measure of the fire and explosion hazards. Other important factors, such as its minimum ignition temperature, flammable limits, temperature range of flammability, density of the vapor, and chemical stability, are also of marked importance.

The flash point is determined by "closed"- or "open"-cup methods. In either case a given volume of the liquid is heated in a container at a definite rate, and periodically a test flame or spark is passed across the surface of the liquid. The temperature at which, on ignition, a flame passes across the surface of the liquid in the container is taken as the flash point. The container is open to the air in the open-cup method, while in the closed-cup method the space above the liquid is covered. A small opening is uncovered only at the time the test flame is introduced. Lower values are obtained by the closed-cup method and it gives more accurate indications of flammable-vapor hazards for a given temperature. The flash points tabulated in Table 3 are for the closed-cup method.

IV. Temperature Range of Flammability

Combustible gases, such as methane, hydrogen, and acetylene, when mixed with air in explosive proportions, are but slightly affected as to explosion hazards

¹⁰⁸ K. Bunte and A. Block, *Gas- u. Wasserfach*, **78**, 325 (1935).

¹⁰⁷ H. Moore, *J. Soc. Chem. Ind. (London)*, **36**, 109 (1917).