

TABLE 79.—Properties of C_nH_{2n+2} hydrocarbons.

Symbol.	Specific gravity.	Refractive index.	Boiling point.	Pressure.	Melting point.	Authority.
			$^{\circ}C.$	<i>m. m.</i>	$^{\circ}C.$	
C_4H_{10} (iso).....			0	760		Mabery.
C_5H_{12} (normal).....	0.6250—25°/25° ^a		36.3	760		Young.
	.6261—0°/4°					
	.6454—0°/4°					
C_5H_{12} (iso).....	.6392—0°/4°		27.95	711		Young.
C_6H_{14} (normal).....	.6771—0°/4°		68.95	711		Do.
C_6H_{14} (iso).....	.6730—0°/4°		61.00	711		Do.
C_7H_{16} (normal).....			98.40	711		Do.
C_7H_{16} (iso).....	.6969—0°/4°		90.30	711		Do.
C_8H_{18} (normal).....	.7188—20°/20°		125.00	760		Do.
C_8H_{18} (iso).....	.7190—20°/20°		119.50	760		Mabery.
C_9H_{20} (normal).....			151.00	760		Do.
$C_{10}H_{22}$ (normal).....	.7479—20°/20°		163—164	760		Do.
$C_{10}H_{22}$ (iso).....	.7467—20°/20°		173—174	760		Do.
$C_{11}H_{24}$.....	.7581—20°/20°		196—197	760		Do.
$C_{12}H_{26}$ (normal).....	.7676—20°/20°		214—216	760		Do.
$C_{13}H_{28}$.....	.7834—20°/20°	1.451	226	760		Do.
$C_{14}H_{30}$.....	.7814—20°/20°	1.436	236—238	760		Do.
$C_{15}H_{32}$.....	.7896—20°/20°	1.4413	256—257	760		Do.
$C_{16}H_{34}$.....	.7911—20°/20°	1.4413	274—275	760		Do.
$C_{17}H_{36}$.....	.8000—20°/20°	1.4435	288—289	760	10	Do.
$C_{18}H_{38}$.....	.8017—20°/20°	1.440	300—301	760	20	Do.
$C_{19}H_{40}$.....	.8122—20°/20°	1.4522	210—212	50	33—34	Do.
$C_{21}H_{44}$			230—231	50	40—41	Do.
$C_{22}H_{46}$.....	.7796—15°		240—242	50	44	Do.
$C_{23}H_{48}$.....	.7900—60°		258—261	50	45	Do.
$C_{24}H_{50}$.....	.7902—60°		272—274	50	48	Do.
$C_{25}H_{52}$.....	.7941—60°		280—282	50	53—54	Do.
$C_{26}H_{54}$.....	.7977—60°		292—294	50	58	Do.
$C_{28}H_{58}$.....	.7945—70°		310—312	50	60	Do.
$C_{31}H_{64}$.....	.7992—70°		328—330	50	66	Do.
$C_{32}H_{66}$.....	.8005—75°		342—345	50	68	Do.
$C_{34}H_{70}$.....	.8009—80°		366—368	50	72	Do.
$C_{35}H_{72}$.....	.80052—80°		380—384	50	76	Do.

^a Specific gravity at 25° C., compared with that of water at 25° C.

TABLE 80.—Properties of certain monocyclic polymethylenes and hydrocarbons.

MONOCYCLIC POLYMETHYLENES C_nH_{2n} .

Symbol.	Compound.	Specific gravity.	Refractive index.	Boiling point.	Pressure.	Authority.
				$^{\circ}C.$	<i>Mm.</i>	
C_5H_{10}	Pentamethylene.....	0.7000 at 0°/4°		50	760	Young.
C_6H_{12}	Methylpentamethylene.....	0.7660 at 0°/4°		72	760	Do.
C_6H_{12}	Hexamethylene.....	0.7722 at 0°/4°		80.6	760	Do.
C_7H_{14}	Dimethylpentamethylene.....	0.7543 at 20°/4°		94	760	Do.
C_7H_{14}	Methylhexamethylene.....	0.7964 at 20°/4°		102	760	Do.

HYDROCARBONS C_nH_{2n} .

$C_{21}H_{42}$		0.8424 at 20°/20°				
$C_{22}H_{44}$		0.8262 at 20°/20°	1.454	240 to 242	50	Mabery.
$C_{23}H_{46}$		0.8569 at 20°/20°	1.4714	258 to 260	50	Do.
$C_{24}H_{48}$		0.8598 at 20°/20°	1.4726	272 to 274	50	Do.
$C_{26}H_{52}$		0.8580 at 20°/20°	1.4725	280 to 282	50	Do.

HYDROCARBONS C_nH_{2n-2} .

$C_{27}H_{52}$		0.8688 at 20°/20°	1.4722	290 to 294	50	Mabery.
$C_{28}H_{54}$		0.8694 at 20°/20°	1.4800	310 to 312	50	Do.

TABLE 81.—Solid hydrocarbons in Pennsylvania petroleum and their physical properties.

Hydrocarbon.	Symbol.	Melting point.	Specific gravity.
		$^{\circ}C.$	
Tetracosane.....	$C_{24}H_{50}$	50 to 51	0.7900 at 60° C.
Hentricontane.....	$C_{31}H_{64}$	66	0.7997 at 70° C.
Dotricontane.....	$C_{32}H_{66}$	67 to 68	0.8005 at 75° C.
Tetratricontane.....	$C_{34}H_{66}$	71 to 72	0.8009 at 80° C.
Pentatricontane.....	$C_{35}H_{72}$	76	0.8052 at 80° C.

TABLE 82.—Hydrocarbons in commercial paraffins, and their physical properties.

Hydrocarbon.	Symbol.	Melting point.	Specific gravity at 60° C.
		$^{\circ}C.$	
Tricosane.....	$C_{23}H_{48}$	48	0.7886
Tetracosane.....	$C_{24}H_{50}$	50—51	
Pentacosane.....	$C_{25}H_{52}$	53—54	.7941
Hexacosane.....	$C_{26}H_{54}$	55—56	.7968
Octocosane.....	$C_{28}H_{58}$	60	
Nonocosane.....	$C_{29}H_{60}$	62—63	

TABLE 83.—Relation of specific gravity to melting point of paraffins.

Sample No.	Origin of sample.	Specific gravity of paraffin.		Solidifying point of paraffin.
		Solid at 15.5° C.	Liquid at 99° C.	
1	Shale oil.....	0.8666	0.7481	$^{\circ}C.$ 44.0
2	do.....	.8961	.7494	47.0
3	do.....	.9000	.7517	52.0
4	do.....	.9111	.7572	58.5
5	American petroleum.....	.9083	.7535	53.8
6	Ozokerite.....		.7531	61.5
7	Rangoon tar.....	.8831	.7571	40.0

CHARACTER OF BIBLIOGRAPHY.

A general review of the literature relating to the manufacture of gasoline and benzene and toluene by the cracking of heavy hydrocarbons has not been attempted by the authors, as such a review, however valuable in and of itself, would have consumed too much time and space.

In lieu of such a review, Mr. M. S. Howard, librarian in charge of the Pittsburgh library, Bureau of Mines, has compiled and arranged a comprehensive bibliography of the subjects relevant to the discussion in this paper. The bibliography deals with the literature pertaining to the recovery of benzene, toluene, and related products from coal distillation; with that relating to methods of analyzing and purifying these substances; and with that pertaining to the production of gasoline and aromatic hydrocarbons from petroleum.