

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)***

| No | Name | Boiling point °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|----|---|--------------------|----------------------|---|------------------------------|--------------------------|---|---------------|------------------------------|------------------------------|--|
| | | | | | | x-Bromo- | B P, °C | M P, °C | n _D ²⁰ | D ₄ ²⁰ | |
| 1 | Ethene (Ethylene) | -103.71 | -169.15 ^T | | 0.384 ⁰ | di- | 131.36 | 9.85 | 1.53868 | 2.1792 | |
| 2 | Propene (Propylene) | -47.70 | -185.25 ^T | | 0.5139 | di- | 141.99 | -55.5 | 1.52004 | 1.93268 | |
| 3 | Cyclopropene | -36 ¹¹¹ | | | | | | | | | |
| 4 | Allene | -34.5 | -136 | | | | | 10.7 | 1.6200 | 2.703 | |
| 5 | 2-Methylpropene | -6.90 | -140.35 | 1.3467 | 0.5942 ^S | di- | 149 | | 1.5080 | 1.7595 | 2,4-Dinitrophenyl-sulfonyl chloride, 86.7 |
| 6 | 1-Butene | -6.26 | -185.35 | 1.3465 | 0.5951 | di- | 166.3 | | 1.5150 | 1.7951 | 2,4-Dinitrophenyl-sulfonyl chloride, 77.5-8.5 |
| 7 | 1,3-Butadiene | -4.41 | -108.92 | 1.4292 ² 0.650 ¹ | 0.6255 ¹ | tetra- | | 118 lgr | | | |
| 8 | trans-2-Butene | 0.88 | -105.55 | | 0.6042 ^S | di- | 161.0 | | 1.5110 | 1.7852 | |
| 9 | Cyclobutene | 2.4 | | | 0.733 ⁰ | | | | | | |
| 10 | cis-2-Butene | 3.72 | -138.91 | | 0.6306 ¹ | di- | 161.0 | | 1.5110 | 1.7852 | |
| 11 | 1,2-Butadiene (Methylallene) | 10.85 | -136.19 | 1.4208 ¹ | 0.652 ^S | tetra- | 97.5 | -2 | 1.6070 | 2.5085 | |
| 12 | 3-Methyl-1-butene | 20.06 | -168.49 | 1.3643 | 0.6272 | di- | 61.2 ¹² | | 1.50932 | 1.6776 | |
| 13 | 1,4-Pentadiene | 25.97 | -148.28 | 1.38876 | 0.66706 | tetra- | | 85.5-6.0, eth | | | |
| 14 | 1-Pentene | 29.97 | -165.22 | 1.37148 | 0.64050 | di- | 68 ¹² | | 1.5012 ¹² | 1.592 ¹⁹ | Mercaptosuccinic acid adduct, 107.3-6 |
| 15 | 2-Methyl-1-butene | 31.16 | -137.56 | 1.3778 | 0.6504 | di- | 47.4-48 ⁹ | | 1.5088 | 1.6711 | Mercaptosuccinic acid adduct, 122.3-6 |
| 16 | 3-Methylcyclobutene | 32 | | 1.4005 | | | | | | | |
| 17 | 2-Methyl-1,3-butadiene (Isoprene) | 34.07 | -145.95 | 1.42194 | 0.68095 | di- tetra- | 90-6 ¹² 155 60 ¹² | | | | Maleic anhyd adduct, 63-4, lgr |
| 18 | trans-2-Pentene | 36.35 | -140.24 | 1.3793 | 0.6482 | di- | 91.0 ⁵⁰ | | 1.5096 | 1.6809 | |
| 19 | cis-2-Pentene | 36.94 | -151.39 | 1.3830 | 0.6556 | di- | 92.4 ⁵⁰ | | 1.5096 | 1.6817 | |
| 20 | 1-Methyl-1-cyclobutene | 37.1 | | 1.4088 | 0.7244 | | | | | | |
| 21 | 2-Methyl-2-butene | 38.57 | -133.77 | 1.3874 | 0.6623 | | | | | | Nitroschloride, 74, Mercaptosuccinic acid adduct, 153.7-4.0 |
| 22 | 3-Methyl-1,2-butadiene (1,1-Dimethylallene) | 40 | | 1.410 | 0.680 | tetra- | 150.2 ¹ | | 1.594 ¹⁷ | 2.305 ¹⁷ | |
| 23 | Cyclopentadiene | 40.83 ² | -85 | 1.4398 ^{19,5} | 0.7983 ¹⁹ | | | | | | Dimer 32, Maleic anhyd adduct, 164.5 Benzoquinone adduct, 75.6 |
| 24 | 1,3-Pentadiene (Piperylene) | 41.1 | -88.9 | 1.4309 | 0.6803 | tetra- | | 114.5, al | | | Maleic anhyd adduct, 61, pet eth, Oxid by KMnO ₄ → HCOOH + CH ₃ COOH |
| 25 | 3,3-Dimethyl-1-butene | 41.24 | -115.2 | 1.3760 | 0.6529 | di- | 95.3 5.6 ¹⁰ | | 1.5109 | 1.5615 | |
| 26 | 1,trans-3-Pentadiene | 42.03 | -87.47 | 1.43008 | 0.67603 | tetra- | 131 ² | 115, al | | | |
| 27 | 1,cis-3-Pentadiene | 44.07 | -140.82 | 1.43634 | 0.69102 | tetra- | 131 ² | 115, al | | | |

*Derivative data given in order m.p., crystal color, solvent from which crystallized

**T = triple point, S = at saturation pressure

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| No | Name | Boiling point °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|----|---|------------------|------------------|------------------------------|------------------------------|--------------------------|---------------------|-----------------|------------------------------|------------------------------|---|
| | | | | | | x Bromo- | B P °C | M P °C | n _D ²⁰ | D ₄ ²⁰ | |
| 28 | Cyclopentene | 44.24 | -135.08 | 1.42246 | 0.77199 | di- | 71.5 ¹² | | 1.5510 ¹¹ | 1.8713 ¹¹ | Mercaptosuccinic acid adduct 142.8.3.1 Pseudonitrosite 69.70 Perbenzoic acid oxid → epoxy-cyclopentane b.p. 102.3 |
| 29 | 1,2-Pentadiene (Ethylallene) | 44.86 | -137.26 | 1.42091 | 0.69257 | tetra- | 94.6 ⁹ | | | 2.3469 ¹² | |
| 30 | 2,3-Pentadiene (1,3-Dimethylallene) | 48.27 | -125.26 | 1.42842 | 0.69502 | | | | | | |
| 31 | 4-Methyl-1-pentene | 53.88 | -153.63 | 1.3828 | 0.6642 | di | 87 ²¹ | | 1.4980 | 1.5689 | Mercaptosuccinic acid adduct 102.6.9 |
| 32 | 3-Methyl-1-pentene | 54.14 | -153.0 | 1.3842 | 0.6675 | di | 99 ¹⁰ | | 1.5060 | 1.6016 | |
| 33 | 3-Methyl-1,4-pentadiene | 55 | | 1.405 | 0.695 | | | | | | |
| 34 | 2,3-Dimethyl-1-butene | 55.67 | -157.27 | 1.3904 | 0.6779 | di- | 80 ¹ | | 1.5105 | 1.6033 | |
| 35 | 2-Methyl-1,4-pentadiene | 56 | | 1.405 | 0.694 | | | | | | |
| 36 | 4-Methyl-cis-2-pentene | 56.3 | -134.43 | 1.3880 | 0.6690 | di | 72.3 ¹⁸ | | 1.5060 | 1.5983 | |
| 37 | 4-Methyl-trans-2-pentene | 58.55 | -140.81 | 1.3889 | 0.6686 | di- | 78 ²² | | 1.5070 | 1.5996 | |
| 38 | 1,5-Hexadiene (Biallyl) | 59.46 | -140.8 | 1.4042 | 0.6923 | tetra- | | 52 | | | Dil HNO ₃ → succinic ac 185 |
| 39 | 2-Methyl-1-pentene | 60.7 | -135.72 | 1.3920 | 0.6817 | di | 87.8 ²⁰ | | 1.5015 | 1.5581 | |
| 40 | 1-Hexene | 63.49 | -139.82 | 1.38788 | 0.67317 | di- | 89.90 ¹⁸ | | 1.5024 | 1.5774 | 2,4-Dinitrophenyl-sulfonyl chloride 61.2 Mercaptosuccinic acid adduct, 94.5.5.7 |
| 41 | 2-Ethyl-1-butene | 64.6 | -131.53 | 1.3969 | 0.6894 | di- | 87 ²¹ | | 1.5112 | 1.6045 | |
| 42 | trans-1,3-Hexadiene | 64.5.5.5 | | 1.4060 ¹⁹ | 0.6925 ¹⁹ | tetra- | | 19 | | | |
| 43 | 3-Methylcyclopentene | 65.0 | | 1.4207 | 0.7622 | | | | | | |
| 44 | cis-3-Hexene | 66.44 | -137.82 | 1.3947 | 0.6796 | di | 80.1 ¹³ | | 1.5045 | 1.6027 | |
| 45 | 3-Hexene (cis-trans mixture) | 66.6-67 | | 1.3942 | 0.6816 | di- | 80.1 ¹³ | | 1.5045 | 1.6027 | |
| 46 | trans-3-Hexene | 67.08 | -113.43 | 1.3943 | 0.6772 | di- | 80.1 ¹³ | | 1.5045 | 1.6027 | |
| 47 | 2-Methyl-2-pentene | 67.29 | -135.7 | 1.4004 | 0.6863 | di- | 71-2 ¹⁸ | | 1.5063 | 1.5849 | Mercaptosuccinic acid adduct, 152.1.6 |
| 48 | 3-Methyl-trans-2-pentene | 67.63 | -134.84 | 1.4016 | 0.6942 | di- | 72.4 ¹⁵ | | 1.5085 | | |
| 49 | trans-2-Hexene | 67.87 | -132.97 | 1.3935 | 0.6784 | di- | 90 ¹⁶ | | 1.5025 | 1.5812 | |
| 50 | 2-Hexene (cis-trans mixture) | 67.9.8.1 | | 1.3928 | 0.6813 | di- | 90 ¹⁶ | | 1.5025 | 1.5812 | |
| 51 | 2,3-Hexadiene | 68 | | 1.395 | 0.680 | | | | | | |
| 52 | 2,3-Dimethyl-1,3-butadiene | 68.78 | -76.01 | 1.4394 | 0.7267 | di- | | 47, lgr 138, bz | | | Maleic anhyd adduct, 78-9 |
| 53 | cis-2-Hexene | 68.84 | -141.14 | 1.3977 | 0.6869 | di- | 90 ¹⁶ | | 1.5025 | 1.5812 | |
| 54 | 4-Methyl-1,2-pentadiene (1-Isopropylallene) | 70 | | 1.424 | 0.708 | | | | | | |
| 55 | 3-Methyl-cis-2-pentene | 70.45 | -138.45 | 1.4045 | 0.6986 | di- | 72-4 ¹⁵ | | 1.5085 | | |

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|----|--|--------------------------|-------------------|------------------------------|------------------------------|------------------------------|------------------------|---|------------------------------|------------------------------|---------------|--|
| | | | | | | <i>x</i> -Bromo- | B P, °C | M P, °C | n _D ²⁰ | D ₄ ²⁰ | | |
| 56 | 2-Methyl-2,3-pentadiene (Trimethyl allene) | 72 | | 1.425 | 0.711 | | | | | | | |
| 57 | 1,4-Hexadiene | 72.3-2.5 | | 1.4402 ¹⁹ | 0.7057 ¹⁹ | tetra- 2 forms | | a) 63-4 b) fp < -50 | | | | |
| 58 | 4,4-Dimethyl-1-pentene | 72.49 | -136.6 | 1.3918 | 0.6827 | di | 77-8 ⁹ | | 1.4970 | 1.5129 | | Mercaptosuccinic acid adduct, 119.05 |
| 59 | 1, (cis and/or trans)-3-hexadiene | 73 | | 1.438 | 0.705 | | | | | | | |
| 60 | 2,3-Dimethyl-2-butene | 73.21 | -74.28 | 1.4122 | 0.7080 | di | | 173-4-121 | | | | |
| 61 | 2-Ethyl-1,3-butadiene | 75 | | 1.445 | 0.717 | | | | | | | |
| 62 | 4-Methylcyclopentene | 75.2 | | 1.4306 | 0.7796 | | | | | | | |
| 63 | 1-Methylcyclopentene | 75.8 | -127 | 1.4330 | 0.7802 | | | | | | | |
| 64 | 2-Methyl-1, (cis and/or trans)-3-pentadiene | 76 | | 1.446 | 0.719 | | | | | | | |
| 65 | 1,2-Hexadiene (n-Propylallene) | 76 | | 1.4282 | 0.7149 | tetra- | 130 ³ | | 1.5850 | 2.1873 | | |
| 66 | 2-Methyl-1, (cis and/or trans)-3-pentadiene | 76 | | 1.446 | 0.719 | | | | | | | |
| 67 | 4-Methyl-1,3-pentadiene | 76.3 | | 1.451 | 0.719 | | | | | | | |
| 68 | 4,4-Dimethyl-trans-2-pentene | 76.75 | -115.24 | 1.3982 | 0.6889 | di- | 92.8-93 ¹⁴ | | 1.5080 | 1.5538 | | |
| 69 | 3,3-Dimethyl-1-pentene | 77.54 | -134.3 | 1.3984 | 0.6974 | di- | 95.3-6 ¹⁰ | | 1.5109 | 1.5615 | | |
| 70 | 2,3,3-Trimethyl-1-butene | 77.87 | -109.85 | 1.4029 | 0.7050 | di- | 98-9 ¹⁴ | 38-9 | | | | |
| 71 | 3-Methyl-1,3-pentadiene | 78.0-3 | | 1.4494 | 0.7499 | | | | | | | |
| 72 | trans-1,3,5-Hexatriene | 78.5, 77.8-5 | | 1.4884 ¹³⁻⁵ | 0.74229 ¹⁵ | hexa- | | 78 | | | | |
| 73 | cis-1,3,5-Hexatriene | 78.5 | | 1.4577 | 0.7179 | | | | | | | |
| 74 | 3-Methyl-1,2-pentadiene | 79.70 | | 1.425 | 0.715 | | | | | | | |
| 75 | 2,4-Hexadiene | 79.4-81.6 ⁷⁶⁵ | -79 | 1.4493 | 0.7152 | 2,5-di-tetra- | 85 ¹¹ | 182 | 1.534 ¹⁰ | 1.622 ¹⁰ | | Maleic anhyd adduct, 95.6, 1gr, SO ₂ adduct, 43-3.5 |
| 76 | 3-Methyl-1,5-hexadiene | 80-1 | | 1.4116 | 0.7103 | | | | | | | |
| 77 | 4,4-Dimethyl-1,2-pentadiene (tert-Butylallene) | 80-3 | | | 0.7184 | | | | | | | |
| 78 | 1,3-Cyclohexadiene | 80.31 ⁷⁵⁷ | -104.8 | 1.4740 | 0.8413 | di- tetra- 2 forms | | 68, isomerizes → m 108 1, trans-2, cis-3, trans-4, 92, 1, cis-2, trans-3, trans-4, 156 | | | | Maleic anhyd adduct, 145-6, heptane, Benzoquinone adduct, 196.7, 1gr |
| 79 | 4,4-Dimethyl-cis-2-pentene | 80.42 | -135.46 | 1.4024 | 0.6996 | di- | 92.8-3.0 ¹⁴ | | 1.5080 | 1.5538 | | |

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|-----|---|---------------------|------------------|------------------------------|------------------------------|--------------------------|--------------------------|--------|------------------------------|------------------------------|---------------|--|
| | | | | | | x-Bromo | B P °C | M P °C | n _D ²⁰ | D ₄ ²⁰ | | |
| 80 | 3,4-Dimethyl-1-pentene | 81 | | 1.3995 | 0.701 | | | | | | | |
| 81 | Cyclohexene | 82.97 | -103.51 | 1.44654 | 0.81096 | di- | 101.3 ¹³ | | 1.5445 ¹⁹ | 1.7759 ¹⁹ | | Mercaptosuccinic acid adduct, 150.5; 1.5, KMnO ₄ oxid → adipic acid, 154, 2,4-Dinitrophenylsulfenyl chloride, 117.8; HBr → cyclohexyl bromide, b.p. 165 |
| 82 | 2,4-Dimethyl-2-pentene | 83-4 | -127.7 | 1.40165 ²² | 0.6958 ²² | di- | 88 ¹⁷ | | 1.50920 ^{22.5} | 1.5431 ^{22.5} | | |
| 83 | 3-Methyl-1-hexene | 84.0 | | 1.397 | 0.695 | di- | 84.0-2 ⁶ | | 1.5028 | 1.5248 | | |
| 84 | 2,3-Dimethyl-1-pentene | 84.26 | -134.8 | 1.4033 | 0.7051 | di- | 72.5-3.0 ³ | | 1.5028 | 1.5245 | | |
| 85 | 3-Ethyl-1-pentene | 85.13 | -127.4 | 1.3980 | 0.6962 | di- | 93.5 ¹⁵ | | 1.5006 | 1.5251 | | |
| 86 | 5-Methyl-1-hexene | 85.31 | | 1.3966 | 0.6920 | di- | 142.6-3.6 ¹⁰¹ | | 1.4970 | 1.5072 | | |
| 87 | 5-Methyl-trans-2-hexene | 86.0 | | 1.400 | 0.700 | di- | 87.8 ¹⁰ | | 1.4960 | 1.5027 | | |
| 88 | 2-Methyl-3-hexene | 86.0 | | 1.399 | 0.694 | di- | 96 ¹⁹ | | 1.5060 | 1.5310 | | |
| 89 | 2,4-Dimethyl-2,3-pentadiene (Tetramethylallene) | 86.5 | | 1.40039 | 0.7006 | | | | | | | |
| 90 | 4-Methyl-1-hexene | 86.73 | -141.45 | 1.4000 | 0.6985 | di- | 94.7-5.7 ¹¹ | | 1.4980 | 1.5027 | | |
| 91 | 3,4-Dimethyl-2-pentene | 87.0 | | 1.407 | 0.713 | di- | 65.5-6.0 | | 1.5104 | 1.5400 | | |
| 92 | 4-Methyl-cis-2-hexene | 87.37 | | 1.4024 | 0.6996 | di- | 91.2 ¹¹ | | 1.5045 | 1.5382 | | |
| 93 | 4-Methyl-trans-2-hexene | 87.6 | -126.5 | 1.4023 | 0.6975 | di- | 91.2 ¹¹ | | 1.5045 | 1.5382 | | |
| 94 | 3,3-Dimethylcyclopentene | 88 | | 1.423 | 0.771 | | | | | | | |
| 95 | 2-Ethyl-3-methyl-1-butene | 89 | | 1.410 | 0.715 | di- | 72.5-3.5 ⁴ | | 1.5062 | 1.5261 | | |
| 96 | 5-Methyl-cis-2-hexene | 91 | | 1.400 | 0.700 | di- | 89.90 ¹¹ | | 1.4990 | 1.5152 | | |
| 97 | 5-Methyl-1,4-hexadiene | 91-2.5 | | 1.4390 | 0.7258 | 1,2-di- | 101.4 ¹⁸ | | 1.5233 ¹⁶ | 1.566 ¹⁶ | | |
| 98 | 2-Methyl-1-hexene | 92.0 | -102.84 | 1.4034 | 0.7030 | di- | 100.5-1.5 ²³ | | 1.5000 | 1.5066 | | |
| 99 | 1,3-Dimethylcyclopentene | 92 | | 1.428 | 0.766 | | | | | | | |
| 100 | 2-Methyl-1,5-hexadiene | 92.5 ⁷⁶⁹ | | 1.423/6 ^{17.3} | 0.7289 ^{18.5} | | | | | | | Nitrosochloride, 75.6 |
| 101 | 2,4-Dimethyl-1,3-pentadiene | 93 | -114 | 1.4412 | 0.7368 | | | | | | | |
| 102 | 1,4-Dimethylcyclopentene | 93.2 | | 1.4283 | 0.779 | | | | | | | |
| 103 | 3-Methyl-trans-3-hexene | 93.5 | | 1.4107 | 0.7099 | | | | | | | |
| 104 | 1-Heptene | 93.64 | -119.03 | 1.39980 | 0.69698 | di- | 106.2 ¹³ | | 1.4990 | 1.5208 | | Mercaptosuccinic acid adduct 103.4-9 |

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|-----|---|-------------------------------|------------------|------------------------------|------------------------------|--|--|---------|------------------------------|------------------------------|---------------|
| | | | | | | x Bromo | B P, °C | M P, °C | n _D ²⁰ | D ₄ ²⁰ | |
| 105 | 3-Methyl- <i>trans</i> -2-hexene | 94 0 | | 1 410 | 0 7120 | <i>di</i> - | 65 0 5 1 ² | | 1 5040 | 1 5240 | |
| 106 | 2-Ethyl-1-pentene | 94 | | 1 405 | 0 708 | <i>di</i> - | 77 8 ⁴ | | 1 4990 | 1 4929 | |
| 107 | 3-Methyl- <i>cis</i> -3-hexene | 95 35 | | 1 4123 | 0 7132 | | | | | | |
| 108 | 2-Methyl-2-hexene | 95 41 | -130 35 | 1 4106 | 0 7082 | <i>di</i> - | 73 0 1 ⁸ | | 1 4990 | 1 5116 | |
| 109 | <i>trans</i> -3-Heptene | 95 67 | -136 63 | 1 4043 | 0 6981 | <i>di</i> - | 105 5 6 5 ^{2,1} | | 1 5010 | 1 5153 | |
| 110 | <i>cis</i> -3-Heptene | 95 75 | | 1 4059 | 0 7030 | <i>di</i> - | 105 5- 6 5 ^{2,3} | | 1 5010 | 1 5153 | |
| 111 | 5-Methyl-1,2-hexadiene (Isobutylallene) | 96 | | 1 4282 ¹⁹ | 0 7225 ¹⁹ | | | | | | |
| 112 | 3-Ethyl-2-pentene | 96 01 | | 1 4148 | 0 7204 | <i>di</i> - | 76 0- 4 ³ | | 1 5090 | 1 5426 | |
| 113 | 2,3-Dimethyl-2-pentene | 97 5 | -118 3 | 1 4208 | 0 7277 | <i>di</i> - | 97 9 ¹⁵ | | 1 517 ²² | 1 547 ²² | |
| 114 | <i>trans</i> -2-Heptene | 97 95 | -109 48 | 1 4045 | 0 7012 | <i>di</i> - | 96 2 ^{1,2} | | 1 5000 | 1 5129 | |
| 115 | 3-Ethylcyclopentene | 98 1 | | 1 4319 | 0 7830 | | | | | | |
| 116 | <i>cis</i> -2-Heptene | 98 5 | | 1 406 | 0 708 | <i>di</i> - | 96 2 ^{1,2} | | 1 5000 | 1 5129 | |
| 117 | 5-Methyl-1,3-cyclohexadiene | 100 5 1 5 ^{7,6,2} | | 1 4662 ^{22,5} | 0 8252 | | | | | | |
| 118 | 2,2-Dimethyl- <i>trans</i> -3-hexene | 100 9 | | 1 4063 | 0 7039 | <i>di</i> - | 96 5- 7 0 ⁸ | | 1 5032 | 1 4856 | |
| 119 | 1,4-Heptadiene | 101 | | 1 4202 | 0 7106 | <i>di</i> - | | | 1 5734 | 2 091 | |
| 120 | 2,4,4-Trimethyl-1-pentene | 101 44 | -93 48 | 1 4086 | 0 7150 | | | | | | |
| 121 | 3,3-Dimethyl-1,5-hexadiene | 101 6 | | 1 4160 | 0 7249 | | | | | | |
| 122 | 3,4-Dimethyl-1,5-hexadiene | 101 8 | | 1 4211 | 0 7304 | | | | | | |
| 123 | 2,5-Dimethyl-3-hexene | 102 | | 1 406 | 0 710 | <i>di</i> - | 109 ¹⁹ | | 1 5058 | 1 5034 | |
| 124 | 5,5-Dimethyl-1-hexene | 102 5 | | 1 4049 | 0 709 | | | | | | |
| 125 | 4-Methylcyclohexene | 102 74 | -115 5 | 1 4414 | 0 7947 | <i>di</i> - | 130 ⁴⁰ | | | 1 650 ¹³ | |
| 126 | 3-Methylcyclohexene | 104 0 | | 1 4444 | 0 8010 | | | | | | |
| 127 | 2-Isopropyl-3-methyl-1-butene | 104 | | 1 4085 | 0 722 | | | | | | |
| 128 | 3,4,4-Trimethyl-1-pentene | 104 | | 1 412 | 0 719 | | | | | | |
| 129 | 3,5-Dimethyl-1-hexene | 104 | | 1 404 | 0 708 | | | | | | |
| 130 | 3,3-Dimethyl-1-hexene | 104 | | 1 4070 | 0 7140 | | | | | | |
| 31 | 5,5-Dimethyl- <i>trans</i> -2-hexene | 104 1 | | 1 4055 | 0 7066 | | | | | | |
| 32 | 2,4,4-Trimethyl-2-pentene | 104 91 | -106 33 | 1 4160 | 0 7218 | | | | | | |
| 33 | 3,3,4-Trimethyl-1-pentene | 105 | | 1 4144 | 0 729 | | | | | | |
| 34 | 2,2-Dimethyl- <i>cis</i> -3-hexene | 105 4 | -137 4 | 1 4099 | 0 7128 | | | | | | |
| 35 | 1,2-Heptadiene (<i>n</i> -Butylallene) | 105 5 6 0 | | 1 432 ¹⁸ | 0 7306 ¹⁸ | 2,3- <i>di</i> - <i>tetra</i> - | 108- 10 ¹² , 140 ⁹ | | 1 5200 ¹⁸ | 1 5595 ¹⁸ | |
| 36 | 1,2-Dimethylcyclopentene | 105 8 | -90 4 | 1 4448 | 0 7976 | | | | 1 5718 | 2 0675 | |
| 37 | 4-Ethylcyclopentene | 106 | | 1 440 | 0 798 | | | | | | |
| 38 | 4,4-Dimethyl-2-hexene | 106 | | 1 413 | 0 722 | <i>di</i> - | 92 3 ⁴ | | 1 5113 | 1 5148 | |
| 39 | 1-Ethylcyclopentene | 106 3 | -118 4 | 1 4410 | 0 7982 | | | | | | |
| 40 | 5,5-Dimethyl- <i>cis</i> -2-hexene | 106 9 | | 1 4113 | 0 7169 | | | | | | |

*Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|-----|---|-------------------------|------------------|------------------------------|------------------------------|--------------------------|---------------------|--------|------------------------------|------------------------------|--|
| | | | | | | <i>α</i> -Bromo- | B P °C | M P °C | n _D ²⁰ | D ₄ ²⁰ | |
| 141 | 2-Methyl-2,4-hexadiene | 107 | | 1.4266 ²⁴ | 0.7439 | | | | | | |
| 142 | 2-Methyl-1,3-cyclohexadiene | 107.8 | | 1.4662 ¹⁸ | 0.8272 ¹⁸ | | | | | | |
| 143 | 3-Methyl-2,4-hexadiene | 107.8 | | 1.46146 ¹⁵ | 0.7625 ¹⁵ | | | | | | |
| 144 | 4,4-Dimethyl-1-hexene | 107.2 | | 1.4102 | 0.7198 | <i>di</i> - | 224.5 | | 1.5003 | 1.4689 | |
| 145 | 3-Ethyl-4-methyl-1-pentene | 107.5 | | 1.4097 | 0.7200 | | | | | | |
| 146 | 2,4-Heptadiene | 107.5-8.0 | | 1.4578 | 0.7384 | | | | | | |
| 147 | 2,4-Dimethyl- <i>trans</i> -3-hexene | 107.6 | | 1.4126 | 0.7145 | | | | | | |
| 148 | Quadricyclene (Quadricyclo [2,2,1,0 ^{2,6} ,0 ^{3,5}] heptane) | 108 ⁷⁴⁰ sl d | | 1.4804 | | | | | | | |
| 149 | 2,3,4-Trimethyl-1-pentene | 108 | | 1.415 | 0.729 | | | | | | |
| 150 | 4-Methyl-1,3-hexadiene | 108-10 | | 1.4523 | 0.7558 | | | | | | |
| 151 | 2,3,3-Trimethyl-1-pentene | 108.3 | -69 | 1.4174 | 0.7352 | | | | | | |
| 152 | 4,5-Dimethyl-1-hexene | 109 | | 1.414 | 0.728 | | | | | | |
| 153 | 1,5,5-Trimethylcyclopentene (Isolaurolene) | 109 ⁷⁵⁴ | | 1.4324 | 0.7824 | | | | | | Reduces Tollen's reagent on warming |
| 154 | 2,4-Dimethyl- <i>cis</i> -3-hexene | 109 | | 1.4140 | 0.7178 | | | | | | |
| 155 | 3,3-Dimethyl-2-ethyl-1-butene | 110 | | 1.4159 | 0.728 | | | | | | |
| 156 | 3-Ethyl-2-methyl-1-pentene | 110 | | 1.415 | 0.730 | | | | | | |
| 157 | 4,5-Dimethyl-2-hexene | 110 | | 1.413 | 0.725 | | | | | | |
| 158 | 1-Methylcyclohexene | 110.0 | -121 | 1.4503 | 0.8102 | <i>di</i> - | 100.2 ¹² | | | | 2,4-Dinitrophenylsulfenyl chloride, 139-40 |
| 159 | 2-Ethyl-4-methyl-1-pentene | 110.3 | | 1.4105 | 0.7195 | | | | | | |
| 160 | 3-Ethyl-1-hexene | 110.3 | | 1.407 | 0.715 | | | | | | |
| 161 | 2,3-Dimethyl-1-hexene | 110.5 | | 1.4113 | 0.7214 | | | | | | |
| 162 | 2,4-Dimethyl-2-hexene | 110.6 | | 1.4118 | 0.7213 | | | | | | |
| 163 | 3-Methyl-1-heptene | 111 | | 1.406 | 0.711 | | | | | | |
| 164 | 2,4-Dimethyl-1-hexene | 111.2 | | 1.4110 | 0.720 | | | | | | |
| 165 | 2,5-Dimethyl-1-hexene | 111.6 | | 1.4105 | 0.7172 | | | | | | |
| 166 | 3-Ethyl-3-methyl-1-pentene | 112 | | 1.418 | 0.7305 | | | | | | |
| 167 | 3,4-Dimethyl-1-hexene | 112 | | 1.413 | 0.724 | | | | | | |
| 168 | 3,4,4-Trimethyl-2-pentene | 112 | | 1.4232 | 0.7395 | | | | | | |
| 169 | 3,5-Dimethyl-2-hexene | 112 | | 1.416 | 0.725 | | | | | | |
| 170 | 2-Methyl-3-heptene | 112 | | 1.402 | 0.706 | | | | | | |
| 171 | 5-Methyl-3-heptene | 112 | | 1.410 | 0.713 | | | | | | |
| 172 | 2,5-Dimethyl-2-hexene | 112.2 | | 1.4140 | 0.720 | <i>di</i> - | 88 ¹³ | | 1.4740 | 1.3980 | |
| 173 | 3-Methyl-1,5-heptadiene | 112.5 | | 1.4230 ^{22,5} | | | | | | | |
| 174 | 2-Ethyl-3-methyl-1-pentene | 112.5 | | 1.4142 | 0.729 | | | | | | |

* Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES,
DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|-----|---|----------------------|--------------------------|------------------------------|------------------------------|--------------------------|----------------------------|--------|------------------------------|------------------------------|---|
| | | | | | | α-Bromo- | B P, °C | M P °C | n _D ²⁰ | D ₄ ²⁰ | |
| 175 | 4-Methyl-1-heptene | 112.8 | | 1.410 | 0.717 | | | | | | |
| 176 | 6-Methyl-3-heptene | 113 ⁷³⁴ | | 1.4114 | 0.7256 | di- | | 97 | | | |
| 177 | 4-Ethyl-1-hexene | 113 | | 1.412 | 0.726 | | | | | | |
| 178 | 4-Ethyl-2-hexene | 113 | | 1.412 | 0.725 | | | | | | |
| 179 | 2-Isopropyl-1-pentene | 113 | | 1.414 | 0.725 | | | | | | |
| 180 | 5-Methyl-1-heptene | 113.3 | | 1.4094 | 0.7164 | | | | | | |
| 181 | 4-Methyl-2-heptene | 113.5-4.1 | | 1.4096 | 0.7154 | | | | | | |
| 182 | 2,3-Dimethyl-3-hexene | 114 | | 1.416 | 0.728 | | | | | | |
| 183 | 4-Methyl-2-octene | 114 | | 1.4100 ²⁵ | 0.7188 ²⁵ | | | | | | |
| 184 | 2,4-Dimethyl-2,4-hexadiene | 114-5 | | 1.4545 ^{16.5} | 0.7635 ^{16.5} | | | | | | |
| 185 | 6-Methyl-2,4-heptadiene | 114.6 | | 1.4397 ²⁵ | 0.7041 ²⁵ | | | | | | |
| 186 | 3-Ethyl-4-methyl-trans-2-pentene | 114.3 | | 1.4210 | 0.7350 | | | | | | |
| 187 | Cycloheptene (Suberene) | 114.38 | -56 | 1.4580 | 0.8254 | di- | unstable | | | | Nitroschloride, 118 Oxid → pimelic ac., 105 |
| 188 | 1-Methyl-1,4-cyclohexadiene | 114.5-4.8 | < -70 | 1.4703 | 0.848 | tetra- | | 171 | | | |
| 189 | 3-Ethyl-4-methyl-cis-2-pentene | 115 | | 1.424 | 0.739 | | | | | | |
| 191 | 1,3,5-Cycloheptatriene (Tropilidene) | 115.5 | -79.49 | 1.5243 | | | | | | | Maleic anhyd. adduct, 104.2-5.0, CCl ₄ |
| 192 | 3,4-Dimethyl-2-hexene | 116 | | 1.418 | 0.737 | | | | | | |
| 193 | 3-Ethyl-3-hexene | 116 | | 1.418 | 0.729 | | | | | | |
| 194 | 6-Methyl-1,3-heptadiene | 116.8 | | | 0.741 ²² | | | | | | |
| 195 | 2,5-Dimethyl-1,3-hexadiene | 116.8 | > -80 | 1.45024 | 0.7412 | | | | | | |
| 196 | 2,3,4-Trimethyl-2-pentene | 116.3 | -113.3 | 1.4275 | 0.7434 | | | | | | |
| 197 | 4,4-Dimethylcyclohexene | 116.98 | -80.5 | 1.4420 | 0.7996 | | | | | | |
| 198 | 6-Methyl-2-heptene | 117 | | 1.412 | 0.718 | | | | | | |
| 199 | 2-n-Propyl-1-pentene | 117.7 | | 1.4136 | 0.7240 | | | | | | |
| 200 | 5-Methyl-2-heptene | 118 | | 1.414 | 0.723 | | | | | | |
| 201 | 3,3-Dimethylcyclohexene | 119 | | 1.445 | 0.804 | | | | | | |
| 202 | 2-Methyl-1-heptene | 119.22 | -87.38 | 1.41195 | 0.72025 | | | | | | |
| 203 | 2,5-Dimethyl-1,5-hexadiene | 119.23 | solid at -80, liq at -23 | 1.45054 | 0.7637 | | | | | | |
| 204 | 2-Ethyl-1-hexene | 120 | | 1.4157 | 0.7270 | | | | | | Mercaptosuccinic acid adduct, 101.9-2.7 |
| 205 | d,l-1,2,3-Trimethylcyclopentene (Laurolene) | 120.1 ⁷⁵² | | 1.4421 | 0.7950 | | | | | | |
| 206 | 4-Methyl-3-heptene | 120.4 | | 1.4171 ²⁵ | 0.7411 ²⁵ | | | | | | |
| 207 | 3-Ethyl-2-hexene | 121 | | 1.424 | 0.737 | | | | | | |
| 208 | 3-Methyl-3-heptene | 121 | | 1.418 | 0.728 | | | | | | |
| 209 | 1-Octene | 121.28 | -101.76 | 1.40870 | 0.71492 | di- | 240.2, 118.5 ¹⁵ | | 1.4970 | 1.4580 | Mercaptosuccinic acid adduct, 96.1-6 |

* Derivative data given in order m.p., crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous | | |
|-----|--|--------------------------------|------------------|------------------------------|------------------------------|------------------------------|----------------------------|----------------|------------------------------|------------------------------|---------------|---|--|
| | | | | | | x Bromo | B P C | M P C | n _D ²⁰ | D ₄ ²⁰ | | | |
| 210 | <i>trans</i> -4-Octene | 121 4 ⁷³⁹ | f p -94 | 1 41157 | 0 71467 | <i>di</i> (<i>meso</i>) | 103 ⁸ | | | 1 4967 ²⁴ | 1 4525 | H ₂ → Cyclo heptane b p 118 20 | |
| 211 | 1,3-Cycloheptadiene (Hydrotropilidene) | 121 52 | -110 42 | | 0 8929 ⁰ | | | | | | | | |
| 212 | 3-Methyl-2-heptene | 121 6 | | 1 4183 | 0 7296 | | | | | | | | |
| 213 | <i>cis</i> -4-Octene | 121 7 ⁷³⁹ | f p -118 | 1 41361 | 0 72048 | <i>di</i> (<i>d l</i>) | 84 0 8 4 ^{1 3} | | | 1 4981 | 1 4569 | | |
| 214 | 2,3-Dimethyl-2-hexene | 121 8 | -115 1 | 1 4268 | 0 7408 | | | | | | | | |
| 215 | 3,4-Dimethyl- <i>trans</i> -3-hexene | 122 | | 1 430 | 0 747 | <i>di</i> | 85 7 ⁵ | | | 1 5060 | 1 387 | | |
| 216 | 6-Methyl-1-heptene | 122 4 113 5 | | 1 4070 | 0 7125 | | | | | | | | |
| 217 | <i>cis</i> -3-Octene | 122 3 ⁷⁴¹ | f p -126 | 1 41246 | 0 71888 | | | | | | | | |
| 218 | <i>trans</i> -3-Octene | 122 4 ⁷⁴¹ | f p -110 4 | 1 41241 | 0 71630 | | | | | | | | |
| 219 | 2-Methyl-2-heptene | 123 5 | | 1 4138 | 0 7241 | | | | | | | | |
| 220 | <i>trans</i> -2-Octene | 125 0 | -87 7 | 1 4132 | 0 7199 | | | | | | | | Mercaptosuccinic acid adduct 142 9 3 5 |
| 221 | <i>cis</i> -2-Octene | 125 64 | -100 2 | 1 4150 | 0 7243 | | | | | | | | |
| 222 | 2-Methyl-1,3-heptadiene | 127 8 4 | | 1 4432 | 0 7432 | | | | | | | | |
| 223 | 1,4-Dimethylcyclohexene | 128 | | 1 446 | 0 802 | | | | | | | | Nitrosochloride 83 4 |
| 224 | 1,5-Dimethylcyclohexene | 128 | | 1 448 | 0 8051 | | | | | | | | Nitrosochloride 118 9 |
| 225 | 2,6-Dimethyl 2-heptene | 128 9 | | 1 412 | 0 722 | | | | | | | | |
| 226 | 4-Vinylcyclohexene | 129 5 30 5 36 ⁴³ | | 1 4623 | 0 8320 | $\alpha \beta$ <i>di</i> | | 69 5 70 eth | | | | | |
| 227 | 4-Methyl-2,4-heptadiene | 131 2 | | 1 4621 | 0 7551 | | | | | | | | |
| 228 | 3,4-Dimethyl-2,4-hexadiene | 132 4 71 3 | | 1 4410 | 0 7832 | | | | | | | | |
| 229 | 3-Methyl-2,4-heptadiene | 132 5 | | 1 4649 | 0 7667 | | | | | | | | HBr → Dihydro bromide b p 109 11 ° |
| 230 | Bicyclo[4,2,0]oct-7-ene | 132 5 | | 1 4761 | | <i>di</i> | 74 ⁰ | | | | | | |
| 231 | 4-Ethylcyclohexene | 133 | | 1 449 | 0 810 | | | | | | | | |
| 232 | 1,6-Dimethylcyclohexene | 133 | | 1 454 | 0 815 | | | | | | | | |
| 233 | 3,5-Dimethyl-2,4-heptadiene | 133 44 1 | | 1 4487 | 0 7728 | | | | | | | | |
| 234 | 2,4-Octadiene | 133 5 4 0 | | 1 4542 ² | 0 7427 ² | | | | | | | | |
| 235 | 2,5-Dimethyl-2,4-hexadiene | 133 6 28 ¹ | 14 6 8 | 1 4796 ¹¹ | 0 7646 ⁸ | <i>tetra</i> | | | 101 | | | Oxid in air → polymeric peroxide 59 | |
| 236 | 3-Ethylcyclohexene | 134 | | 1 451 | 0 814 | | | | | | | | |
| 237 | 1,2,3,3-Tetramethylcyclopentene (Campholene) | 134 5 | | 1 44406 | 0 8035 | | | | | | | | |
| 238 | 1-Ethylcyclohexene | 136 | | 1 4575 | 0 823 | | | | | | | | |
| 239 | 1,2-Dimethylcyclohexene | 137 | | 1 4588 | 0 8250 | <i>di</i> | | 142 3 acet | | | | Nitrosochloride 58 60 | |
| 240 | 1,3-Dimethylcyclohexene | 137 | | 1 445 | 0 802 | | | | | | | | |
| 241 | Bicyclo[4,2,0]oct-2-ene | 137 9 | | 1 4810 ³⁰ | 0 8948 | | | | | | | | |

*Derivative data given in order m p crystal color solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point, °C | Melting point °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|-----|--|-----------------------------------|------------------|------------------------------|------------------------------|--------------------------|-----------------------|--------|------------------------------|------------------------------|---|
| | | | | | | x Bromo | B P °C | M P °C | n _D ²⁰ | D ₄ ²⁰ | |
| 243 | 1-Methylcycloheptene | 137.5-8.5 | | 1.4581 | 0.8243 ²² | | | | | | Nitroschloride, 106, Nitrosate, 97.8 |
| 244 | 2-Methyl-4-octene | 138 ⁷¹¹ | | 1.4181 | 0.7392 | | | | | | |
| 245 | δ-Fenchene (1,5,5-Trimethylbicyclo[2,2,1]hept-2-ene) | 139-40 | | 1.44862 | 0.8433 | | | | | | Nitroschloride, 131 |
| 246 | 1,5,5-Trimethylcyclohexene (α-Cyclogeraniolene) | 139-41 ⁷¹¹ | | 1.44612 ²¹ | 0.7981 ²¹ | | | | | | Nitroschloride, 100.20, aq. me., al Nitrosate, 102.4 |
| 247 | 2,6-Dimethyl-2,4-heptadiene | 139.43 ⁷² | | 1.4587 ⁴⁴ | 0.74820 | | | | | | |
| 248 | 1,4,4-Trimethylcyclohexene (Pulene) | 139.5-40.5 | | 1.444 ²⁴ | 0.8032 ^{15, 22} | di- | 120.05 ¹⁰⁰ | | 1.5247 ¹¹ | 1.5324 ¹¹ | Nitroschloride, 118.22, et. ac |
| 249 | 1,5,6-Trimethylcyclohexene | 140 | | 1.4572 | 0.831 ²⁵ | | | | | | |
| 250 | 2,3-Dimethyl-2-norbornene (Santene 2,3-Dimethylbicyclo[2,2,1]hept-2-ene) | 140-1.35 ¹ | | 1.46699 | 0.8640 | | | | | | Dichloride 88.9, Nitrosate, 216d, Nitroschloride, 109.10 Nitrosite, 3 forms a) 122.4, b) 127-8, grn, c) 104, col |
| 251 | 2,6-Dimethyl-1,3-heptadiene (Isogeraniolene) | 140-2.31 | | 1.4606 ²² | 0.7923 ²² | | | | | | |
| 252 | Cyclooctatetraene | 140.56, 142.3, 42.25 ¹ | -4.68, -7 | 1.5290 | 0.9206 | | | | | | Maleic anhyd adduct, 167.8 Benzquinone adduct, 141, al Acrylic acid adduct 112.3, lgr AgNO ₃ adduct, 173.4 |
| 253 | 7-Methyl-3-octene | 141 ^{71b} | | 1.4168 | 0.7278 | | | | | | |
| 254 | 2,6-Dimethyl-1,5-heptadiene (Geraniolene) | 141-2.165.70 | -70 | 1.44361 ²² | 0.7626 ²² | | | | | | |
| 255 | 1,8-Nonadiene * | 141-4 | | 1.4302 | 0.7511 | | | | | | |
| 256 | 1,3,5-Trimethylcyclohexene (Tetrahydro-mesitylene) | 142.5-3.5 | | 1.449 ^{13, 5} | 0.8025 ^{14, 3} | | | | | | Nitroschloride, 134 |
| 257 | 3-Methyl-2-octene | 143-5 ^{73a} | | 1.4247 | 0.7409 ²⁵ | | | | | | |
| 258 | Cyclooctene | 143.8-4.5 ^{77a} | | 1.4693 | | | | | | | Br ₂ → Bromocyclooctene, b p 7-8 ²³ , n _D ²⁰ 1.5182, Dichloride, b p 130.4-0.6 ²⁵ , m p -5, n _D ²⁰ 1.5061, D ₄ ²⁰ 1.1620 |
| 259 | 3,6-Dimethyl-2,4-heptadiene | 144-6 | | 1.46335 ¹⁴ | 0.7853 ⁰ | | | | | | |
| 260 | 4-Nonene | 144-6.44.6 ¹² | | 1.4212 ¹⁸ | 0.732 ¹⁸ | di- | 119.20 ¹² | | 1.4988 ¹⁷ | 1.410 ¹⁷ | |
| 261 | 1,4,5-Trimethylcyclohexene | 144-6 | | 1.4482 | 0.805 | | | | | | |

*Derivative data given in order m p, crystal color, solvent from which crystallized

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a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

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|-----|--|----------------------------------|-------------------|------------------------------|------------------------------|--------------------------|---------------------|---------|------------------------------|------------------------------|--|
| | | | | | | x-Bromo- | B P, °C | M P, °C | n _D ²⁰ | D ₄ ²⁰ | |
| 262 | 1-Vinylcyclohexene | 145, 63 5 ^{5a} | | 1 4950 ¹⁹ | | | | | | | 50% H ₂ SO ₄ → dimer, b p 118-9 ⁵ |
| 263 | cis-1,4-Cyclooctadiene | 145 1 ^{75b} | -53 | | 0 8754 | tetra- | | 139 | | | |
| 264 | 1,3,5-Cyclooctatriene | 145 6, 76 ⁹⁰ | | 1 5035 ²⁵ | 0 8971 ²⁵ | | | | | | Maleic anhyd adduct, 144-5, AgNO ₃ adduct, 125-6, al |
| 265 | 4,4-Dimethyl-1,7-octadiene | 145 8 | | 1 4330 | 0 7647 | | | | | | |
| 266 | ξ-Fenchene (2,7,7-Trimethylbicyclo[2,2,1]hept-2-ene) | 146 2 6 8 ⁷⁵² | | 1 4865 | 0 8626 | | | | | | [α] _D ²⁰ -24 l |
| 267 | 1,6,6-Trimethylcyclohexene | 146 2-7 2 ⁷⁶⁷ , 144 6 | | 1 456 ^{20 4} | 0 8217 ^{20 3} | | | | | | Nitrosochloride, 133 4, et ac |
| 268 | 1-Nonene | 146 87 | -81 37 | 1 41572 | | di- | 141 5 ²⁰ | | 1 4942 | 1 3980 | |
| 269 | 3-Nonene | 147 4 ⁷⁵⁰ | | 1 4173 | 0 7294 | | | | | | |
| 270 | 1,5-Cyclooctadiene | 148 9 | | 1 4905 | 0 8818 ²⁴ | | | | | | N-Bromosuccinimide → bromocyclooctadiene, b p 64 ^{1 9} , n _D ²⁵ 1 5410, D ₄ ²⁵ 1 3420 |
| 271 | 4-Methyl-3,5-octadiene | 148 51 | | 1 46285 ²⁵ | 0 7640 ²⁵ | | | | | | |
| 272 | 7-Methyl-2,4-octadiene | 149 | | 1 4543 ¹⁸ | 0 7521 ¹⁸ | tetra- | 184 ¹⁸ | | | | |
| 273 | 1-Ethyl-4-methylcyclohexene | 149, 153 4 | | 1 453 ¹⁶ | 0 8169 ¹⁶ | | | | | | Nitrosochloride, 2 forms a) 103-4, pr, eth, b) 98 9, cr, eth |
| 274 | 1-Ethyl-3-methylcyclohexene | 149 51 | | 1 454 | 0 8296 | | | | | | |
| 275 | 2-Nonene | 149 4 9 9 | | 1 420 ²¹ | 0 738 ²¹ | | | | | | |
| 276 | 1,2,3-Trimethylcyclohexene | 149 6 150 ⁷⁴⁹ | | 1 463 ¹² | 0 8347 ¹² | | | | | | |
| 277 | 1-Ethyl-5-methylcyclohexene | 150 | | 1 4527 ²⁵ | 0 812 ²⁵ | | | | | | |
| 278 | β-Fenchene (2,2-Dimethyl-5-methylenebicyclo[2,2,1]heptane) | 150 5 3 5 | | 1 46511 | 0 8599 | di- | | 81-2 | | | [α] _D ²⁵ +62 5, Nitrosochloride, 120 |
| 279 | 2,6-Dimethyl-2,5-heptadiene | 150 6 1 0 | | 1 4490 | | | | | | | |
| 280 | 2,7-Nonadiene | 150 6 | -72 5 | 1 4358 | 0 7499 | | | | | | |
| 281 | Allylcyclohexane (3-Cyclohexylpropene) | 151 | | 1 4536 ¹³ | 0 8196 ¹³ | di- | 143 4 ¹⁶ | | | 1 537 ⁰ | |
| 282 | 1-Ethylidene-4-methylcyclohexane | 152-3 | | 1 4571 ²¹ | 0 81 ²¹ | | | | | | Nitrosochloride, 2 forms a) 117-8, least soluble, b) 113-4, more soluble |
| 283 | 4,5-Dimethyl-2,6-octadiene | 152 9-3 8 | | 1 4375 ²⁵ | 0 7611 ²⁵ | | | | | | |
| 284 | 1-Ethylidene-3-methylcyclohexane | 153 | | 1 458 ⁴ | 0 8135 ¹⁹ | | | | | | Nitrosochloride, 114, acet |
| 285 | 3,6-Dimethyl-2,6-octadiene | 153-5 | | 1 44453 | 0 7767 | | | | | | |
| 286 | 2,6-Dimethyl-2,7-octadiene | 155 6 ⁷²⁰ | | 1 4385 ¹⁸ | 0 7605 ¹⁸ | | | | | | |

*Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES,
DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point, °C | Melting point, °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|-----|--|---|-------------------|------------------------------|------------------------------|--------------------------|-----------------------|------------|------------------------------|------------------------------|--|
| | | | | | | x Bromo | B P, °C | M P, °C | n _D ²⁰ | D ₄ ²⁰ | |
| 287 | α-Pinene | 156 0-6 3 | -50 | 1 4560 | 0 8600 | <i>di-</i> | | 169 70, al | | | Nitroschloride, 109, Hydrobromide, 89, Nitrosobromide, 91 2d, Acid KMnO ₄ → pinonic ac, 103-5 |
| 288 | 1-Ethylidene-2-methylcyclohexane | 158 | | 1 47 | 0 823 ⁰ | | | | | | |
| 289 | 2,4-Dimethyl-2,4-octadiene | 161 3 ⁷⁴⁶ | | 1 4558 ^{9 8} | 0 7802 ^{9 8} | | | | | | |
| 290 | 1,4,4-Trimethylcycloheptene (Eucarvene) | 161-5 ⁷²⁰ | | 1 4561 | 0 8185 | | | | | | |
| 291 | β-Pinene (Nopinene, Pseudopinene) | 163-4 | | 1 4782 | 0 8694 | | | | | | [α] _D -22 |
| 292 | 2,7-Dimethyl-2,6-octadiene | 163 5 4 5 | | 1 44814 | 0 7849 | <i>tetra-</i> | | 124-7 | | | |
| 293 | 3,7-Dimethyl-2,4-octadiene | 164-7, 58 ¹² | | 1 456 | 0 7933 | | | | | | |
| 294 | 1-4-Carene (3,7,7-Trimethylbicyclo[2,2,1]hept-2-ene) | 165 5 7 0 ⁷⁰⁷ | | 1 474 ³⁰ | 0 8552 ³⁰ | | | | | | [α] _B ³⁰ +62 2 |
| 295 | Myrcene (2-Methyl-6-methylene-2,7-octadiene) | 166 | | 1 4722 | 0 7982 | | | | | | Maleic anh adduct, 33-4, 1,4-Naphthoquinone adduct, 81 Methodide, 130d |
| 296 | 2,6-Dimethyl-2,6-octadiene | 168, 56 ¹⁴ | | 1 45245 ¹⁵ | 0 775 ²¹ | | | | | | |
| 297 | 1-3-Carene (3,7,7-Trimethylbicyclo[2,2,1]hept-3-ene) | 168 9 ⁷⁰⁵ , 123 4 ²⁰⁰ | | 1 469 ³⁰ | 0 8586 ³⁰ | | | | | | [α] _B ³⁰ +7 69, Nitroschloride, 100-1 |
| 298 | 3,8-o-Menthadiene (cis-3-Isopropenyl-4-methylcyclohexene) | 169-70 | | 1 4749 | 0 8507 | | | | | | |
| 299 | 5-Decene | 170 ⁷⁵⁰ | -112 to -111 | 1 4260 | 0 7474 | <i>di-</i> | 119 ⁹ | | 1 4912 | 1 3484 | |
| 300 | p-8-Menthene (1-Isopropenyl-4-methylcyclohexane) | 170 | | 1 4523 | 0 8142 | | | | | | |
| 301 | d-m-8-Menthene (1-Isopropenyl-3-methylcyclohexane) | 170 | | 1 4546 | 0 8179 | | | | | | [α] _D +9 73 |
| 302 | l-m-8-Menthene (1-Isopropenyl-3-methylcyclohexane) | 170-1 | | 1 4574 | 0 8189 | | | | | | [α] _D -8 06 |
| 303 | 6,8-o-Menthadiene (3-Isopropenyl-2-methylcyclohexene) | 170 1 | | 1 4758 | 0 8481 | | | | | | |
| 304 | 5,8-o-Menthadiene (4-Isopropenyl-3-methylcyclohexene) | 170-1 | | 1 4778 | 0 8490 ¹⁷ | | | | | | |
| 305 | 1-Decene | 170 57 | -66 31 | 1 42146 | 0 74081 | <i>di-</i> | 145 160 ¹⁸ | | 1 4891 ²⁴ | 1 324 ²⁸ | Mercaptosuccinic acid adduct, 93 5- 8 |
| 306 | 4-Decene | 170 6 | | 1 4243 | 0 7404 | | | | | | |

*Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point, °C | Melting point, °C | n _D ²⁰ | D ₄ ²⁰ | Bromine addition product | | | | | Miscellaneous |
|-----|--|-----------------------------|-------------------|------------------------------|------------------------------|--------------------------|----------|-------------------|------------------------------|------------------------------|---|
| | | | | | | <i>α</i> -Bromo- | B P., °C | M P., °C | n _D ²⁰ | D ₄ ²⁰ | |
| 307 | <i>p</i> -Menthene (1-Isopropylidene-4-methylcyclohexane) | 172-4 | | 1.4568 | 0.819 ²¹ | | | | | | Nitroschloride, 101-3 |
| 308 | 1-Isopropenyl-1,4-cyclohexadiene | 172-6 | | 1.5216 | 0.9068 | tetra- | | 113 | | | |
| 309 | <i>o</i> -Menthene (1-Isopropylidene-2-methylcyclohexane) | 173, 160-2 | | 1.467 | 0.8345 | | | | | | |
| 310 | <i>m</i> -Menthene (1-Isopropylidene-3-methylcyclohexane) | 173-5 | | 1.4670 | 0.8214 | | | | | | |
| 311 | <i>α</i> -Terpinene (1-Isopropyl-4-methyl-1,3-cyclohexadiene) | 173.5 4.8 ²⁵⁵ | | 1.477 | 0.8375 | | | | | | Dihydrochloride, 53-4, me al, Dihydrobromide, 58.9, me al, Dihydroiodide, 76, me al, Nitrosite, 155, Maleic anhydride, 62, 66-7 |
| 312 | 2,4- <i>p</i> -Menthadiene (2-Isopropyl-5-methyl-1,3-cyclohexadiene) | 174.6 | | 1.4845 ²⁷ | 0.8441 ²⁷ | | | | | | |
| 313 | 1,5-Isopropyl-2-methyl-1,3-cyclohexadiene | 174-7 | | 1.4732 | 0.8425 | | | | | | [<i>α</i>] _D ²⁰ -112.76, Nitrosite, <i>α</i> 120-1, <i>β</i> 105.6 |
| 314 | 1,5- <i>p</i> -Menthadiene (5-Isopropyl-2-methyl-1,3-cyclohexadiene) | 175.6 | | 1.4777 | 0.8463 ²⁵ | | | | | | [<i>α</i>] _D +49.1, Nitrosite, <i>α</i> 113-4, <i>β</i> 105. Maleic anhydride, 126-7, pet eth |
| 315 | <i>d</i> -Silvestrene | 175.8 | | 1.4760 | 0.8479 | tetra- | | 135 | | | Dihydrochloride, 72, Nitroschloride, 106-7 |
| 316 | <i>d</i> -Limonene | 176.6-4 | | 1.4743 | 0.8411 | tetra- | | 104 | | | Nitroschloride, 100-4, 2,4-Dinitrophenylsulfenyl chloride, 195-6 |
| 317 | Isocarvestrene (5-Isopropenyl-1-methylcyclohexene) | 176.7 ⁶⁵ | | 1.4804 | 0.8496 | tetra- | | 137-8, me al -chl | | | Dihydrochloride, 71.5, me al |
| 318 | 1,3-Isopropenyl-1-methylcyclohexene | 176-8 | | 1.4761 ¹⁸ | 0.848 ¹⁹ | | | | | | [<i>α</i>] _D ²⁰ -68.2, Dihydrochloride, 72 |
| 319 | Dipentene (<i>d,l</i> -Limonene) | 177.6-8.0 | | 1.4727 ²⁰ | 0.8402 ²⁰ | tetra- | | 125, eth | | | Dihydrochloride, 50-1, al |
| 320 | 3,8- <i>m</i> -Menthadiene (1-Isopropenyl-5-methylcyclohexene) | 179 ³⁰ | | 1.4972 | | | | | | | [<i>α</i>] _D +17.5 |
| 321 | Menogerene (5-Isopropylidene-2-methyl-1,3-cyclohexadiene) | 180.7 ⁶⁰ | | 1.5005 | 0.8672 | di- | | 115 | | | |
| 322 | <i>γ</i> -Terpinene (1-Isopropyl-4-methyl-1,4-cyclohexadiene) | 183 | | 1.4765 ^{14.5} | 0.849 | tetra- | | 129-30, pet eth | | | [<i>α</i>] _D ²⁰ +36, Nitroschloride, 111, Nitrosate, 116d, ac a-me al |
| 323 | <i>d,l</i> -2,8- <i>m</i> -Menthadiene (1-Isopropenyl-3-methylcyclohexene) | 184.7 | | 1.503 | 0.864 ²⁰ | | | | | | |

* Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES,
DIENES AND POLYENES

a) Liquids 1) (Listed in order of increasing b.p.)* (Continued)

| No | Name | Boiling point, °C | Melting point, °C | n_D^{20} | D_4^{20} | Bromine addition product | | | | | Miscellaneous | |
|-----|---|--------------------------------|-------------------|----------------------|----------------------|--------------------------|---------------------|----------------------------------|------------|------------|--|--|
| | | | | | | α -Bromo | B P °C | M P °C | n_D^{20} | D_4^{20} | | |
| 324 | Menogene (3-Iso-propylidene-6-methylcyclohexene) | 184 6 ⁷⁶⁴ 5 | | 1 5026 | 0 8624 | | | | | | | Nitrosite, 155, me al or chl, Maleic anh adduct, 205 8 Maleic anh adduct, 182 |
| 325 | Terpinolene (4-Iso-propylidene-1-methylcyclohexene) | 186 | | 1 4883 | 0 8633 $\frac{1}{3}$ | <i>di-tetra-2 forms</i> | | 69 70 a) 119, ac a, b) 122 | | | | |
| 326 | 2-Undecene (2-Hendecene) | 192 3, 78 5 ¹⁴ | | 1 43325 | 0 7735 $\frac{1}{3}$ | <i>di-</i> | 145 6 ⁹ | | | | | |
| 327 | 5-Undecene (5-Hendecene) | 192 2 | | 1 4289 | 0 7511 | | | | | | | |
| 328 | 1-Undecene (1-Undecene) | 192 67 | -49 19 | 1 42609 | 0 75032 | <i>di-</i> | 186 ¹³ | | 1 4916 | 1 3122 | | |
| 329 | <i>cis</i> -Cyclodecene | 194 5 ⁷⁴⁰ | | 1 4854 | 0 8770 | <i>di-</i> | | 121 | | | O ₃ → Sebacic acid, 134 5 | |
| 330 | 1-Dodecene | 213 36 88 7 ¹⁰ | -35 23 | 1 43002 | 0 75836 | <i>di-</i> | | -15 | | | | |
| 331 | 1-Tridecene | 232 78 104 5 ¹⁰ | -23 07 | 1 4336 | 0 7653 | | | | | | | |
| 332 | 1-Tetradecene | 251 1, 119 0 ¹⁰ | -12 85 | 1 43631 | 0 7713 | <i>di-</i> | | 0 | | | Mercaptosuccinic acid adduct, 104 0 8 | |
| 333 | Cedrene | 262-3, 124 6 ¹² | | 1 5001 ¹⁹ | 0 9359 $\frac{1}{3}$ | | | | | | | |
| 334 | 1-Pentadecene | 268 17, 133 7 ¹⁰ | -3 73 | 1 4389 | 0 77641 | <i>di-</i> | 204-5 ¹⁷ | | 1 4897 | 1 2235 | | |
| 335 | 1-Hexadecene | 284 4 103 9 ¹ | 4 12 | 1 44120 | 0 78112 | <i>di-</i> | 225 7 ¹⁵ | 13 5, al | | | 1% Hot KMnO ₄ → <i>n</i> pentadecylic ac, 52 3, Mercaptosuccinic acid adduct, 105 0 8 | |
| 336 | 1-Heptadecene | 299 7, 116 ¹ | 11 2 | 1 4432 | 0 7852 | | | | | | | |
| 337 | 2-Methyl-2-heptadecene | 314, 277 ¹⁰⁰ | -2 5 | | 0 7953 | <i>di-</i> | 267-8 ²⁸ | | | | | |
| 338 | 1-Octadecene | 314 2, 128 ¹ | 17 6 | 1 4449 | 0 7888 | <i>di-</i> | | 24, al | | | | |

* Derivative data given in order m p, crystal color, solvent from which crystallized

TABLE II. ORGANIC DERIVATIVES OF ALKENES, CYCLOALKENES, DIENES AND POLYENES

a) Liquids 2) (B.p. at reduced pressure only. Listed alphabetically)

| No | Name | Boiling point, °C | Melting point, °C | n_D^{20} | D_4^{20} | Miscellaneous |
|----|---|-----------------------------------|-------------------|-----------------------|-----------------------|---|
| 1 | Bicyclo[12,2,2]octadeca-14,16,18-triene | 163.5 ⁴ 5 ⁵ | | 1.5204 ²⁵ | | Maleic anhydride adduct, 143.4 |
| 2 | Bicyclo[4,2,0]oct-3-ene | 81 ¹⁴⁰ | | 1.4832 | | |
| 3 | Butylcyclooctatetraene | 98 ²⁰ | | 1.5083 ²⁵ | 0.8876 ²⁵ | |
| 4 | trans-Cyclodecene | 68-70 ¹⁰ | | 1.4822 | 0.8672 | O ₃ → Sebacic acid, 134.5 |
| 5 | 1,5,9,13-Cyclohexadecatetraene | 93.8 ⁰ 8 ⁸ | | 1.5472 | | |
| 6 | trans-Cyclononene | 73.4 ³⁰ | | 1.4799 | 0.8615 | Phenylazide adduct, 97.8.8.2 |
| 7 | 1,3-Cyclooctadecadiene | 115 ³ | | 1.4899 | 0.8814 | |
| 8 | 1,3-Cyclooctadiene | 48 ²⁵ | -57 to -55 | 1.4940 ²⁵ | 0.8699 ²⁵ | |
| 9 | 1,3,6-Cyclooctatriene | 68 ⁶⁰ | -62 to -56 | | 0.8940 ²⁵ | |
| 10 | 1,3-Cyclotetradecadiene | 106-8 ³ | | 1.4982 | 0.8723 ²⁵ | Nitroschloride, 109-10, Nitrosate, 210d |
| 11 | 1,2-Dimethylcyclooctatetraene | 107 ⁹⁶ | | 1.5219 ²⁵ | 0.8950 ²⁵ | Maleic anhydride adduct, 184.5-5.5, benzylidene, AgNO ₃ adduct, 142.5.4.5, al |
| 12 | 2,6-Dimethyl-2,5-octadiene | 59.0-5 ¹² | | 1.4500 | 0.733 | |
| 13 | Ethylcyclooctatetraene | 81 ³⁷ | | 1.5187 ²⁵ | 0.8996 ²⁵ | Maleic anhydride adduct, 97.8.5, benzylidene-cyclohexane, AgNO ₃ adduct, 124-5.5, al |
| 14 | 5-Methylcycloheptene | 69.70 ³⁸ | | 1.42016 ³¹ | 0.76061 ³¹ | |
| 15 | Methylcyclooctatetraene | 84.5 ⁶⁷ | | 1.5249 ²⁵ | 0.8978 ²⁵ | |
| 16 | 7-Pentadecene | 114 ³² | | 1.4420 | 0.7765 | |
| 17 | Propylcyclooctatetraene | 73 ⁹ | | 1.5131 ²⁵ | 0.8870 ²⁵ | |

*Derivative data given in order m p, crystal color, solvent from which crystallized