

Certificate of Composition
 Part #: SD-053-001 and SD-053-006
 PIANO Blend

ASTM D6730 with Helium Carrier

Summary by Group

| <u>Group</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> | <u>Avg MW</u> | <u>Avg SG</u> |
|------------------------------|----------------|----------------|----------------|---------------|---------------|
| Paraffin | 13.612 | 15.444 | 15.324 | 13.416 | 0.101 |
| I-Paraffins | 32.969 | 36.074 | 32.957 | 32.494 | 0.245 |
| Aromatics | 37.343 | 31.738 | 33.599 | 36.806 | 0.278 |
| <i>Mono-Aromatics</i> | 35.129 | 30.071 | 31.995 | 34.624 | 0.261 |
| <i>Naphthalenes</i> | 0.930 | 0.679 | 0.655 | 0.917 | 0.007 |
| <i>Indanes</i> | 1.231 | 0.946 | 0.907 | 1.214 | 0.009 |
| <i>Indenes</i> | 0.052 | 0.041 | 0.042 | 0.051 | 0.000 |
| Naphthenes | 4.973 | 4.845 | 4.998 | 4.902 | 0.037 |
| <i>Mono-Naphthenes</i> | 4.957 | 4.832 | 4.987 | 4.886 | 0.037 |
| <i>Di/Bicyclo-Naphthenes</i> | 0.016 | 0.013 | 0.011 | 0.016 | 0.000 |
| Olefins | 11.015 | 11.820 | 13.063 | 10.857 | 0.082 |
| <i>n-Olefins</i> | 3.286 | 3.718 | 4.313 | 3.238 | 0.024 |
| <i>Iso-Olefins</i> | 5.994 | 6.456 | 6.856 | 5.908 | 0.045 |
| <i>Naphtheno-Olefins</i> | 1.553 | 1.456 | 1.694 | 1.530 | 0.012 |
| <i>Di-Olefins</i> | 0.182 | 0.189 | 0.200 | 0.180 | 0.001 |
| Oxygenates | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Unidentified | 0.088 | 0.080 | 0.058 | 0.087 | 0.001 |
| Plus | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | 100.000 | 100.000 | 100.000 | 98.561 | 0.744 |

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Component List

| <u>Pk#</u> | <u>Time</u> | <u>C#</u> | <u>Component</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> |
|------------|-------------|-----------|--------------------------|-------------|-------------|-------------|
| 1 | 7.350 | 3 | Propane | 0.032 | 0.049 | 0.073 |
| 2 | 8.437 | 4 | i-Butane | 0.421 | 0.569 | 0.715 |
| 3 | 9.137 | 4 | Isobutene | 0.019 | 0.024 | 0.034 |
| 4 | 9.172 | 4 | Butene-1 | 0.024 | 0.031 | 0.042 |
| 5 | 9.472 | 4 | n-Butane | 3.182 | 4.131 | 5.395 |
| 6 | 9.817 | 4 | Vinyl-Acetylene | 0.004 | 0.004 | 0.008 |
| 7 | 9.887 | 4 | t-Butene-2 | 0.166 | 0.206 | 0.291 |
| 8 | 9.988 | 5 | 2,2-Dimethylpropane | 0.014 | 0.018 | 0.020 |
| 9 | 10.507 | 4 | c-Butene-2 | 0.197 | 0.239 | 0.347 |
| 10 | 12.163 | 5 | 3-Methylbutene-1 | 0.083 | 0.100 | 0.117 |
| 11 | 13.240 | 5 | i-Pentane | 4.779 | 5.738 | 6.528 |
| 12 | 14.253 | 5 | Pentene-1 | 0.289 | 0.336 | 0.406 |
| 13 | 14.740 | 5 | 2-Methylbutene-1 | 0.573 | 0.656 | 0.806 |
| 14 | 15.033 | 5 | n-Pentane | 2.347 | 2.788 | 3.206 |
| 15 | 15.370 | 5 | 2-Methyl-1,3-Butadiene | 0.015 | 0.016 | 0.021 |
| 16 | 15.633 | 5 | t-Pentene-2 | 0.790 | 0.914 | 1.111 |
| 17 | 16.002 | 6 | 3,3-Dimethylbutene-1 | 0.009 | 0.010 | 0.011 |
| 18 | 16.185 | 5 | c-Pentene-2 | 0.440 | 0.499 | 0.618 |
| 19 | 16.530 | 5 | 2-Methylbutene-2 | 1.133 | 1.277 | 1.593 |
| 20 | 16.728 | 5 | 1t,3-Pentadiene | 0.016 | 0.017 | 0.023 |
| 21 | 17.447 | 5 | 1,3-Cyclopentadiene | 0.006 | 0.007 | 0.009 |
| 22 | 17.593 | 6 | 2,2-Dimethylbutane | 0.259 | 0.298 | 0.296 |
| 23 | 18.898 | 5 | Cyclopentene | 0.142 | 0.137 | 0.206 |
| 24 | 19.255 | 6 | 4-Methylpentene-1-trans | 0.051 | 0.058 | 0.060 |
| 25 | 19.328 | 6 | 3-Methylpentene-1 | 0.080 | 0.087 | 0.094 |
| 26 | 19.717 | 5 | Cyclopentane | 0.231 | 0.231 | 0.325 |
| 27 | 19.902 | 6 | 2,3-Dimethylbutane | 0.810 | 0.911 | 0.927 |
| 28 | 20.047 | 6 | 2,3-Dimethylbutene-1 | 0.086 | 0.093 | 0.100 |
| 29 | 20.197 | 6 | 2-Pentene-CIS- ,4-methyl | 0.045 | 0.048 | 0.053 |
| 30 | 20.302 | 6 | 2-Methylpentane | 2.832 | 3.216 | 3.239 |
| 31 | 20.452 | 6 | 4-Methyl-t-pentene-2-E | 0.147 | 0.163 | 0.173 |
| 32 | 21.458 | 6 | 3-Methylpentane | 1.922 | 2.152 | 2.198 |
| 33 | 21.927 | 6 | 2-Methylpentene-1 | 0.252 | 0.274 | 0.295 |
| 34 | 22.018 | 6 | Hexene-1 | 0.128 | 0.142 | 0.150 |
| 35 | 22.990 | 6 | n-Hexane | 2.024 | 2.279 | 2.315 |
| 36 | 23.223 | 6 | t-Hexene-3 | 0.179 | 0.192 | 0.210 |
| 37 | 23.297 | 6 | c-Hexene-3 | 0.067 | 0.073 | 0.079 |
| 38 | 23.452 | 6 | t-Hexene-2 | 0.361 | 0.407 | 0.422 |
| 39 | 23.663 | 6 | 2-Methylpentene-2 | 0.396 | 0.424 | 0.464 |
| 40 | 23.760 | 6 | 3-Methylcyclopentene | 0.094 | 0.087 | 0.112 |
| 41 | 23.917 | 6 | 3-Methyl-c-pentene-2 | 0.252 | 0.268 | 0.295 |
| 42 | 24.053 | 6 | 4-methylcyclopentene | 0.048 | 0.044 | 0.057 |
| 43 | 24.290 | 6 | c-Hexene-2 | 0.204 | 0.219 | 0.238 |
| 44 | 24.518 | ? | Unidentified | 0.002 | 0.002 | 0.001 |

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|------------|-------------|-----------|---------------------------------|-------------|-------------|-------------|
| 45 | 24.875 | 6 | 2-Pentene, 3-methyl- | 0.392 | 0.420 | 0.460 |
| 46 | 25.005 | 6 | 3-Methyl-t-pentene-2 | 0.004 | 0.004 | 0.004 |
| 47 | 25.193 | 7 | 2,2-Dimethylpentane | 0.134 | 0.143 | 0.132 |
| 48 | 25.410 | 6 | Methylcyclopentane | 1.150 | 1.143 | 1.347 |
| 49 | 25.827 | 7 | 2,4-Dimethylpentane | 0.892 | 0.960 | 0.877 |
| 50 | 25.912 | 6 | 2-Pentene-c&t-, 4-methyl- | 0.034 | 0.036 | 0.039 |
| 51 | 26.068 | 7 | 2,3,3-Trimethylbutene-1 | 0.007 | 0.007 | 0.007 |
| 52 | 26.290 | 7 | 2,2,3-Trimethylbutane | 0.052 | 0.056 | 0.051 |
| 53 | 26.428 | 6 | 1,3-Pentadiene, 2-methyl-, (E)- | 0.006 | 0.006 | 0.007 |
| 54 | 26.663 | 6 | C6_Naphtheno-Olefins(1) | 0.010 | 0.010 | 0.012 |
| 55 | 27.028 | 7 | 3,4-Dimethylpentene-1 | 0.006 | 0.006 | 0.006 |
| 56 | 27.148 | 6 | C6_Naphtheno-Olefins(2) | 0.014 | 0.013 | 0.016 |
| 57 | 27.527 | 7 | 2,4-Dimethylpentene-1 | 0.030 | 0.031 | 0.030 |
| 58 | 27.683 | 6 | C6_Naphtheno-Olefins(3) | 0.019 | 0.018 | 0.022 |
| 59 | 27.802 | 6 | 1-Methylcyclopentene | 0.345 | 0.312 | 0.414 |
| 60 | 27.987 | 6 | Benzene | 2.267 | 1.926 | 2.863 |
| 61 | 28.183 | 7 | 5-Methylhexene-1 | 0.018 | 0.019 | 0.018 |
| 62 | 28.437 | 7 | 2-Pentene, 2,4-dimethyl- | 0.172 | 0.180 | 0.173 |
| 63 | 28.705 | 7 | 1-Pentene, 2,3-dimethyl- | 0.018 | 0.019 | 0.018 |
| 64 | 28.885 | 6 | Cyclohexane | 0.217 | 0.208 | 0.254 |
| 65 | 29.158 | 7 | cis-2-Methyl-hexene-3 | 0.060 | 0.062 | 0.060 |
| 66 | 29.385 | 7 | 1,4-Hexadiene, 2-methyl- | 0.021 | 0.021 | 0.022 |
| 67 | 29.533 | 7 | 1,4-Pentadiene, 3,3-dimethyl- | 0.043 | 0.045 | 0.044 |
| 68 | 29.810 | 7 | 2-Hexene, 4-methyl-, (E)- | 0.121 | 0.126 | 0.121 |
| 69 | 29.977 | 7 | 2-Methylhexane | 1.614 | 1.733 | 1.588 |
| 70 | 30.162 | 7 | 2,3-Dimethylpentane | 1.417 | 1.526 | 1.394 |
| 71 | 30.498 | 7 | 1,1-Dimethylcyclopentane | 0.036 | 0.034 | 0.036 |
| 72 | 30.843 | 6 | Cyclohexene | 0.046 | 0.043 | 0.056 |
| 73 | 31.042 | 7 | 3-Methylhexane | 1.716 | 1.842 | 1.687 |
| 74 | 31.510 | 7 | 1,5-Heptadiene | 0.047 | 0.048 | 0.048 |
| 75 | 31.858 | 7 | 1t,3-Dimethylcyclopentane | 0.310 | 0.302 | 0.311 |
| 76 | 32.228 | 7 | 1c,3-Dimethylcyclopentane | 0.271 | 0.264 | 0.272 |
| 77 | 32.395 | 7 | 3-Ethylpentane | 0.239 | 0.256 | 0.235 |
| 78 | 32.610 | 7 | 1t,2-Dimethylcyclopentane | 0.174 | 0.170 | 0.175 |
| 79 | 32.772 | 8 | 2,2,4-Trimethylpentane | 4.770 | 5.128 | 4.115 |
| 80 | 33.392 | ? | Unidentified | 0.003 | 0.003 | 0.002 |
| 81 | 33.630 | 7 | 3-Methyl-c-hexene-3 | 0.078 | 0.082 | 0.079 |
| 82 | 34.133 | 7 | 2-Methylhexene-1 | 0.165 | 0.174 | 0.166 |
| 83 | 34.208 | 7 | 3,5-Dimethylcyclopentene | 0.090 | 0.085 | 0.092 |
| 84 | 34.377 | 7 | n-Heptane | 1.278 | 1.399 | 1.257 |
| 85 | 34.708 | 7 | 3-Methyl-c-hexene-2 | 0.314 | 0.327 | 0.315 |
| 86 | 34.872 | 7 | 2-Methyl-2-hexene | 0.115 | 0.120 | 0.115 |
| 87 | 35.130 | 7 | 3-Methyl-t-hexene-3 | 0.131 | 0.136 | 0.131 |
| 88 | 35.382 | 7 | t-Heptene-2 | 0.067 | 0.071 | 0.067 |

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|------------|-------------|-----------|---|-------------|-------------|-------------|
| 89 | 35.853 | 7 | (Z)-4-Methyl-2-hexene | 0.188 | 0.197 | 0.189 |
| 90 | 35.935 | 7 | Cyclopentene, 1,5-dimethyl- | 0.058 | 0.053 | 0.059 |
| 91 | 36.417 | 7 | 2-Pentene, 3,4-dimethyl-, (E)- | 0.108 | 0.110 | 0.109 |
| 92 | 36.488 | 7 | 2-Heptene | 0.034 | 0.035 | 0.034 |
| 93 | 36.690 | 7 | 2,3-Dimethylpentene-2 | 0.007 | 0.007 | 0.007 |
| 94 | 37.113 | 7 | 3-Ethylcyclopentene | 0.018 | 0.016 | 0.018 |
| 95 | 37.397 | 7 | 1c,2-Dimethylcyclopentane | 0.182 | 0.177 | 0.182 |
| 96 | 37.537 | 7 | Methylcyclohexane | 0.392 | 0.379 | 0.393 |
| 97 | 37.882 | 8 | 2,2-Dimethylhexane | 0.051 | 0.054 | 0.044 |
| 98 | 38.012 | 8 | 1,1,3-Trimethylcyclopentane | 0.061 | 0.059 | 0.053 |
| 99 | 38.650 | 8 | Butane, 2,2,3,3-tetramethyl- | 0.009 | 0.010 | 0.008 |
| 100 | 39.023 | 8 | 1,3-Dimethyl-1-cyclohexene | 0.007 | 0.007 | 0.007 |
| 101 | 39.568 | 7 | Ethylcyclopentane | 0.073 | 0.070 | 0.073 |
| 102 | 39.697 | 8 | 2,5-Dimethylhexane | 0.697 | 0.734 | 0.602 |
| 103 | 39.913 | 8 | 2,2,3-Trimethylpentane | 0.068 | 0.072 | 0.059 |
| 104 | 40.060 | 8 | 2,4-Dimethylhexane | 0.957 | 1.007 | 0.826 |
| 105 | 40.390 | 7 | 1,4-Heptadiene | 0.011 | 0.011 | 0.011 |
| 106 | 40.767 | 7 | Cyclohexene, 4-methyl- | 0.004 | 0.004 | 0.004 |
| 107 | 41.163 | 8 | Cyclopentane, 1,2,4-trimethyl-, (1à,2á0.121 | 0.121 | 0.119 | 0.106 |
| 108 | 41.385 | 8 | 3,3-Dimethylhexane | 0.051 | 0.053 | 0.044 |
| 109 | 41.855 | 7 | Cyclopentane, 1,3-bis(methylene)- | 0.007 | 0.007 | 0.008 |
| 110 | 42.257 | 8 | 3-Hexene, 3,4-dimethyl-, (Z)- | 0.013 | 0.013 | 0.011 |
| 111 | 42.405 | 8 | 2-Hexene, 2,4-dimethyl- | 0.040 | 0.041 | 0.035 |
| 112 | 42.633 | 8 | 1t,2c,3-Trimethylcyclopentane | 0.072 | 0.071 | 0.063 |
| 113 | 43.173 | 8 | 2,3,4-Trimethylpentane | 1.602 | 1.688 | 1.383 |
| 114 | 43.417 | 7 | Cyclopentene, 4,4-dimethyl- | 0.196 | 0.183 | 0.201 |
| 115 | 43.732 | 7 | 1-Ethylcyclopentene | 0.052 | 0.048 | 0.054 |
| 116 | 44.055 | 8 | 2,3,3-Trimethylpentane | 0.998 | 1.047 | 0.861 |
| 117 | 44.362 | 7 | Toluene | 7.171 | 6.187 | 7.671 |
| 118 | 44.667 | 8 | 5,5-Dimethyl-1,3-hexadiene | 0.029 | 0.029 | 0.026 |
| 119 | 44.955 | 8 | 3-Ethyl-3-Hexene | 0.051 | 0.052 | 0.045 |
| 120 | 45.568 | 8 | 2,3-Dimethylhexane | 0.742 | 0.781 | 0.640 |
| 121 | 45.835 | 8 | 2-Methyl-3-ethylpentane | 0.064 | 0.067 | 0.056 |
| 122 | 46.073 | 8 | 2-Hexene, 2,5-dimethyl- | 0.056 | 0.057 | 0.049 |
| 123 | 46.543 | 8 | 3-Methyl-3-ethylpentane | 0.073 | 0.077 | 0.063 |
| 124 | 46.970 | 8 | 2-Methylheptane | 0.662 | 0.694 | 0.571 |
| 125 | 47.327 | 8 | 4-Methylheptane | 0.258 | 0.271 | 0.223 |
| 126 | 47.607 | 9 | Hexane, 2,3,3-trimethyl- | 0.082 | 0.085 | 0.063 |
| 127 | 47.737 | 8 | 3,4-Dimethylhexane | 0.088 | 0.093 | 0.076 |
| 128 | 48.342 | 8 | 1c,2c,4-Trimethylcyclopentane | 0.075 | 0.073 | 0.066 |
| 129 | 48.453 | 8 | 1c,2t,3-Trimethylcyclopentane | 0.032 | 0.031 | 0.028 |
| 130 | 48.817 | 8 | 3-Methylheptane | 0.678 | 0.711 | 0.585 |
| 131 | 49.103 | 8 | 3-Ethylhexane | 0.190 | 0.200 | 0.164 |
| 132 | 49.217 | 8 | i-Propylcyclopentane | 0.061 | 0.057 | 0.053 |

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|------------|-------------|-----------|----------------------------------|-------------|-------------|-------------|
| 133 | 49.427 | 8 | 1t,2-Dimethylcyclohexane | 0.071 | 0.069 | 0.063 |
| 134 | 49.713 | 8 | 1,3-dimethyl-c-cyclohexane | 0.069 | 0.067 | 0.061 |
| 135 | 50.175 | 8 | Heptane, 4-methylene- | 0.011 | 0.012 | 0.010 |
| 136 | 51.150 | 8 | 1,1-Dimethylcyclohexane | 0.010 | 0.010 | 0.009 |
| 137 | 51.638 | 9 | 2,2,5-Trimethylhexane | 0.464 | 0.478 | 0.357 |
| 138 | 52.118 | 8 | 3c-Ethylmethylcyclopentane | 0.167 | 0.162 | 0.147 |
| 139 | 52.707 | 8 | 3t-Ethylmethylcyclopentane | 0.115 | 0.112 | 0.101 |
| 140 | 53.072 | 8 | 1c,4-Dimethylcyclohexane | 0.081 | 0.079 | 0.071 |
| 141 | 53.738 | 8 | 3-Heptene, 4-methyl- | 0.054 | 0.055 | 0.047 |
| 142 | 54.380 | 8 | C8_Naphtheno-Olefins(1) | 0.106 | 0.098 | 0.094 |
| 143 | 54.697 | 8 | C8_Mono-Naphthenes(3) | 0.053 | 0.051 | 0.047 |
| 144 | 55.400 | 8 | 3-Heptene, 3-methyl- | 0.022 | 0.022 | 0.019 |
| 145 | 55.548 | 8 | 3-Octene, (Z)- | 0.128 | 0.130 | 0.112 |
| 146 | 56.005 | 8 | trans-3,5-DimethylCyclohexene | 0.010 | 0.009 | 0.009 |
| 147 | 56.322 | 8 | n-Octane | 0.784 | 0.835 | 0.676 |
| 148 | 56.658 | 8 | Cyclohexane c&t, 1,4-dimethyl- | 0.139 | 0.133 | 0.122 |
| 149 | 57.568 | 8 | c-Octene-2 | 0.051 | 0.052 | 0.045 |
| 150 | 57.823 | 8 | C8_Iso-Olefins(1) | 0.015 | 0.014 | 0.013 |
| 151 | 58.233 | 8 | Cyclopentene, 1,2,3-trimethyl- | 0.123 | 0.114 | 0.110 |
| 152 | 58.655 | 8 | 2-Hexene, 3,5-dimethyl- | 0.086 | 0.083 | 0.076 |
| 153 | 59.480 | 8 | C8_Iso-Olefins(2) | 0.008 | 0.007 | 0.007 |
| 154 | 60.235 | 8 | t-Octene-3 | 0.025 | 0.026 | 0.022 |
| 155 | 60.763 | 8 | Cyclohexene, 1-ethyl- | 0.004 | 0.004 | 0.004 |
| 156 | 61.128 | 8 | Cyclopentene, 1-(1-methylethyl)- | 0.005 | 0.005 | 0.005 |
| 157 | 61.635 | 9 | 2,3,5-Trimethylhexane | 0.073 | 0.076 | 0.056 |
| 158 | 62.317 | 8 | Cyclopentane, 1-ethyl-2-methyl- | 0.048 | 0.046 | 0.042 |
| 159 | 62.587 | 8 | C8_Iso-Olefins(3) | 0.012 | 0.011 | 0.010 |
| 160 | 62.902 | ? | Unidentified | 0.039 | 0.035 | 0.025 |
| 161 | 63.808 | 9 | 2,4-Dimethylheptane | 0.020 | 0.020 | 0.015 |
| 162 | 64.427 | 9 | C9_I-Paraffins(3) | 0.047 | 0.049 | 0.036 |
| 163 | 64.427 | 8 | C8_Naphtheno-Olefins(3) | 0.045 | 0.046 | 0.040 |
| 164 | 65.922 | ? | Unidentified | 0.010 | 0.009 | 0.006 |
| 165 | 66.360 | 8 | Ethylcyclohexane | 0.131 | 0.123 | 0.115 |
| 166 | 66.973 | 9 | 2,6-Dimethylheptane | 0.070 | 0.072 | 0.054 |
| 167 | 67.625 | 9 | 1-Ethyl-2-Methylcyclopentene | 0.018 | 0.018 | 0.014 |
| 168 | 67.923 | ? | Unidentified | 0.013 | 0.012 | 0.009 |
| 169 | 68.265 | 8 | C8_Naphtheno-Olefins(4) | 0.041 | 0.041 | 0.036 |
| 170 | 68.740 | 9 | C9_Mono-Naphthenes(5) | 0.013 | 0.013 | 0.010 |
| 171 | 69.268 | 9 | 3,5-Dimethyl-3-heptene | 0.012 | 0.013 | 0.009 |
| 172 | 69.607 | 9 | 2,5-Dimethylheptane | 0.171 | 0.176 | 0.131 |
| 173 | 70.080 | 9 | Heptane, 3,3-dimethyl- | 0.047 | 0.048 | 0.036 |
| 174 | 70.485 | 9 | 1,1,4-Trimethylcyclohexane | 0.023 | 0.022 | 0.018 |
| 175 | 70.992 | 9 | C9_Mono-Naphthenes(10) | 0.033 | 0.032 | 0.026 |
| 176 | 71.577 | 9 | trans-1,3-Diethylcyclopentane | 0.029 | 0.024 | 0.023 |

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|------------|-------------|-----------|--|-------------|-------------|-------------|
| 177 | 71.977 | 9 | C9_Iso-Olefins(2) | 0.005 | 0.005 | 0.004 |
| 178 | 72.673 | 9 | 4-Nonene | 0.023 | 0.023 | 0.018 |
| 179 | 73.578 | 8 | Ethylbenzene | 1.934 | 1.668 | 1.795 |
| 180 | 74.073 | 9 | 1c,2t,4t-Trimethylcyclohexane | 0.060 | 0.059 | 0.047 |
| 181 | 74.788 | 9 | 3-Heptene, 4-ethyl- | 0.037 | 0.037 | 0.029 |
| 182 | 75.437 | 9 | Cyclohexane, 1,3,5-trimethyl-, (1à,3à, | 0.008 | 0.008 | 0.007 |
| 183 | 76.562 | 8 | m-Xylene | 4.105 | 3.511 | 3.811 |
| 184 | 76.873 | 8 | p-Xylene | 1.786 | 1.543 | 1.658 |
| 185 | 77.552 | 9 | 3,5-Dimethylheptane | 0.022 | 0.022 | 0.017 |
| 186 | 77.812 | 8 | 1-Heptene, 5-methyl- | 0.040 | 0.042 | 0.036 |
| 187 | 78.268 | 9 | C9_Mono-Naphthenes(13) | 0.024 | 0.023 | 0.018 |
| 188 | 78.562 | 9 | 4-Ethylheptane | 0.049 | 0.051 | 0.038 |
| 189 | 78.733 | 10 | Cyclopentane, 1-methyl-3-(2-methyl-20.008enyl)-0.007 | 0.016 | 0.017 | 0.012 |
| 190 | 79.137 | 9 | 2-Heptene, 2,6-dimethyl- | 0.016 | 0.017 | 0.012 |
| 191 | 79.512 | 9 | 4-Methyloctane | 0.195 | 0.201 | 0.150 |
| 192 | 79.828 | 9 | 2-Methyloctane | 0.274 | 0.282 | 0.210 |
| 193 | 80.198 | 9 | C9_Naphtheno-Olefins(3) | 0.043 | 0.044 | 0.034 |
| 194 | 80.405 | 8 | 3-Hexene, 2,3-dimethyl- | 0.009 | 0.009 | 0.008 |
| 195 | 80.777 | 10 | 3-Hexene, 3-ethyl-2,5-dimethyl- | 0.003 | 0.003 | 0.002 |
| 196 | 81.337 | 9 | Heptane, 3-ethyl- | 0.065 | 0.067 | 0.050 |
| 197 | 81.742 | 9 | 3-Methyloctane | 0.280 | 0.288 | 0.215 |
| 198 | 82.085 | 10 | 3-Heptyne, 5-ethyl-5-methyl- | 0.016 | 0.015 | 0.011 |
| 199 | 82.470 | 9 | 2,6-Dimethylheptene-1 | 0.042 | 0.043 | 0.033 |
| 200 | 83.158 | 8 | o-Xylene | 2.415 | 2.041 | 2.242 |
| 201 | 83.722 | 9 | C9_Iso-Olefins(3) | 0.013 | 0.014 | 0.010 |
| 202 | 83.958 | 10 | 2,2,4-trimethylheptane | 0.057 | 0.058 | 0.039 |
| 203 | 84.612 | 9 | Cyclopentane, 1-methyl-2-propyl- | 0.040 | 0.039 | 0.031 |
| 204 | 84.912 | 9 | 1-Ethyl-4-methylcyclohexane | 0.064 | 0.062 | 0.050 |
| 205 | 85.183 | 9 | C9_Mono-Naphthenes(21) | 0.008 | 0.008 | 0.006 |
| 206 | 85.482 | 9 | cis-1-Ethyl-3-methyl-cyclohexane | 0.010 | 0.010 | 0.008 |
| 207 | 85.690 | 10 | Octane, 3,3-dimethyl- | 0.094 | 0.095 | 0.065 |
| 208 | 86.017 | 9 | 1à,2à,3à,4à-Tetramethylcyclopentane | 0.011 | 0.011 | 0.009 |
| 209 | 86.292 | 9 | t-Nonene-3 | 0.015 | 0.015 | 0.012 |
| 210 | 86.560 | 9 | Cyclohexane, 1-ethyl-2-methyl-, cis- | 0.026 | 0.026 | 0.021 |
| 211 | 86.755 | 10 | Cyclohexane, 1-isopropyl-1-methyl- | 0.010 | 0.010 | 0.007 |
| 212 | 87.622 | 9 | trans-4-Nonene | 0.057 | 0.062 | 0.045 |
| 213 | 87.953 | 10 | C10_Iso-Olefins(1) | 0.012 | 0.012 | 0.008 |
| 214 | 88.117 | 9 | cis-4-Nonene | 0.031 | 0.031 | 0.024 |
| 215 | 88.317 | 9 | cis-3-Nonene | 0.018 | 0.020 | 0.014 |
| 216 | 88.557 | 9 | 2-Methyl-2-octene | 0.040 | 0.040 | 0.031 |
| 217 | 88.775 | 10 | Heptane, 3,3,5-trimethyl- | 0.049 | 0.049 | 0.034 |
| 218 | 89.178 | 9 | n-Nonane | 0.632 | 0.655 | 0.485 |
| 219 | 89.667 | 9 | 1,1-Methylethylcyclohexane | 0.050 | 0.048 | 0.039 |
| 220 | 89.955 | 9 | C9_Iso-Olefins(4) | 0.019 | 0.019 | 0.015 |

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Component List

| <u>Pk#</u> | <u>Time</u> | <u>C#</u> | <u>Component</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> |
|------------|-------------|-----------|--|-------------|-------------|-------------|
| 221 | 90.198 | 10 | i-Butylcyclohexane | 0.018 | 0.017 | 0.013 |
| 222 | 90.345 | 9 | Cyclohexane, 1-ethyl-4-methyl-, trans | 0.022 | 0.021 | 0.017 |
| 223 | 91.582 | 9 | i-Propylbenzene | 0.165 | 0.143 | 0.136 |
| 224 | 92.047 | 9 | C9_Mono-Naphthenes(23) | 0.018 | 0.018 | 0.014 |
| 225 | 92.280 | 10 | C10_I-Paraffins(4) | 0.007 | 0.007 | 0.005 |
| 226 | 92.575 | 9 | Propylcyclohexane | 0.009 | 0.008 | 0.007 |
| 227 | 93.058 | 10 | Heptane, 2,3,5-trimethyl- | 0.042 | 0.043 | 0.029 |
| 228 | 93.443 | 10 | C10_I-Paraffins(6) | 0.005 | 0.005 | 0.004 |
| 229 | 93.573 | 10 | Heptane, 2,4,6-trimethyl- | 0.033 | 0.034 | 0.023 |
| 230 | 93.980 | 10 | 1,6-Octadiene, 2,5-dimethyl-, (E)- | 0.010 | 0.010 | 0.007 |
| 231 | 94.507 | 9 | C9_Mono-Naphthenes(25) | 0.009 | 0.008 | 0.007 |
| 232 | 94.782 | 10 | C10_I-Paraffins(8) | 0.006 | 0.006 | 0.004 |
| 233 | 94.782 | 9 | C9_Mono-Naphthenes(26) | 0.006 | 0.005 | 0.004 |
| 234 | 95.130 | 10 | t-2,2,5,5-Tetramethylhexene-3 | 0.082 | 0.082 | 0.058 |
| 235 | 95.488 | 10 | C10_I-Paraffins(10) | 0.004 | 0.004 | 0.003 |
| 236 | 95.992 | 10 | 2,3,6-trimethylheptane | 0.076 | 0.077 | 0.053 |
| 237 | 96.223 | 10 | 2,7-dimethyloctane | 0.027 | 0.028 | 0.019 |
| 238 | 96.668 | 10 | C10_Mono-Naphthenes(1) | 0.005 | 0.005 | 0.004 |
| 239 | 96.993 | 10 | 2,6-Dimethyloctane | 0.065 | 0.066 | 0.045 |
| 240 | 97.378 | 10 | C10_I-Paraffins(12) | 0.004 | 0.004 | 0.003 |
| 241 | 97.555 | 10 | 3-Octene, 4-ethyl- | 0.010 | 0.010 | 0.007 |
| 242 | 97.997 | 9 | n-Propylbenzene | 0.648 | 0.557 | 0.532 |
| 243 | 98.457 | 10 | 3-Methyl-5-ethylheptane | 0.010 | 0.011 | 0.007 |
| 244 | 98.937 | 10 | Cyclopentane, 2-isopropyl-1,3-dimethyl- | 0.016 | 0.017 | 0.012 |
| 245 | 99.593 | 9 | 1-Methyl-3-ethylbenzene | 1.823 | 1.564 | 1.495 |
| 246 | 99.953 | 9 | 1-Methyl-4-ethylbenzene | 0.796 | 0.689 | 0.653 |
| 247 | 100.480 | 9 | 1,5-Heptadiene, 2,6-dimethyl- | 0.002 | 0.002 | 0.002 |
| 248 | 101.083 | 9 | 1,3,5-Trimethylbenzene | 0.821 | 0.707 | 0.673 |
| 249 | 101.548 | 10 | C10_Mono-Naphthenes(4) | 0.005 | 0.005 | 0.004 |
| 250 | 101.698 | 10 | Trans-1,4-diethylcyclohexane | 0.005 | 0.005 | 0.004 |
| 251 | 101.860 | 9 | 2,3,3-Trimethyl-1-hexene | 0.006 | 0.006 | 0.005 |
| 252 | 102.110 | 10 | 5-Methylnonane | 0.050 | 0.051 | 0.035 |
| 253 | 102.527 | 11 | 2,4,6-Trimethyloctane | 0.350 | 0.352 | 0.221 |
| 254 | 102.888 | 9 | 1-Methyl-2-ethylbenzene | 0.873 | 0.738 | 0.716 |
| 255 | 103.235 | 10 | Cyclopentane, 1-methyl-3-(2-methylpropyl)- | 0.013 | 0.013 | 0.009 |
| 256 | 103.503 | 10 | 3-Ethyloctane | 0.020 | 0.020 | 0.014 |
| 257 | 104.092 | 10 | 3-Methylnonane | 0.138 | 0.140 | 0.096 |
| 258 | 104.292 | 10 | 4-Octene, 2,6-dimethyl-, [S-(Z)]- | 0.014 | 0.014 | 0.010 |
| 259 | 104.513 | 10 | C10_Mono-Naphthenes(6) | 0.007 | 0.006 | 0.005 |
| 260 | 104.800 | 11 | Heptane, 2,2,3,5-tetramethyl- | 0.093 | 0.094 | 0.058 |
| 261 | 105.273 | 10 | C10_I-Paraffins(16) | 0.012 | 0.012 | 0.009 |
| 262 | 105.423 | 11 | C11_I-Paraffins(1) | 0.008 | 0.008 | 0.005 |
| 263 | 105.660 | 9 | 1,2,4-Trimethylbenzene | 2.981 | 2.532 | 2.444 |
| 264 | 106.037 | ? | Unidentified | 0.008 | 0.007 | 0.005 |

Recovery = 100.000

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Component List

| <u>Pk#</u> | <u>Time</u> | <u>C#</u> | <u>Component</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> |
|------------|-------------|-----------|-------------------------------------|-------------|-------------|-------------|
| 265 | 106.203 | 10 | 1-Octene, 2,6-dimethyl- | 0.052 | 0.055 | 0.037 |
| 266 | 106.358 | 11 | Octane, 2,2,6-trimethyl- | 0.032 | 0.032 | 0.020 |
| 267 | 106.662 | 9 | Cyclopentane, 1-methyl-3-(1-methyl- | 0.020 | 0.019 | 0.016 |
| 268 | 107.108 | 9 | C9_Mono-Naphthenes(30) | 0.018 | 0.017 | 0.014 |
| 269 | 107.633 | 10 | trans-4-Decene | 0.019 | 0.019 | 0.013 |
| 270 | 107.833 | 11 | Octane, 2,3,3-trimethyl- | 0.056 | 0.057 | 0.035 |
| 271 | 108.182 | 10 | 3-Heptene, 4-propyl- | 0.014 | 0.014 | 0.010 |
| 272 | 108.338 | 10 | i-Butylbenzene | 0.103 | 0.089 | 0.075 |
| 273 | 108.493 | 11 | C11_I-Paraffins(3) | 0.012 | 0.012 | 0.008 |
| 274 | 108.803 | 10 | sec-Butylbenzene | 0.081 | 0.071 | 0.060 |
| 275 | 109.045 | 10 | n-Decane | 0.704 | 0.718 | 0.488 |
| 276 | 109.362 | 11 | C11_I-Paraffins(4) | 0.021 | 0.022 | 0.013 |
| 277 | 109.513 | 11 | Octane, 6-ethyl-2-methyl- | 0.015 | 0.015 | 0.009 |
| 278 | 109.810 | 11 | C11_I-Paraffins(5) | 0.003 | 0.003 | 0.002 |
| 279 | 110.293 | 9 | 1,2,3-Trimethylbenzene | 0.755 | 0.628 | 0.619 |
| 280 | 110.597 | 10 | 1-Methyl-3-i-propylbenzene | 0.138 | 0.120 | 0.102 |
| 281 | 110.868 | 10 | C10_Mono-Aromatics(1) | 0.004 | 0.004 | 0.003 |
| 282 | 111.090 | 10 | 1-Methyl-4-i-propylbenzene | 0.056 | 0.049 | 0.041 |
| 283 | 111.482 | 11 | Octane, 2,6,6-trimethyl- | 0.020 | 0.020 | 0.013 |
| 284 | 111.628 | 11 | C11_I-Paraffins(7) | 0.006 | 0.006 | 0.004 |
| 285 | 111.823 | 11 | C11_I-Paraffins(8) | 0.011 | 0.011 | 0.007 |
| 286 | 112.117 | 9 | Indan | 0.292 | 0.218 | 0.244 |
| 287 | 112.460 | 11 | C11_I-Paraffins(10) | 0.028 | 0.028 | 0.018 |
| 288 | 112.908 | 11 | C11_I-Paraffins(12) | 0.021 | 0.021 | 0.013 |
| 289 | 113.140 | 9 | Indene | 0.028 | 0.021 | 0.024 |
| 290 | 113.422 | 11 | 2,5,6-Trimethyloctane | 0.110 | 0.110 | 0.069 |
| 291 | 113.702 | 11 | C11_I-Paraffins(13) | 0.033 | 0.033 | 0.021 |
| 292 | 113.803 | 10 | n-ButylCyclohexane | 0.010 | 0.010 | 0.007 |
| 293 | 114.452 | 12 | Heptane, 5-ethyl-2,2,3-trimethyl- | 0.053 | 0.053 | 0.030 |
| 294 | 114.693 | 12 | Undecane, 2-methyl- | 0.020 | 0.020 | 0.012 |
| 295 | 114.873 | 10 | 1,3-Diethylbenzene | 0.213 | 0.184 | 0.156 |
| 296 | 115.075 | 11 | Octane, 5-ethyl-2-methyl- | 0.052 | 0.052 | 0.033 |
| 297 | 115.260 | 10 | 1-Methyl-3-n-propylbenzene | 0.552 | 0.474 | 0.405 |
| 298 | 115.827 | 10 | 1-Methyl-4-n-propylbenzene | 0.333 | 0.287 | 0.245 |
| 299 | 115.987 | 10 | 1,4-Diethylbenzene | 0.170 | 0.146 | 0.125 |
| 300 | 116.288 | 10 | 1,3-Dimethyl-5-ethylbenzene | 0.435 | 0.373 | 0.320 |
| 301 | 116.638 | 10 | 1,2-Diethylbenzene | 0.052 | 0.044 | 0.038 |
| 302 | 116.815 | 10 | C10_Mono-Aromatics(2) | 0.003 | 0.002 | 0.002 |
| 303 | 117.215 | 10 | t-Decahydronaphthalene | 0.016 | 0.013 | 0.011 |
| 304 | 117.360 | 11 | C11_I-Paraffins(17) | 0.011 | 0.011 | 0.007 |
| 305 | 117.548 | 10 | 1-Methyl-2-n-propylbenzene | 0.231 | 0.199 | 0.170 |
| 306 | 117.778 | 10 | C10_I-Paraffins(20) | 0.010 | 0.010 | 0.007 |
| 307 | 117.972 | 11 | Decane, 5-methyl- | 0.130 | 0.130 | 0.082 |
| 308 | 118.240 | 11 | C11_Iso-Olefins(1) | 0.014 | 0.014 | 0.009 |

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Component List

| Pk# | Time | C# | Component | %Wgt | %Vol | %Mol |
|-----|---------|----|---------------------------------------|-------|-------|-------|
| 309 | 118.447 | 11 | Decane, 4-methyl- | 0.043 | 0.043 | 0.027 |
| 310 | 118.742 | 11 | C11_I-Paraffins(19) | 0.003 | 0.003 | 0.002 |
| 311 | 119.043 | 10 | 1,4-Dimethyl-2-ethylbenzene | 0.415 | 0.356 | 0.305 |
| 312 | 119.293 | 10 | Benzene, (2-methyl-1-propenyl)- | 0.438 | 0.362 | 0.327 |
| 313 | 119.673 | 10 | C10_Mono-Aromatics(5) | 0.005 | 0.004 | 0.004 |
| 314 | 119.848 | 11 | Decane, 3-methyl- | 0.052 | 0.052 | 0.033 |
| 315 | 120.152 | 10 | 1,2-Dimethyl-4-ethylbenzene | 0.694 | 0.595 | 0.510 |
| 316 | 120.582 | 10 | Indan, 1-methyl- | 0.008 | 0.006 | 0.006 |
| 317 | 121.017 | 11 | 1-Methyl-4-t-butylbenzene | 0.106 | 0.092 | 0.070 |
| 318 | 121.313 | 11 | C11_I-Paraffins(22) | 0.011 | 0.011 | 0.007 |
| 319 | 121.623 | 10 | Cyclopropane, 1,2-dimethyl-1-pentyl- | 0.011 | 0.010 | 0.008 |
| 320 | 121.923 | ? | Unidentified | 0.002 | 0.002 | 0.001 |
| 321 | 122.158 | 9 | 1-Octene, 6-methyl- | 0.006 | 0.007 | 0.005 |
| 322 | 122.312 | 9 | C9_Iso-Olefins(5) | 0.019 | 0.020 | 0.015 |
| 323 | 122.677 | 11 | 1-Ethyl-3-i-propylbenzene | 0.054 | 0.045 | 0.036 |
| 324 | 122.968 | 10 | 1,2-Dimethyl-3-ethylbenzene | 0.189 | 0.162 | 0.139 |
| 325 | 123.240 | ? | Unidentified | 0.002 | 0.002 | 0.001 |
| 326 | 123.532 | 11 | (1,2-dimethylpropyl)benzene | 0.013 | 0.011 | 0.009 |
| 327 | 123.757 | 11 | n-Undecane | 0.513 | 0.515 | 0.323 |
| 328 | 124.022 | 12 | C12_I-Paraffins(3) | 0.010 | 0.010 | 0.006 |
| 329 | 124.385 | 12 | Benzene, 2,4-dimethyl-1-(1-methylprc | 0.014 | 0.012 | 0.009 |
| 330 | 124.580 | 11 | 1-Ethyl-4-i-propylbenzene | 0.281 | 0.243 | 0.187 |
| 331 | 125.052 | 10 | 1,2,4,5-Tetramethylbenzene | 0.416 | 0.348 | 0.305 |
| 332 | 125.433 | 11 | C11_Mono-Aromatics(2) | 0.005 | 0.004 | 0.003 |
| 333 | 125.607 | 11 | 1-t-Butyl-2-methylbenzene | 0.003 | 0.003 | 0.002 |
| 334 | 125.945 | 11 | 1H-Indene,2,3-dihydro-2,2-dime | 0.016 | 0.013 | 0.011 |
| 335 | 126.120 | 11 | C11_Mono-Aromatics(3) | 0.009 | 0.008 | 0.006 |
| 336 | 126.253 | 11 | C11_I-Paraffins(25) | 0.011 | 0.011 | 0.007 |
| 337 | 126.840 | 12 | C12_I-Paraffins(4) | 0.004 | 0.004 | 0.003 |
| 338 | 126.970 | 12 | C12_I-Paraffins(5) | 0.009 | 0.009 | 0.005 |
| 339 | 127.230 | 12 | Benzene, 1-ethyl-4-(2-methylpropyl)- | 0.027 | 0.023 | 0.016 |
| 340 | 127.325 | 10 | 4-Methylindan | 0.245 | 0.186 | 0.182 |
| 341 | 127.708 | 11 | C11_Mono-Naphthenes(1) | 0.003 | 0.003 | 0.002 |
| 342 | 127.910 | 11 | Benzene, 1,3-diethyl-5-methyl- | 0.056 | 0.048 | 0.037 |
| 343 | 128.085 | 11 | C11_Mono-Aromatics(5) | 0.016 | 0.014 | 0.011 |
| 344 | 128.262 | 11 | Benzene, 1-(1,1-dimethylethyl)-3-metl | 0.120 | 0.104 | 0.080 |
| 345 | 128.432 | 10 | 1H-Indene, 1-methyl- | 0.024 | 0.020 | 0.018 |
| 346 | 128.655 | 10 | 2-Methylindan | 0.222 | 0.173 | 0.166 |
| 347 | 129.158 | 10 | 1,3-Dimethyl-2-ethylbenzene | 0.261 | 0.224 | 0.191 |
| 348 | 129.568 | 11 | C11_Mono-Naphthenes(2) | 0.004 | 0.004 | 0.002 |
| 349 | 129.740 | 11 | Benzene, 1,4-dimethyl-2-(1-methyleth | 0.017 | 0.015 | 0.011 |
| 350 | 129.928 | 11 | n-Pentylbenzene | 0.078 | 0.068 | 0.052 |
| 351 | 130.320 | 11 | 1,4-diethyl-2-methylbenzene | 0.057 | 0.049 | 0.038 |
| 352 | 130.445 | 11 | Benzene, 1-ethyl-3-(1-methylethyl)- | 0.041 | 0.035 | 0.027 |

Recovery = 100.000

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Component List

| <u>Pk#</u> | <u>Time</u> | <u>C#</u> | <u>Component</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> |
|------------|-------------|-----------|--|-------------|-------------|-------------|
| 353 | 130.727 | 10 | C10_I-Paraffins(21) | 0.010 | 0.010 | 0.007 |
| 354 | 130.882 | 11 | Benzene, (1,1-dimethylpropyl)- | 0.060 | 0.052 | 0.040 |
| 355 | 131.115 | 11 | 2,4-diethyl-1-methylbenzene | 0.062 | 0.053 | 0.041 |
| 356 | 131.352 | 12 | Decane, 4-ethyl- | 0.018 | 0.014 | 0.011 |
| 357 | 131.632 | 11 | C11_Mono-Aromatics(8) | 0.004 | 0.003 | 0.003 |
| 358 | 131.847 | 13 | Undecane, 2,7-dimethyl- | 0.011 | 0.011 | 0.006 |
| 359 | 131.958 | 11 | 1-methyl-4-(1-methylpropyl)be | 0.109 | 0.094 | 0.072 |
| 360 | 132.432 | 10 | Naphthalene | 0.317 | 0.228 | 0.244 |
| 361 | 132.667 | 12 | 1-t-Butyl-3,5-dimethylbenzene | 0.032 | 0.028 | 0.019 |
| 362 | 132.978 | 11 | 1H-Indene, 2,3-dihydro-1,3-dimethyl- | 0.038 | 0.031 | 0.026 |
| 363 | 133.502 | 11 | 4,7-Dimethyl Indane | 0.089 | 0.069 | 0.060 |
| 364 | 133.718 | 11 | 1,1-Dimethyl Indane | 0.040 | 0.032 | 0.027 |
| 365 | 134.160 | 12 | 1t-Butyl-4-ethylbenzene | 0.062 | 0.054 | 0.038 |
| 366 | 134.770 | 12 | 1,3-Di-n-propylbenzene | 0.144 | 0.125 | 0.088 |
| 367 | 134.993 | 11 | Benzene, 1,3-dimethyl-5-(1-methylethyl)- | 0.058 | 0.050 | 0.039 |
| 368 | 135.228 | 12 | 4-Octene, 2,3,6,7-tetramethyl- | 0.002 | 0.002 | 0.001 |
| 369 | 135.497 | 11 | C11_Mono-Aromatics(9) | 0.002 | 0.001 | 0.001 |
| 370 | 135.995 | 12 | n-Dodecane | 0.645 | 0.640 | 0.373 |
| 371 | 136.247 | 12 | Benzene, (3,3-dimethylbutyl)- | 0.004 | 0.004 | 0.003 |
| 372 | 136.777 | 12 | Benzene, (1,3-dimethylbutyl)- | 0.007 | 0.006 | 0.004 |
| 373 | 137.158 | 11 | Naphthalene, 1,2,3,4-tetrahydro-1-methyl- | 0.018 | 0.017 | 0.012 |
| 374 | 137.382 | 11 | C11_Mono-Aromatics(12) | 0.005 | 0.005 | 0.004 |
| 375 | 137.783 | 11 | C11_Mono-Aromatics(14) | 0.022 | 0.019 | 0.015 |
| 376 | 138.003 | 12 | 1,3,5-trimethyl-2-propylbenzene | 0.022 | 0.019 | 0.013 |
| 377 | 138.692 | 11 | 2-Ethyl-2,3-dihydro-1H-indene | 0.033 | 0.026 | 0.022 |
| 378 | 138.960 | 11 | 1H-Indene, 1-ethyl-2,3-dihydro- | 0.039 | 0.031 | 0.026 |
| 379 | 139.192 | 12 | 1H-Indene, 2,3-dihydro-1,1,4-trimethyl- | 0.014 | 0.011 | 0.009 |
| 380 | 139.382 | 12 | C12_Mono-Aromatics(6) | 0.005 | 0.004 | 0.003 |
| 381 | 139.485 | 12 | C12_Indanes(4) | 0.015 | 0.011 | 0.009 |
| 382 | 139.977 | 12 | Benzene, 1,4-dimethyl-2-(2-methylpropyl)- | 0.032 | 0.027 | 0.019 |
| 383 | 140.185 | 12 | C12_Mono-Aromatics(8) | 0.007 | 0.006 | 0.004 |
| 384 | 140.593 | 12 | Benzene, (1-ethyl-1-methylpropyl)- | 0.010 | 0.008 | 0.006 |
| 385 | 140.725 | 11 | C11_Indanes(1) | 0.081 | 0.062 | 0.054 |
| 386 | 141.115 | 12 | Benzene, 3-ethyl-1,2,4,5-tetramethyl- | 0.008 | 0.006 | 0.005 |
| 387 | 141.343 | 12 | Benzene, (2-ethylbutyl)- | 0.003 | 0.003 | 0.002 |
| 388 | 141.610 | 12 | C12_Mono-Aromatics(9) | 0.003 | 0.003 | 0.002 |
| 389 | 141.832 | 13 | Dodecane, 6-methyl- | 0.027 | 0.016 | 0.014 |
| 390 | 142.088 | 12 | 2,3-Dimethyldecane | 0.012 | 0.012 | 0.007 |
| 391 | 142.255 | 11 | 1-H-Indene, 1-3-dimethyl | 0.036 | 0.028 | 0.025 |
| 392 | 142.618 | 11 | 1H-Indene, 2,3-dihydro-4,6-dimethyl- | 0.025 | 0.019 | 0.017 |
| 393 | 143.080 | 13 | Decane, 2,3,8-trimethyl- | 0.015 | 0.015 | 0.008 |
| 394 | 143.393 | 12 | Benzene, 1-(1-methylethenyl)-4-(1-methylpropyl)- | 0.006 | 0.005 | 0.004 |
| 395 | 143.567 | 12 | C12_Mono-Aromatics(10) | 0.009 | 0.008 | 0.005 |
| 396 | 143.813 | 12 | C12_Mono-Aromatics(11) | 0.015 | 0.012 | 0.009 |

Recovery = 100.000

Certificate of Composition
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Component List

| Pk# | Time | C# | Component | %Wgt | %Vol | %Mol |
|-----|---------|----|---|-------|-------|-------|
| 397 | 143.978 | 12 | Benzene, 1-(1-methylethenyl)-2-(1-methyl-2-propenyl)- | 0.004 | 0.003 | 0.003 |
| 398 | 144.248 | 11 | Pentamethylbenzene | 0.078 | 0.067 | 0.052 |
| 399 | 144.848 | 12 | C12_Indanes(6) | 0.011 | 0.009 | 0.007 |
| 400 | 145.290 | 11 | 2-Methylnaphthalene | 0.284 | 0.207 | 0.197 |
| 401 | 145.600 | 12 | C12_Mono-Aromatics(15) | 0.017 | 0.014 | 0.010 |
| 402 | 145.865 | 12 | Naphthalene, 1,2,3,4-tetrahydro-5,6-dihydro- | 0.010 | 0.008 | 0.006 |
| 403 | 146.578 | 12 | 1H-Indene, 2,3-dihydro-1,4,7-trimethyl- | 0.011 | 0.009 | 0.007 |
| 404 | 146.787 | 13 | n-Tridecane | 0.515 | 0.506 | 0.275 |
| 405 | 147.020 | 11 | 1-Methylnaphthalene | 0.143 | 0.106 | 0.099 |
| 406 | 147.353 | 13 | C13_I-Paraffins(2) | 0.001 | 0.001 | 0.001 |
| 407 | 147.487 | 12 | C12_Indanes(7) | 0.002 | 0.001 | 0.001 |
| 408 | 148.373 | 12 | Naphthalene, 1,2,3,4-tetrahydro-1,1-dihydro- | 0.018 | 0.014 | 0.011 |
| 409 | 148.678 | 12 | 1H-Indene, 2,3-dihydro-4-propyl- | 0.005 | 0.004 | 0.003 |
| 410 | 149.087 | 12 | 1H-Indene, 2,3-dihydro-1,5,7-trimethyl- | 0.003 | 0.002 | 0.002 |
| 411 | 149.272 | 12 | Naphthalene, 1-ethyl-1,2,3,4-tetrahydro- | 0.006 | 0.005 | 0.004 |
| 412 | 149.807 | 13 | C13_I-Paraffins(3) | 0.003 | 0.003 | 0.002 |
| 413 | 150.255 | 13 | Naphthalene, 1,2,3,4-tetrahydro-6-propyl- | 0.011 | 0.009 | 0.006 |
| 414 | 151.012 | 12 | C12_Indanes(8) | 0.008 | 0.006 | 0.005 |
| 415 | 151.425 | 13 | 1-Methyl-4-Hexylbenzene | 0.006 | 0.006 | 0.004 |
| 416 | 151.633 | 13 | C13_I-Paraffins(4) | 0.006 | 0.006 | 0.003 |
| 417 | 151.952 | 12 | Naphthalene, 2-ethyl-1,2,3,4-tetrahydro- | 0.006 | 0.005 | 0.004 |
| 418 | 152.238 | 13 | C13_Mono-Naphthenes(1) | 0.006 | 0.005 | 0.003 |
| 419 | 152.555 | ? | Unidentified | 0.004 | 0.004 | 0.003 |
| 420 | 152.723 | 13 | Benzene, (2,4-dimethylpentyl)- | 0.005 | 0.004 | 0.003 |
| 421 | 153.205 | 13 | Undecane, 3-ethyl- | 0.006 | 0.006 | 0.003 |
| 422 | 153.548 | 12 | 1,1'-Biphenyl | 0.003 | 0.002 | 0.002 |
| 423 | 153.922 | 12 | Naphthalene, 2-ethenyl- | 0.005 | 0.003 | 0.003 |
| 424 | 154.712 | 13 | C13_I-Paraffins(6) | 0.004 | 0.003 | 0.002 |
| 425 | 155.470 | 12 | 1-Ethyl-naphthalene | 0.022 | 0.016 | 0.014 |
| 426 | 155.715 | 12 | 2-Ethyl-naphthalene | 0.013 | 0.010 | 0.008 |
| 427 | 156.632 | 14 | n-Tetradecane | 0.412 | 0.402 | 0.205 |
| 428 | 156.632 | 12 | Naphthalene,2,6 dimethyl | 0.000 | 0.000 | 0.000 |
| 429 | 156.770 | 12 | Naphthalene,2,7 dimethyl | 0.005 | 0.004 | 0.003 |
| 430 | 158.015 | 12 | Naphthalene,1,7-dimethyl | 0.025 | 0.019 | 0.016 |
| 431 | 158.015 | 12 | Naphthalene, 1,3-dimethyl- | 0.025 | 0.019 | 0.016 |
| 432 | 158.370 | 12 | Naphthalene, 1,6-dimethyl- | 0.024 | 0.018 | 0.015 |
| 433 | 159.935 | 12 | Naphthalene-1,4-dimethyl | 0.007 | 0.005 | 0.005 |
| 434 | 159.935 | 12 | Naphthalene, 2,3-dimethyl- | 0.007 | 0.005 | 0.005 |
| 435 | 160.187 | 12 | Naphthalene, 1,5-dimethyl- | 0.004 | 0.003 | 0.003 |
| 436 | 161.355 | 12 | Naphthalene, 1,2-dimethyl- | 0.012 | 0.008 | 0.007 |
| 437 | 163.612 | 13 | 1,1'-Biphenyl, 3-methyl- | 0.005 | 0.004 | 0.003 |
| 438 | 164.043 | 12 | Octane, 3,4,5,6-tetramethyl- | 0.003 | 0.003 | 0.002 |
| 439 | 164.463 | 13 | 1,1'-Biphenyl, 4-methyl- | 0.006 | 0.005 | 0.004 |
| 440 | 165.780 | 15 | n-Pentadecane | 0.546 | 0.528 | 0.253 |

Certificate of Composition
 Part #: SD-053-001 and SD-053-006
 PIANO Blend

ASTM D6730 with Helium Carrier

Component List

| <u>Pk#</u> | <u>Time</u> | <u>C#</u> | <u>Component</u> | <u>%Wgt</u> | <u>%Vol</u> | <u>%Mol</u> |
|------------|-------------|-----------|--|-------------|-------------|-------------|
| 441 | 165.955 | 13 | Naphthalene, 2,3,6-trimethyl- | 0.006 | 0.004 | 0.003 |
| 442 | 166.848 | ? | Unidentified | 0.003 | 0.003 | 0.002 |
| 443 | 167.017 | 13 | C13_Naphthalenes(1) | 0.002 | 0.002 | 0.001 |
| 444 | 167.913 | 13 | Naphthalene, 1,4,6-trimethyl- | 0.006 | 0.004 | 0.003 |
| 445 | 168.267 | 14 | 2,2'-Dimethylbiphenyl | 0.003 | 0.002 | 0.002 |
| 446 | 168.422 | 13 | Naphthalene, 1,4,5-trimethyl- | 0.004 | 0.003 | 0.002 |
| 447 | 169.800 | 13 | C13_Naphthalenes(4) | 0.004 | 0.003 | 0.002 |
| 448 | 170.190 | 13 | C13_Naphthalenes(5) | 0.004 | 0.003 | 0.002 |
| 449 | 171.235 | 13 | Naphthalene, 2-(1-methylethyl)- | 0.002 | 0.002 | 0.001 |
| 450 | 171.435 | 13 | Naphthalene, 1,6,7-trimethyl- | 0.004 | 0.003 | 0.002 |
| 451 | 171.602 | 14 | 4-Ethylbiphenyl | 0.005 | 0.004 | 0.003 |
| 452 | 172.963 | 14 | 3,3'-Dimethylbiphenyl | 0.005 | 0.003 | 0.002 |
| 453 | 174.867 | 14 | 4,4'-Dimethylbiphenyl | 0.001 | 0.001 | 0.000 |
| 454 | 174.992 | 14 | Naphthalene, 2,6-diethyl | 0.001 | 0.001 | 0.000 |
| 455 | 175.473 | 15 | Benzene, 1-methyl-3-[(4-methylphenyl)- | 0.001 | 0.001 | 0.000 |
| 456 | 176.257 | 14 | C14_Mono-Aromatics(1) | 0.003 | 0.002 | 0.002 |
| 457 | 179.523 | ? | Unidentified | 0.003 | 0.002 | 0.002 |
| 458 | 180.483 | 14 | 1,4,6,7-tetramethylnaphthalene | 0.004 | 0.003 | 0.002 |

Certificate of Composition
Part #: SD-053-001 and SD-053-006
PIANO Blend

ASTM D6730 with Helium Carrier

Sample Chromatogram

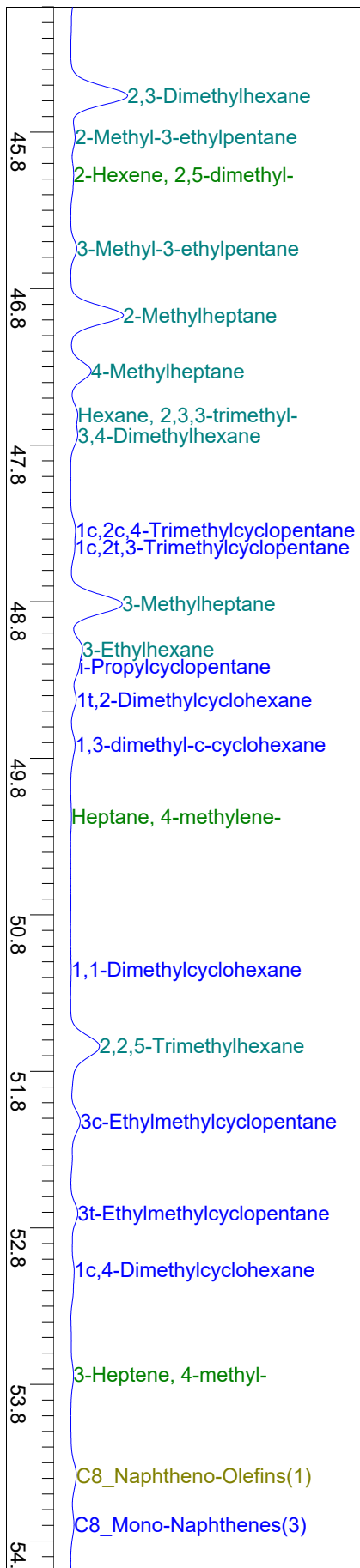


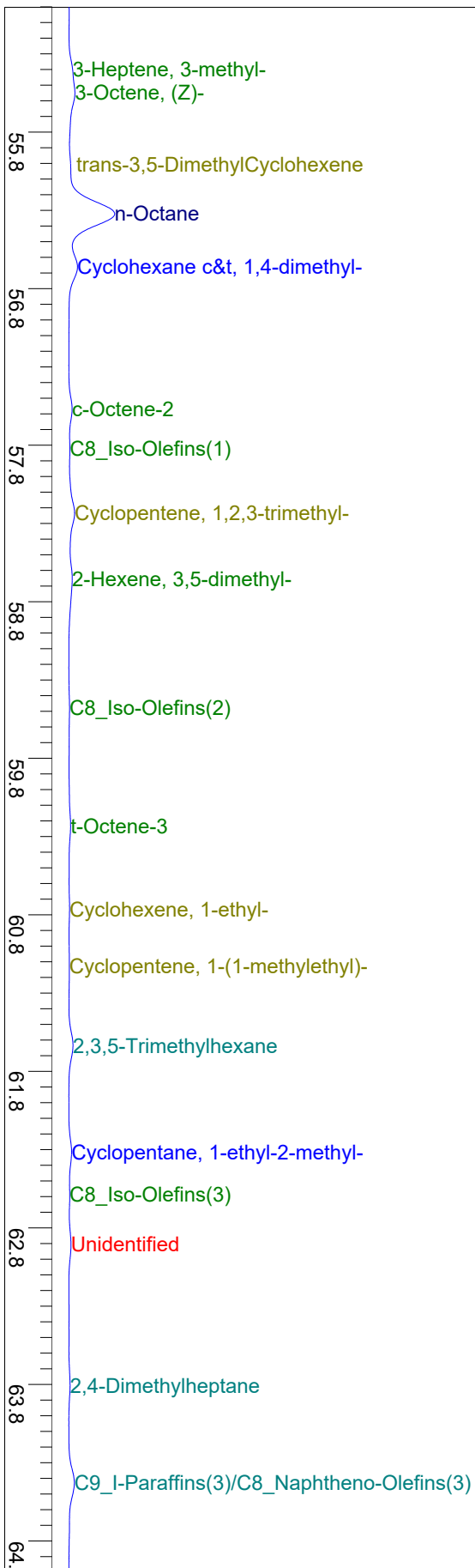
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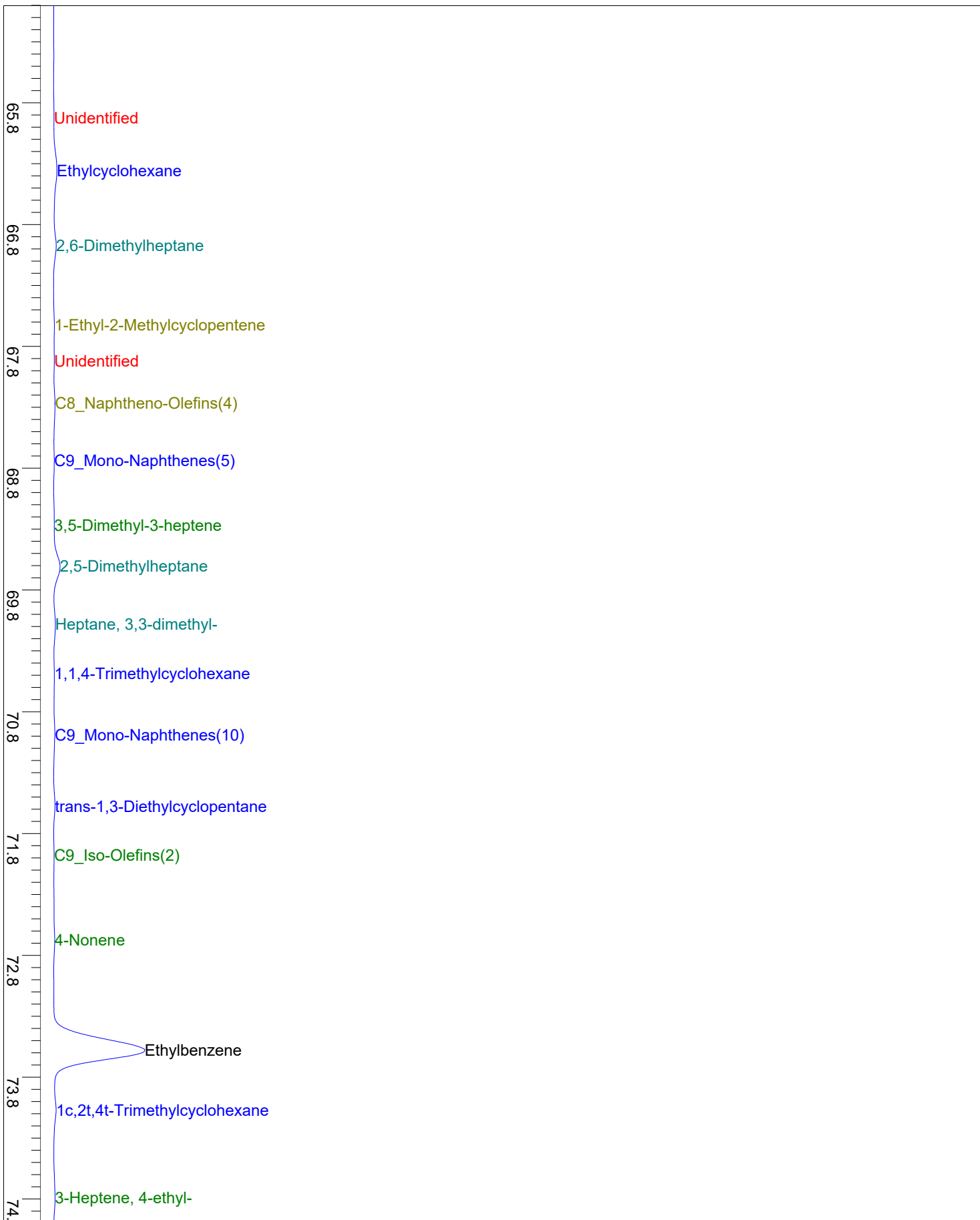


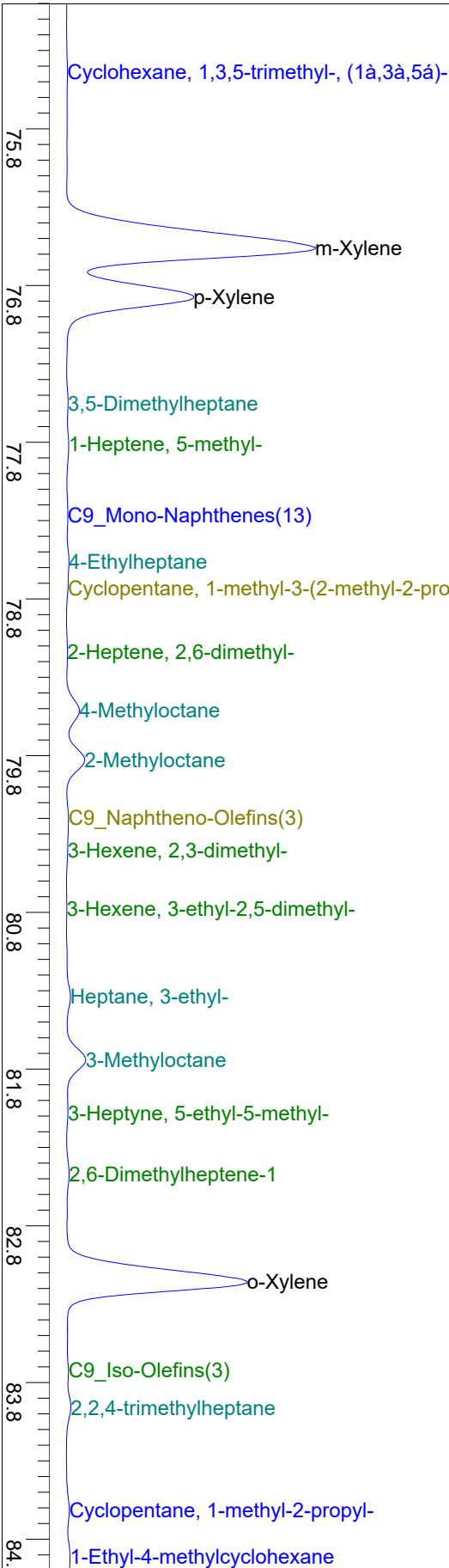


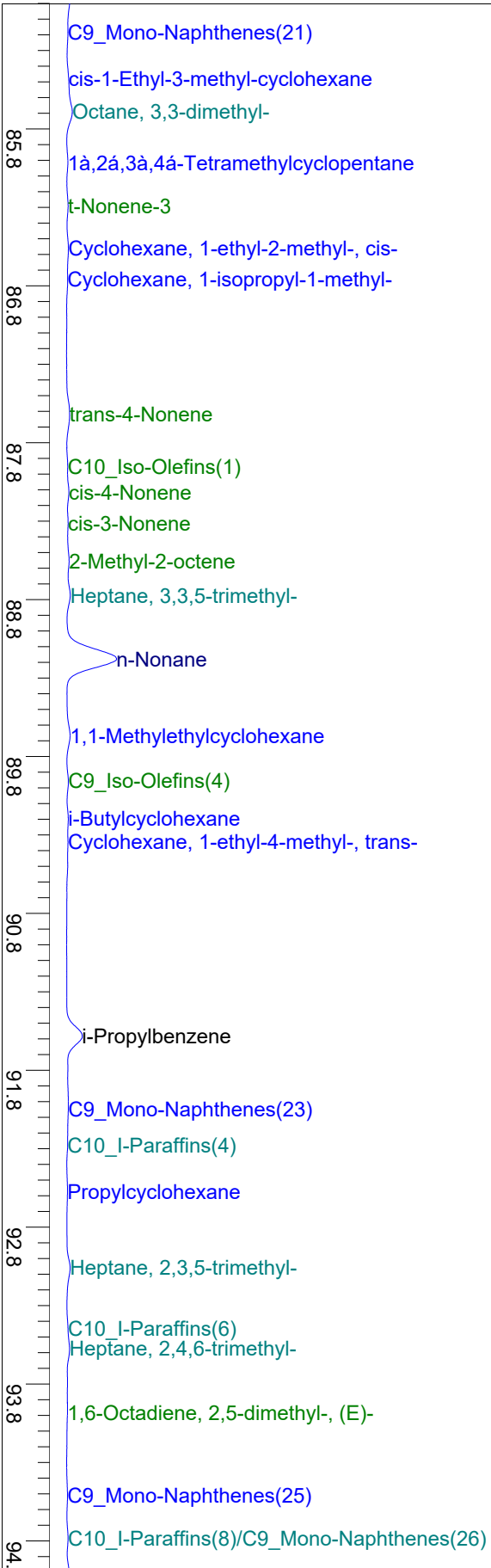


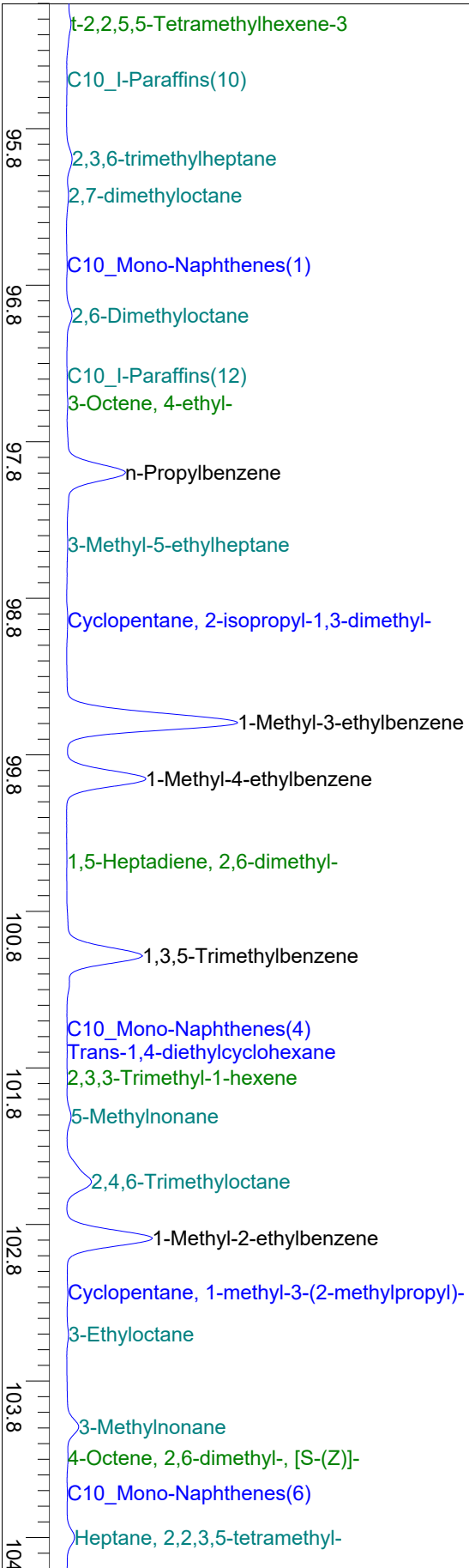


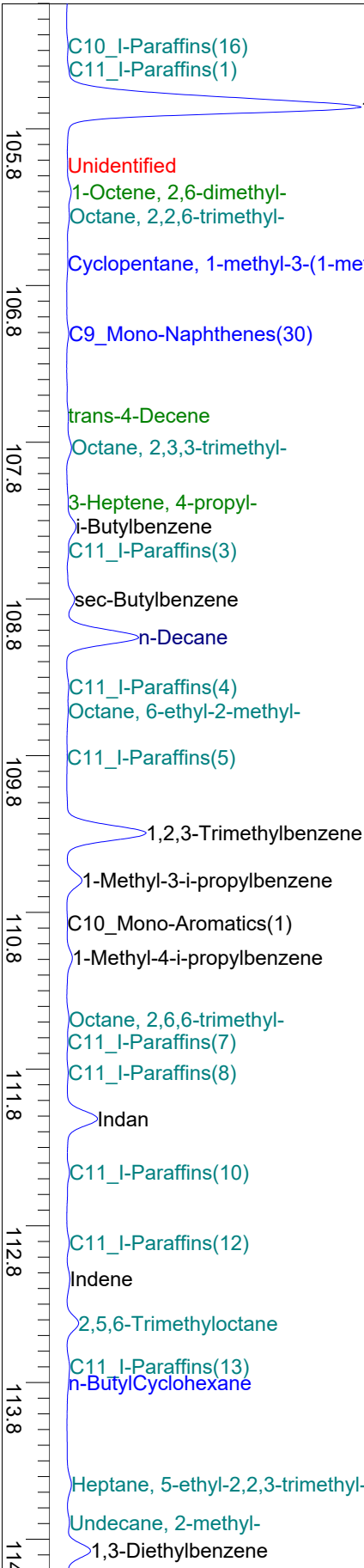


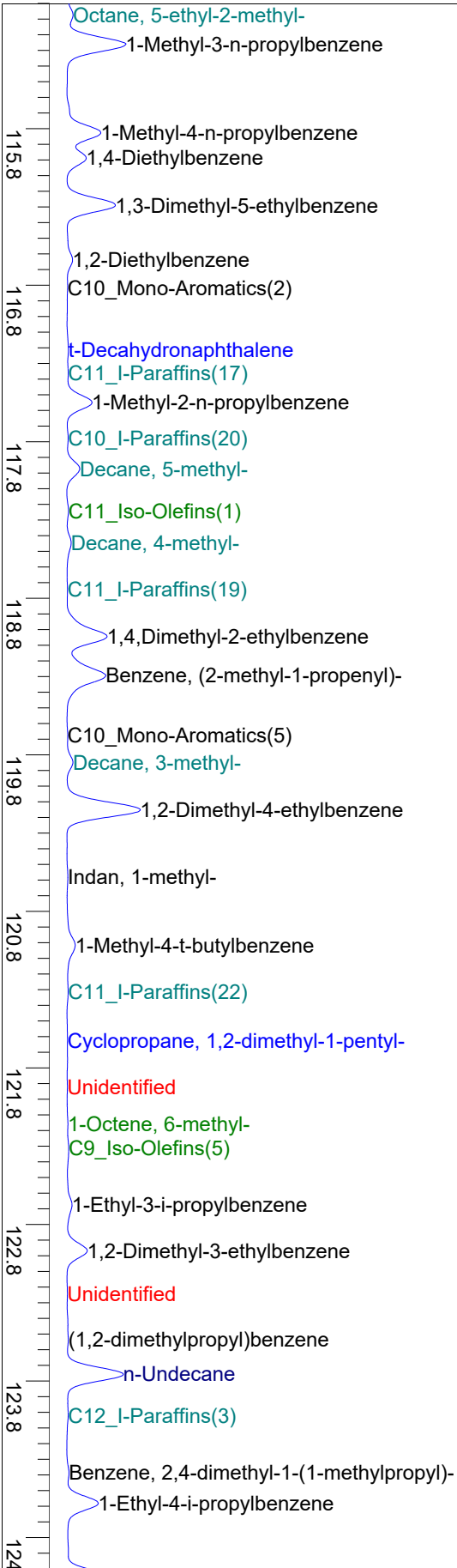


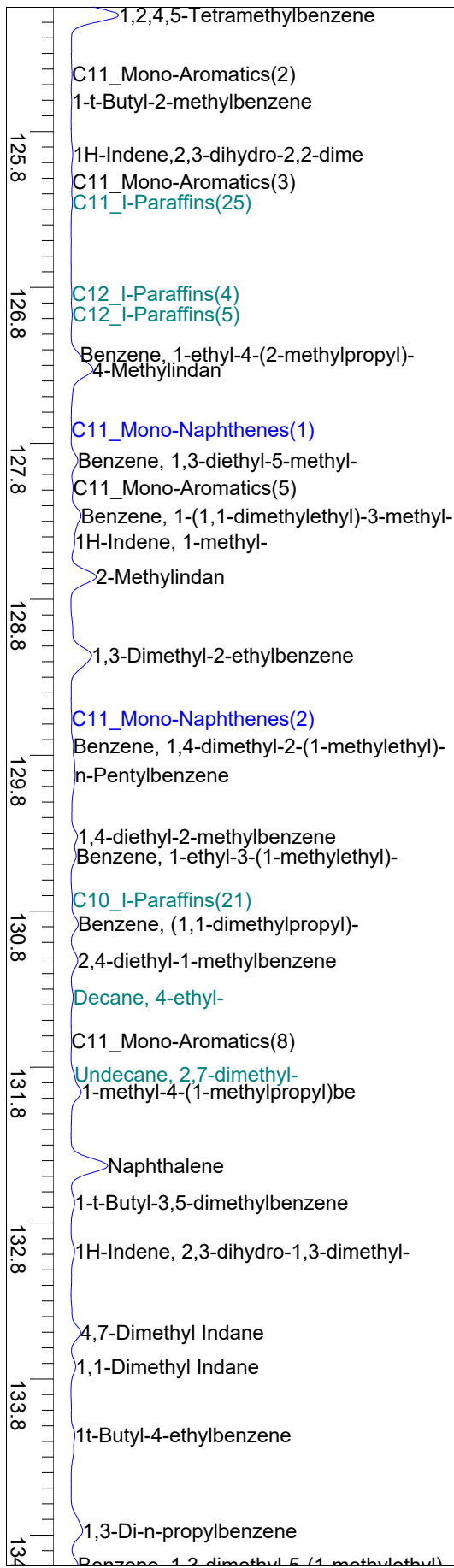


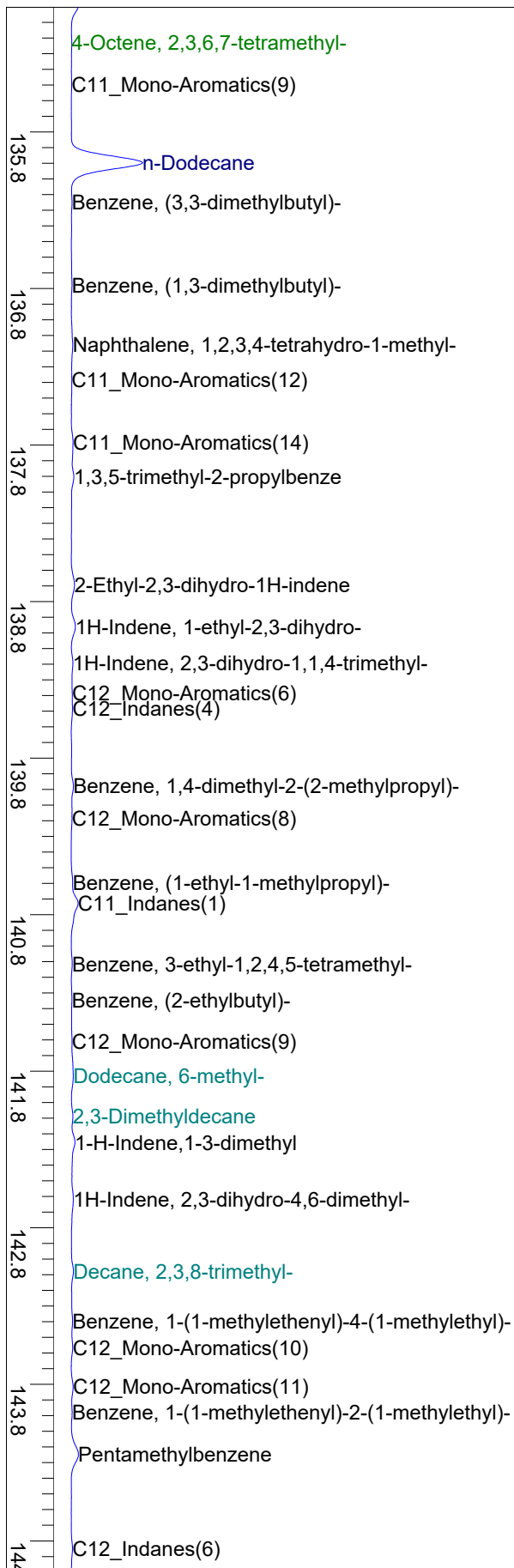


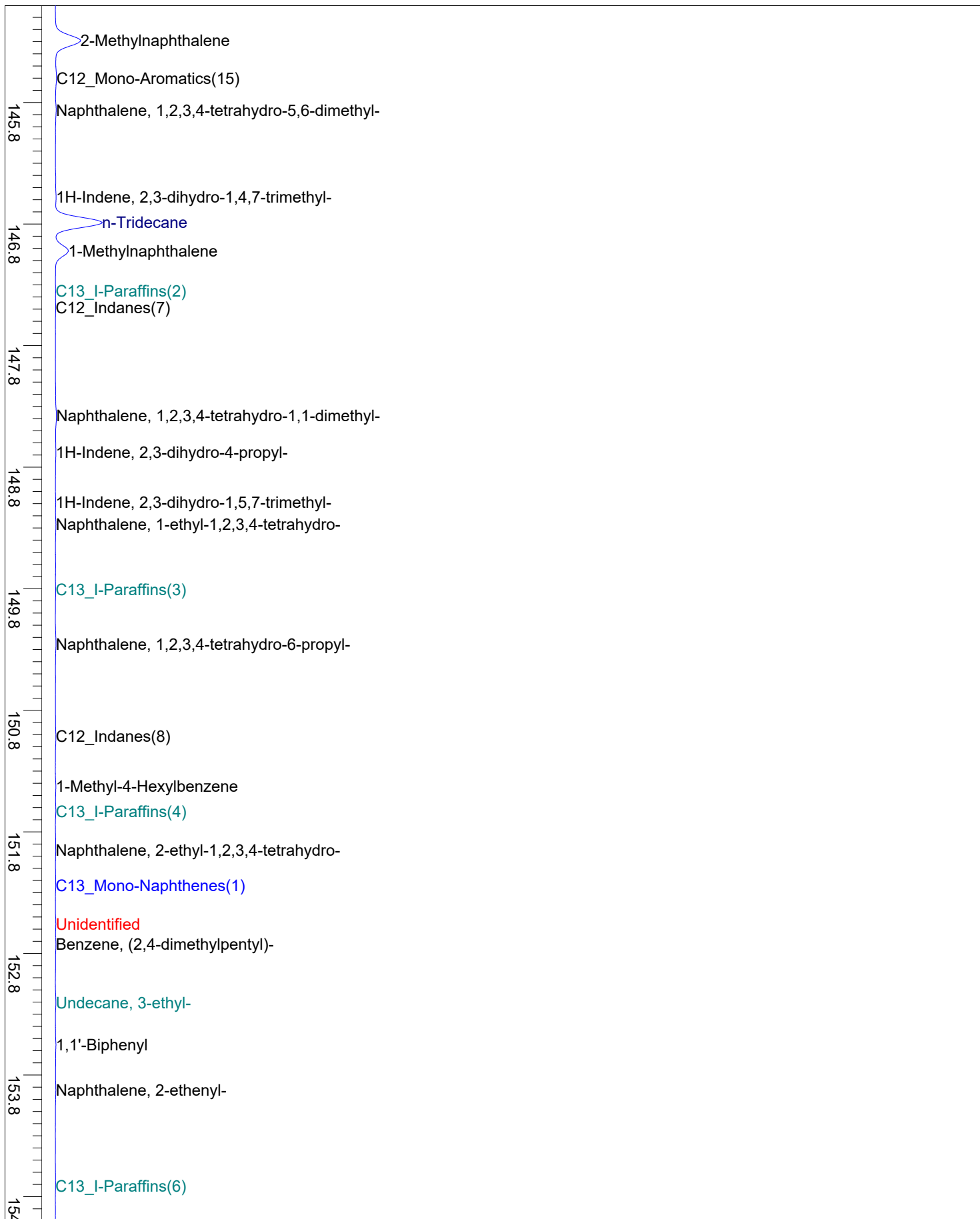


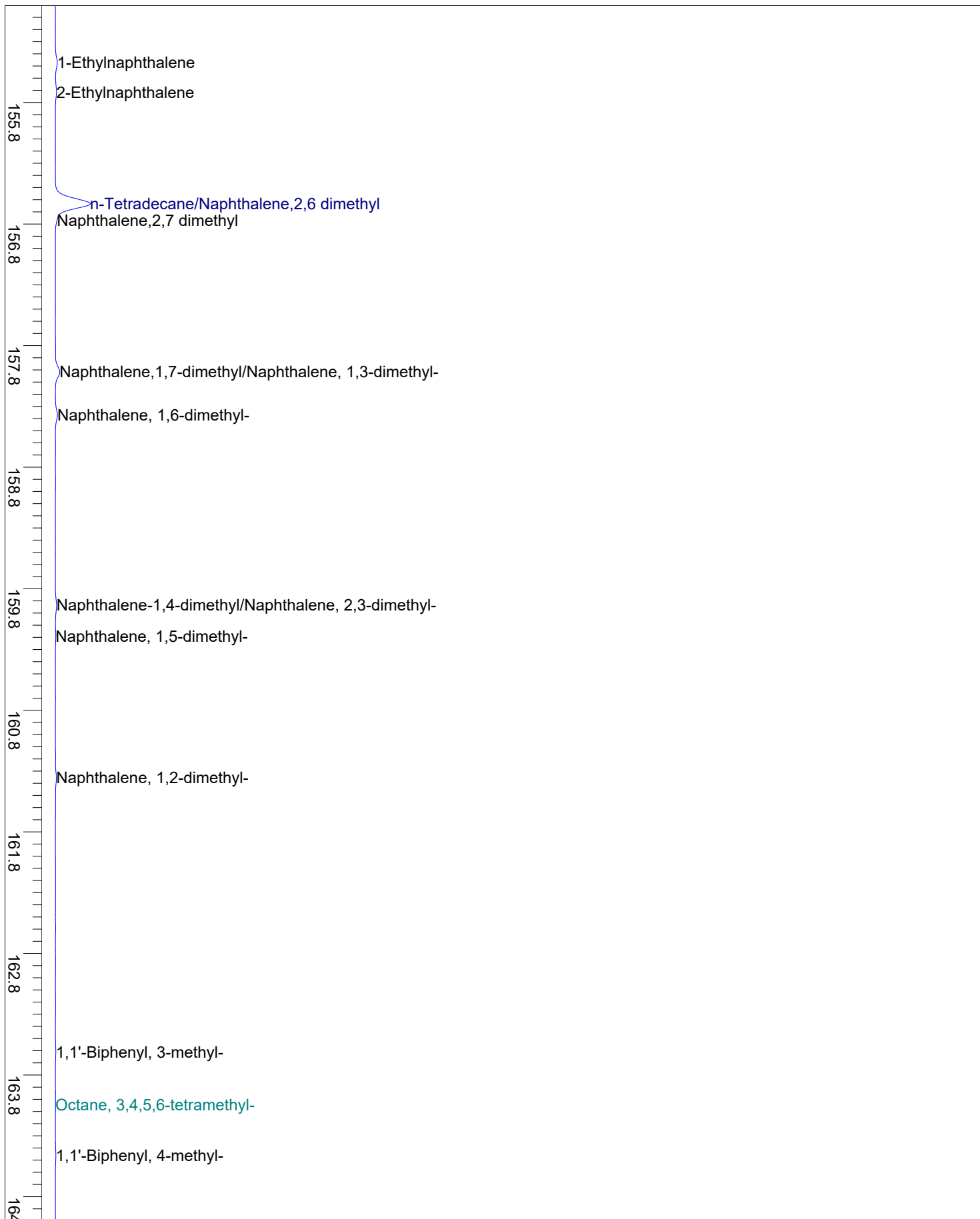


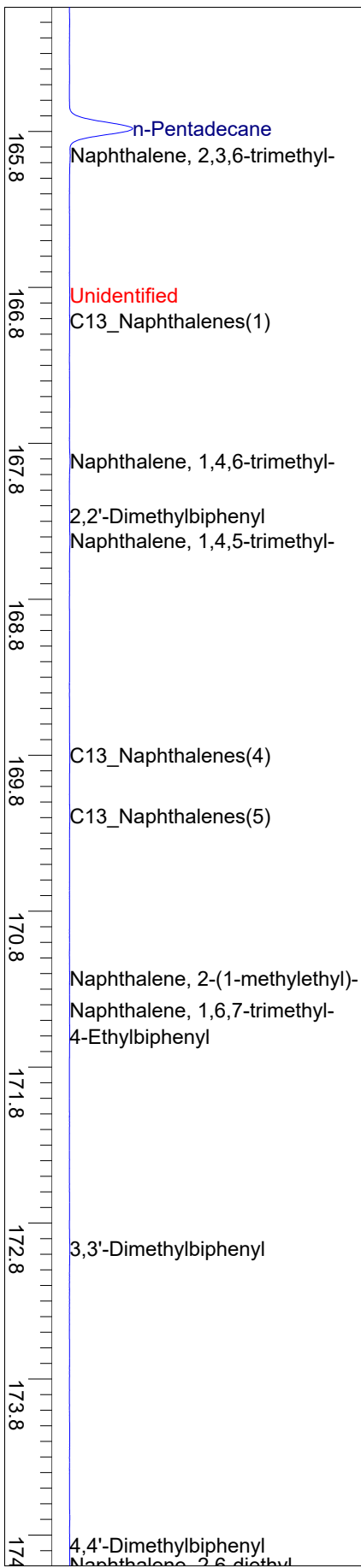












Benzene, 1-methyl-3-[(4-methylphenyl)methyl]-

C14_Mono-Aromatics(1)

Unidentified

1,4,6,7-tetramethylnaphthalene

175.8
176.8
177.8
178.8
179.8
180.8
181.8
182.8
183.8
184