| Metal | Name            | EE (kJ/mol)  | ΔEE(kJ/mol) | Calculated CCS (Ų) |         |
|-------|-----------------|--------------|-------------|--------------------|---------|
|       |                 |              |             | $N_2$              | He      |
| Mg    | Glyphosate_Mg_a | -2863538.716 | 0.000       | 127.941            | 61.2072 |
|       | Glyphosate_Mg_b | -2863538.713 | 0.003       | 127.938            | 61.247  |
|       | Glyphosate_Mg_c | -2863509.725 | 28.991      | 131.074            | 62.6081 |
|       | Glyphosate_Mg_d | -2863502.339 | 36.376      | 132.933            | 62.6085 |
|       | Glyphosate_Mg_e | -2863502.334 | 36.382      | 132.943            | 61.2063 |
|       | Glyphosate_Mg_f | -2863476.741 | 61.975      | 130.973            | 62.0399 |
|       | Glyphosate_Mg_g | -2863476.741 | 61.975      | 130.973            | 62.0635 |
|       | Glyphosate_Mg_h | -2863470.369 | 68.347      | 133.066            | 64.359  |
|       | Glyphosate_Mg_i | -2863462.075 | 76.641      | 128.932            | 62.9563 |
|       | AMPA_Mg_a       | -2265287.614 | 0.000       | 119.103            | 52.0235 |
|       | AMPA_Mg_b       | -2265238.937 | 48.677      | 128.557            | 56.0643 |
|       | AMPA_Mg_c       | -2265220.094 | 67.520      | 129.719            | 54.7855 |
|       | AMPA_Mg_d       | -2265217.613 | 70.001      | 130.166            | 57.6498 |
|       | AMPA_Mg_e       | -2265209.618 | 77.996      | 120.001            | 53.077  |
| Ca    | Glyphosate_Ca_a | -4117336.564 | 0.000       | 134.281            | 63.9074 |
|       | Glyphosate_Ca_b | -4117316.311 | 20.253      | 136.572            | 64.0529 |
|       | Glyphosate_Ca_c | -4117316.277 | 20.287      | 136.564            | 64.0511 |
|       | Glyphosate_Ca_d | -4117309.750 | 26.814      | 138.062            | 64.0884 |
|       | Glyphosate_Ca_e | -4117283.426 | 53.137      | 139.561            | 65.6726 |
|       | Glyphosate_Ca_f | -4117281.029 | 55.535      | 139.244            | 64.8085 |
|       | Glyphosate_Ca_g | -4117278.364 | 58.199      | 140.190            | 65.0911 |
|       | Glyphosate_Ca_h | -4117271.633 | 64.931      | 139.918            | 64.8218 |
|       | Glyphosate_Ca_i | -4117265.447 | 71.117      | 144.281            | 65.1605 |
|       | AMPA_Ca_a       | -3519124.572 | 0.000       | 124.590            | 54.7011 |
|       | AMPA_Ca_b       | -3519089.616 | 34.956      | 132.364            | 58.6088 |
|       | AMPA_Ca_c       | -3519071.799 | 52.773      | 133.315            | 55.7643 |
|       | AMPA_Ca_d       | -3519071.342 | 53.229      | 132.544            | 59.9555 |
|       | AMPA_Ca_e       | -3519071.327 | 53.245      | 130.643            | 59.5171 |
|       | AMPA_Ca_f       | -3519069.268 | 55.304      | 131.871            | 59.7073 |

| Motel | Name            | EE (kJ/mol)  | ΔEE(kJ/mol) | Calculated CCS (Ų) |         |
|-------|-----------------|--------------|-------------|--------------------|---------|
| Metal |                 |              |             | N <sub>2</sub>     | He      |
| Sr    | Glyphosate_Sr_a | -2418929.370 | 0.000       | 125.306            | 65.9144 |
|       | Glyphosate_Sr_b | -2418929.362 | 0.008       | 125.060            | 65.9617 |
|       | Glyphosate_Sr_c | -2418912.087 | 17.284      | 129.076            | 66.3817 |
|       | Glyphosate_Sr_d | -2418906.639 | 22.732      | 129.908            | 66.8149 |
|       | Glyphosate_Sr_e | -2418879.184 | 50.186      | 124.240            | 67.0879 |
|       | Glyphosate_Sr_f | -2418876.682 | 52.689      | 127.523            | 67.0853 |
|       | Glyphosate_Sr_g | -2418875.364 | 54.007      | 124.951            | 65.9138 |
|       | Glyphosate_Sr_h | -2418873.578 | 55.792      | 125.852            | 67.2041 |
|       | Glyphosate_Sr_i | -2418868.414 | 60.956      | 125.832            | 67.0483 |
|       | Glyphosate_Sr_j | -2418841.849 | 87.521      | 125.789            | 69.6546 |
|       | Glyphosate_Sr_k | -2418833.335 | 96.036      | 142.332            | 66.3635 |
|       | AMPA_Sr_a       | -1820728.657 | 0.000       | 130.220            | 56.7116 |
|       | AMPA_Sr_b       | -1820728.655 | 0.003       | 129.535            | 60.7748 |
|       | AMPA_Sr_c       | -1820695.626 | 33.031      | 136.387            | 57.6028 |
|       | AMPA_Sr_d       | -1820678.704 | 49.953      | 138.106            | 62.1074 |
|       | AMPA_Sr_e       | -1820678.206 | 50.452      | 136.689            | 61.7096 |
|       | AMPA_Sr_f       | -1820674.068 | 54.589      | 136.744            | 56.9309 |
| Ва    | Glyphosate_Ba_a | -2405263.206 | 0.000       | 141.387            | 67.7866 |
|       | Glyphosate_Ba_b | -2405263.188 | 0.018       | 142.000            | 68.1276 |
|       | Glyphosate_Ba_c | -2405247.975 | 15.231      | 143.011            | 68.9312 |
|       | Glyphosate_Ba_d | -2405247.970 | 15.236      | 143.293            | 68.0907 |
|       | Glyphosate_Ba_e | -2405213.818 | 49.388      | 146.408            | 68.8987 |
|       | Glyphosate_Ba_f | -2405210.609 | 52.597      | 146.861            | 69.3972 |
|       | Glyphosate_Ba_g | -2405209.864 | 53.342      | 147.137            | 68.946  |
|       | Glyphosate_Ba_h | -2405206.527 | 56.679      | 148.080            | 72.0218 |
|       | Glyphosate_Ba_i | -2405185.152 | 78.053      | 153.785            | 72.126  |
|       | Glyphosate_Ba_j | -2405185.147 | 78.059      | 153.244            | 77.295  |
|       | Glyphosate_Ba_k | -2405181.836 | 81.370      | 155.057            | 71.7288 |
|       | Glyphosate_Ba_l | -2405176.349 | 86.857      | 154.602            | 73.3259 |
|       | AMPA_Ba_a       | -1807074.224 | 0.000       | 132.208            | 59.0567 |
|       | AMPA_Ba_b       | -1807074.213 | 0.011       | 132.193            | 62.6589 |
|       | AMPA_Ba_c       | -1807045.537 | 28.686      | 138.402            | 63.8489 |
|       | AMPA_Ba_d       | -1807029.207 | 45.017      | 140.108            | 63.4883 |
|       | AMPA_Ba_e       | -1807028.466 | 45.757      | 139.653            | 59.7211 |
|       | AMPA_Ba_f       | -1807020.632 | 53.592      | 138.934            | 59.0569 |

| Metal | Name            | EE (kJ/mol)  | ΔEE(kJ/mol) | Calculated CCS (Ų) |         |
|-------|-----------------|--------------|-------------|--------------------|---------|
|       |                 |              |             | N <sub>2</sub>     | He      |
| Mn    | Glyphosate_Mn_a | -5360016.524 | 0.000       | 128.559            | 60.9314 |
|       | Glyphosate_Mn_b | -5359974.839 | 41.685      | 128.710            | 61.9878 |
|       | Glyphosate_Mn_c | -5359968.769 | 47.755      | 135.180            | 60.6789 |
|       | Glyphosate_Mn_d | -5359968.375 | 48.149      | 131.103            | 60.7037 |
|       | Glyphosate_Mn_e | -5359967.834 | 48.690      | 128.698            | 62.1057 |
|       | Glyphosate_Mn_f | -5359953.229 | 63.296      | 132.398            | 61.6563 |
|       | Glyphosate_Mn_g | -5359942.049 | 74.475      | 133.252            | 61.5644 |
|       | Glyphosate_Mn_h | -5359941.144 | 75.381      | 131.844            | 63.146  |
|       | Glyphosate_Mn_i | -5359935.861 | 80.663      | 130.830            | 61.801  |
|       | AMPA_Mn_a       | -4761776.599 | 0.000       | 116.199            | 50.7531 |
|       | AMPA_Mn_b       | -4761776.578 | 0.021       | 116.023            | 51.7713 |
|       | AMPA_Mn_c       | -4761724.336 | 52.263      | 124.026            | 54.1786 |
|       | AMPA_Mn_d       | -4761722.464 | 54.135      | 122.672            | 51.9068 |
|       | AMPA_Mn_e       | -4761720.624 | 55.976      | 115.358            | 55.9332 |
|       | AMPA_Mn_f       | -4761707.160 | 69.439      | 127.385            | 50.7704 |
| Co    | Glyphosate_Co_a | -5968379.254 | 0.000       | 125.670            | 60.5005 |
|       | Glyphosatei     | -5968355.530 | 23.724      | 125.426            | 61.2875 |
|       | Glyphosatec     | -5968344.768 | 34.486      | 128.068            | 60.7714 |
|       | Glyphosateb     | -5968337.336 | 41.919      | 130.540            | 61.4614 |
|       | Glyphosatef     | -5968330.788 | 48.467      | 132.012            | 59.7654 |
|       | Glyphosated     | -5968330.286 | 48.968      | 130.402            | 61.4587 |
|       | Glyphosatee     | -5968325.159 | 54.096      | 124.744            | 59.8132 |
|       | Glyphosateg     | -5968320.674 | 58.580      | 125.748            | 61.1172 |
|       | Glyphosateh     | -5968312.493 | 66.761      | 126.498            | 62.6619 |
|       | Glyphosatej     | -5968295.422 | 83.832      | 126.086            | 60.7718 |
|       | Glyphosatek     | -5968294.375 | 84.880      | 126.317            | 66.6002 |
|       | AMPA_Co_a       | -5370133.204 | 0.000       | 112.659            | 49.6795 |
|       | AMPA_Co_b       | -5370121.741 | 11.463      | 110.787            | 51.0384 |
|       | AMPA_Co_c       | -5370074.201 | 59.003      | 118.358            | 50.531  |
|       | AMPA_Co_d       | -5370066.839 | 66.365      | 119.016            | 52.6578 |
|       | AMPA_Co_e       | -5370060.094 | 73.110      | 120.393            | 54.0024 |
|       | AMPA_Co_f       | -5370054.016 | 79.188      | 120.747            | 54.2523 |
|       | AMPA_Co_g       | -5370053.124 | 80.080      | 120.080            | 54.1488 |
|       | AMPA_Co_h       | -5370045.276 | 87.928      | 116.045            | 51.8454 |
|       | AMPA_Co_i       | -5370041.789 | 91.415      | 115.878            | 52.203  |

| Metal | Name            | EE (kJ/mol)  | ΔEE(kJ/mol) | Calculated CCS (Å <sup>2</sup> ) |         |
|-------|-----------------|--------------|-------------|----------------------------------|---------|
|       |                 |              |             | N <sub>2</sub>                   | He      |
| Cu    | Glyphosate_Cu_a | -6645032.717 | 0.000       | 125.220                          | 60.3003 |
|       | Glyphosate_Cu_b | -6645028.086 | 4.631       | 126.492                          | 62.2656 |
|       | Glyphosate_Cu_c | -6645000.082 | 32.635      | 124.904                          | 62.3996 |
|       | Glyphosate_Cu_d | -6645000.069 | 32.648      | 124.935                          | 62.5396 |
|       | Glyphosate_Cu_e | -6644988.084 | 44.634      | 129.821                          | 60.9261 |
|       | Glyphosate_Cu_f | -6644986.068 | 46.650      | 127.523                          | 60.0027 |
|       | Glyphosate_Cu_g | -6644983.523 | 49.194      | 128.503                          | 62.9184 |
|       | Glyphosate_Cu_h | -6644977.613 | 55.104      | 124.650                          | 62.4775 |
|       | Glyphosate_Cu_i | -6644975.707 | 57.010      | 126.937                          | 62.8899 |
|       | Glyphosate_Cu_j | -6644975.665 | 57.052      | 128.386                          | 63.2962 |
|       | Glyphosate_Cu_k | -6644964.124 | 68.594      | 129.359                          | 61.3875 |
|       | Glyphosate_Cu_l | -6644940.969 | 91.748      | 127.435                          | 62.2566 |
|       | AMPA_Cu_a       | -6046818.730 | 0.000       | 109.550                          | 51.1997 |
|       | AMPA_Cu_b       | -6046764.608 | 54.122      | 113.436                          | 49.5142 |
|       | AMPA_Cu_c       | -6046758.448 | 60.281      | 113.556                          | 55.0807 |
|       | AMPA_Cu_d       | -6046757.695 | 61.035      | 111.227                          | 55.3725 |
|       | AMPA_Cu_e       | -6046755.920 | 62.810      | 113.581                          | 51.6603 |
|       | AMPA_Cu_f       | -6046753.544 | 65.186      | 110.659                          | 52.176  |
|       | AMPA_Cu_g       | -6046735.063 | 83.667      | 116.237                          | 50.8455 |
|       | AMPA_Cu_h       | -6046735.050 | 83.680      | 116.474                          | 50.8702 |
|       | AMPA_Cu_i       | -6046733.272 | 85.457      | 119.112                          | 53.2385 |
|       | AMPA_Cu_j       | -6046733.272 | 85.457      | 115.987                          | 51.0365 |
| Zn    | Glyphosate_Zn_a | -7009701.654 | 0.000       | 124.436                          | 59.9886 |
|       | Glyphosate_Zn_b | -7009677.187 | 24.467      | 127.923                          | 60.783  |
|       | Glyphosate_Zn_c | -7009671.388 | 30.267      | 128.357                          | 61.5815 |
|       | Glyphosate_Zn_d | -7009658.512 | 43.142      | 123.752                          | 59.0071 |
|       | Glyphosate_Zn_e | -7009657.914 | 43.741      | 123.823                          | 59.0128 |
|       | Glyphosate_Zn_f | -7009652.628 | 49.026      | 120.862                          | 60.2384 |
|       | Glyphosate_Zn_g | -7009650.103 | 51.552      | 121.886                          | 60.5125 |
|       | Glyphosate_Zn_h | -7009648.333 | 53.321      | 121.127                          | 62.008  |
|       | Glyphosate_Zn_i | -7009636.356 | 65.299      | 124.842                          | 62.1803 |
|       | Glyphosate_Zn_j | -7009614.732 | 86.922      | 122.630                          | 60.1661 |
|       | Glyphosate_Zn_k | -7009614.333 | 87.322      | 142.332                          | 60.9631 |
|       | Glyphosate_Zn_l | -7009602.988 | 98.666      | 125.040                          | 62.8352 |
|       | AMPA_Zn_a       | -6411447.956 | 0.000       | 115.316                          | 50.5465 |
|       | AMPA_Zn_b       | -6411447.956 | 0.000       | 115.153                          | 51.5984 |
|       | AMPA_Zn_c       | -6411429.121 | 18.835      | 113.906                          | 52.3093 |
|       | AMPA_Zn_d       | -6411413.150 | 34.806      | 122.533                          | 53.5933 |
|       | AMPA_Zn_e       | -6411383.151 | 64.805      | 122.341                          | 55.0527 |
|       | AMPA_Zn_f       | -6411370.648 | 77.308      | 124.098                          | 55.1545 |
|       | AMPA_Zn_g       | -6411367.805 | 80.151      | 123.778                          | 50.3958 |