

The data set is saved in SOM_PAK format (used in SOM_Toolbox:
<http://www.cis.hut.fi/projects/somtoolbox/>) in a text file readable in Notepad (MS Windows).

The first line in the file has only one number. It represents number of variables (in this case: descriptors and the modeled property). The second line starts with '#n' after this the names (or abbreviations) of the variables are given separated by spaces. Third line (which does not have to be present) starts with '#l'. This means that after this sign the names of the labels are given.

The structure of the abbreviation for the atom-based descriptors is for example:

'a_av_El_Affinity'

The first letter 'a' shows that the descriptor this is an atom-based descriptor. The second two letters 'av' or 'su' shows that the descriptor is based on the arithmetic mean of the values in the columns of the Laplacian-transformed property matrix (M). In the case of 'su' the final descriptors are obtained as a sum of the columns of M. The remaining part of the abbreviation represents the atomic property on which the descriptor is based. In this case, it is electron affinity.

In the case of bond-based descriptors (calculated from the line graphs) the structure of the abbreviations is:

'b_su_dif_VdW_radius'

Here the first letter 'b' shows that this is bond-based descriptor. 'su' represents that the descriptor was calculated as a sum of the columns of M. The next three letters ('sum' or 'dif') shows whether the bond property was calculated as a sum or absolute value of the differences of the atomic properties. The remaining part (in this case 'VdW_radius') represents the atomic property on which the descriptor is based.

This data set has 54 descriptors. The column number 55 corresponds to the modeled property (-log(LD50) in this case). The last column starts with 'l' and ends with '69' this column has the labels for the structures as presented on Table 2.

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#n a_av_Z a_av_Ar a_av_Elneg a_av_lst_ion_pot a_av_El_Affinity a_av_Ion_radius a_av_Atom_radius a_av_VdV_radius a_av_Polariz
a_av_Atom_vol a_av_Vert_degree a_su_Z a_su_Ar a_su_Elneg a_su_lst_ion_pot a_su_El_Affinity a_su_Ion_radius a_su_Atom_radius
a_su_VdV_radius a_su_Polariz a_su_Atom_vol a_su_Vert_degree b_av_dif_Ar b_av_dif_Elneg b_av_dif_El_Affinity
b_av_dif_Ion_radius b_av_dif_Atom_radius b_av_dif_VdV_radius b_av_dif_Polariz b_av_dif_Atom_vol b_su_dif_Elneg
b_su_dif_El_Affinity b_su_dif_Ion_radius b_su_dif_Atom_radius b_su_dif_VdV_radius b_su_dif_Polariz b_su_dif_Atom_vol
b_av_sum_Ar b_av_sum_Elneg b_av_sum_El_Affinity b_av_sum_Ion_radius b_av_sum_Atom_radius b_av_sum_VdV_radius
b_av_sum_Polariz b_av_sum_Atom_vol b_su_sum_Ar b_su_sum_Elneg b_su_sum_El_Affinity b_su_sum_Ion_radius b_su_sum_Atom_radius
b_su_sum_VdV_radius b_su_sum_Polariz b_su_sum_Atom_vol property
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# labels
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48 96.088 20.4 90.08 10.08 1.28 7.28 1360 14.4 36.64 80 288 576.528 122.4 540.48 60.48 7.68 43.68 8160 86.4 219.84 480 0 0 0
0 0 0 0 0 0 0 0 0 0 192.176 40.8 20.16 2.56 14.56 2720 28.8 73.28 1153.06 244.8 120.96 15.36 87.36 16320 172.8 439.68
3.4 1
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70.9948 150.223 20.3567 89.8043 11.6218 2.739 7.31703 1346.96 15.202 53.2727 74.5776 496.963 1051.56 142.497 628.63 81.3525
19.173 51.2192 9428.69 106.414 372.909 522.043 34.6411 0.209207 1.07155 0.918469 0.107155 7.65391 0.663339 10.7257 242.488
1.46445 7.50083 6.42929 0.750083 53.5774 4.64337 75.0798 260.241 40.9396 22.1681 4.38203 14.6749 2716.7 29.9313 94.2601
1821.69 286.577 155.177 30.6742 102.724 19016.9 209.519 659.821 3.89 2
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57.8133 113.603 20.5215 89.8046 11.8277 2.61542 7.19345 1338.72 14.4606 46.1053 74.5776 404.693 795.222 143.651 628.632
82.7942 18.308 50.3542 9371.02 101.224 322.737 522.043 11.96 0.311259 1.19911 0.84193 0.0306156 2.5513 0.204104 6.28641
83.72 2.17881 8.39379 5.89351 0.21431 17.8591 1.42873 44.0049 214.814 41.144 22.4236 4.22873 14.5216 2706.48 29.0116 85.3689
1503.7 288.008 156.965 29.6011 101.651 18945.4 203.081 597.582 3.77 3
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48.7511 97.5787 20.7522 90.3401 10.0565 2.27765 6.92983 1319.77 13.3014 43.7162 78.8749 341.258 683.051 145.265 632.381
70.3954 15.9436 48.5088 9238.38 93.11 306.013 552.124 2.03492 0.454132 0.102052 0.632723 0.132668 9.18469 0.513833 4.80666
14.2444 3.17892 0.714365 4.42906 0.928675 64.2929 3.59683 33.6466 194.936 41.4302 20.2263 3.80972 14.1946 2682.98 27.5736
82.4052 1364.55 290.011 141.584 26.668 99.362 18780.8 193.015 576.836 3.51 4
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47.1035 94.2933 20.019 88.3975 9.89173 1.25609 7.14402 1334.6 14.131 35.9556 78.8749 329.724 660.053 140.133 618.782 69.2421
8.79264 50.0082 9342.18 98.9173 251.689 552.124 0 0 0 0 0 0 0 0 0 0 0 0 0 0 190.86 40.5206 20.0219 2.54247 14.4603
2701.37 28.6028 72.7782 1336.02 283.644 140.154 17.7973 101.222 18909.6 200.219 509.447 3.32 5
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64.8787 126.208 20.598 89.5555 13.0852 3.57981 7.12686 1322.58 14.4963 52.9254 78.0689 519.029 1009.66 164.784 716.444
104.682 28.6385 57.0149 10580.6 115.971 423.403 624.551 20.0926 0.522909 2.01449 1.41443 0.0514337 4.28614 0.342891 10.561
160.741 4.18327 16.1159 11.3154 0.411469 34.2891 2.74313 84.4884 229.499 41.2498 23.889 5.34713 14.4506 2688.93 29.0651
93.3015 1835.99 329.998 191.112 42.777 115.605 21511.5 232.521 746.412 4.4 6
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65.122 126.651 20.6174 89.6242 13.1298 3.60858 7.13108 1323.26 14.5095 53.1521 78.0005 520.976 1013.21 164.939 716.994
105.039 28.8686 57.0487 10586.1 116.076 425.217 624.004 20.7508 0.540039 2.08048 1.46076 0.0531186 4.42655 0.354124 10.907
166.006 4.32031 16.6438 11.6861 0.424949 35.4124 2.83299 87.2562 231.747 41.5091 24.1194 5.44387 14.5353 2704.44 29.2467
94.3276 1853.97 332.073 192.955 43.551 116.282 21635.5 233.973 754.621 4.3 7
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65.186 126.765 20.618 89.6217 13.1412 3.61733 7.13046 1323.11 14.5098 53.214 78.0053 521.488 1014.12 164.944 716.974 105.13
28.9386 57.0437 10584.9 116.078 425.712 624.042 20.93 0.544703 2.09845 1.47338 0.0535774 4.46478 0.357183 11.0012 167.44
4.35763 16.7876 11.787 0.428619 35.7183 2.85746 88.0098 231.984 41.476 24.1422 5.4726 14.5204 2701.55 29.2227 94.4828
1855.87 331.808 193.138 43.7808 116.164 21612.4 233.782 755.862 4.62 8
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57.073 112.405 20.7967 90.0168 11.5596 3.28887 6.89979 1306.26 13.4979 50.8676 78.0689 456.584 899.242 166.373 720.134
92.4765 26.311 55.1983 10450.1 107.983 406.941 624.551 11.7556 0.642921 1.09297 1.23869 0.137156 9.85812 0.60306 9.31807
94.0448 5.14337 8.74373 9.90956 1.09725 78.865 4.82448 74.5445 212.851 41.4894 22.0488 4.99622 14.1767 2669.25 27.8609
90.8194 1702.81 331.915 176.39 39.9697 113.414 21354 222.887 726.555 4.02 9
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55.7859 109.818 20.1793 88.3976 11.4421 2.42362 7.08799 1319.67 14.2222 44.3044 78.0005 446.288 878.543 161.434 707.181
91.5372 19.389 56.704 10557.4 113.778 354.436 624.004 10.3754 0.27002 1.04024 0.730381 0.0265593 2.21328 0.177062 5.45351
83.0032 2.16016 8.32192 5.84305 0.212474 17.7062 1.4165 43.6281 211.101 40.9718 22.0494 3.99047 14.4824 2700.04 28.8943
83.4755 1688.8 327.774 176.395 31.9237 115.859 21600.3 231.155 667.804 3.84 10
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55.8148 109.869 20.1783 88.3905 11.4472 2.42791 7.08721 1319.51 14.2214 44.333 78.0053 446.519 878.949 161.426 707.124
91.5775 19.4233 56.6977 10556.1 113.772 354.664 624.042 10.465 0.272352 1.04922 0.736689 0.0267887 2.23239 0.178591 5.50061
83.72 2.17881 8.39379 5.89351 0.21431 17.8591 1.42873 44.0049 211.114 40.9329 22.0497 4.00343 14.467 2697.1 28.8666 83.513
1688.91 327.463 176.398 32.0274 115.736 21576.8 230.933 668.104 4.33 11
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49.3225 98.713 21.0195 90.5578 10.0417 3.01969 6.67146 1290.23 12.4886 48.9868 78.0005 394.58 789.704 168.156 724.463 80.334
24.1575 5.3717 10321.8 99.9089 391.895 624.004 3.53062 0.787926 0.177062 1.09778 0.230181 15.9356 0.891508 8.33962 28.2449
6.30341 1.4165 8.78228 1.84145 127.485 7.13206 66.717 197.48 42.0024 20.3317 4.72157 13.9715 2663.92 26.7679 89.2187 1579.84
336.019 162.654 37.7726 111.772 21311.4 214.144 713.75 3.04 12
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49.8904 99.8478 21.2662 91.4383 10.1318 3.19247 6.68276 1296.4 12.4455 50.4688 72.2985 449.014 898.63 191.396 822.944 91.186
28.7322 60.1449 11667.6 112.01 454.22 650.687 4.84196 1.08058 0.242826 1.50552 0.315674 21.8544 1.22263 11.4371 43.5776
9.72519 2.18544 13.5497 2.84107 196.689 11.0037 102.934 197.743 42.0853 20.2227 5.46773 13.6397 2621.06 25.8033 94.2617
1779.69 378.768 182.004 49.2096 122.757 23589.5 232.23 848.355 3.21 13
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47.8481 95.7728 20.3638 88.8047 9.89198 2.11802 6.85721 1302.71 13.2141 42.1252 78.0689 382.785 766.182 162.911 710.438
79.1359 16.9441 54.8577 10421.7 105.713 337.002 624.551 1.70931 0.381466 0.0857228 0.531481 0.11144 7.71505 0.431614 4.03754
13.6745 3.05173 0.685782 4.25185 0.891517 61.7204 3.45291 32.3004 192.79 40.9673 20.0375 3.584 14.1254 2664.97 27.5186
80.2749 1542.32 327.739 160.3 28.672 113.003 21319.7 220.148 642.199 3.77 14
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47.8862 95.849 20.3804 88.8644 9.89811 2.12918 6.85818 1303.15 13.2118 42.2218 78.0005 383.09 766.792 163.043 710.915
79.1849 17.0334 54.8655 10425.2 105.694 337.774 624.004 1.76531 0.393963 0.088531 0.548892 0.11509 7.96779 0.445754 4.16981
14.1225 3.1517 0.708248 4.39114 0.920723 63.7423 3.56603 33.3585 193.967 41.2184 20.1556 3.62932 14.2005 2679.78 27.655
80.9211 1551.74 329.747 161.244 29.0346 113.604 21438.2 221.24 647.369 3.29 15
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47.8854 95.8473 20.3801 88.8591 9.89734 2.13236 6.85653 1302.93 13.2072 42.2425 78.0053 383.083 766.778 163.041 710.873
79.1787 17.0589 54.8523 10423.4 105.658 337.94 624.042 1.78055 0.397366 0.0892956 0.553633 0.116084 8.03661 0.449604 4.20582
14.2444 3.17892 0.714365 4.42906 0.928675 64.2929 3.59683 33.6466 193.795 41.1822 20.1354 3.63836 14.1821 2676.62 27.6138
80.9308 1550.36 329.458 161.083 29.1069 113.457 21413 220.91 647.446 3.58 16
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50.7006 101.457 21.734 95.3458 7.71774 6.13859 6.16916 1231.3 10.6702 73.8728 64.8248 709.808 1420.4 304.277 1334.84 108.048
85.9403 86.3683 17238.1 149.383 1034.22 907.547 3.8563 0.855606 2.50618 1.72905 0.248059 16.7327 0.951733 14.9629 53.9883
11.9785 35.0865 24.2066 3.47283 234.258 13.3243 209.48 204.345 43.7245 15.6324 10.9465 13.1599 2576.92 23.5707 139.636
2860.83 612.143 218.853 153.251 184.238 36076.8 329.989 1954.9 4.12 54

50.6737 101.403 21.7219 95.2843 7.72635 6.12039 6.16931 1231.11 10.6753 73.718 67.5452 709.431 1419.64 304.106 1333.98
108.169 85.6855 86.3704 17235.6 149.455 1032.05 945.633 3.82717 0.848628 2.48841 1.70884 0.245841 16.5372 0.942281 14.7956
53.5804 11.8808 34.8378 23.9238 3.44177 231.52 13.1919 207.138 203.528 43.5494 15.581 10.8938 13.1081 2566.74 23.4797
139.003 2849.4 609.691 218.134 152.513 183.513 35934.4 328.716 1946.04 5.34 55

50.6944 101.445 21.7308 95.3299 7.72736 6.12264 6.17277 1231.74 10.6822 73.7501 62.7835 709.722 1420.23 304.231 1334.62
108.183 85.717 86.4188 17244.3 149.55 1032.5 878.969 3.8301 0.84952 2.48976 1.71353 0.246192 16.5825 0.944072 14.8326
53.6214 11.8933 34.8567 23.9894 3.44668 232.155 13.217 207.656 203.652 43.5753 15.5963 10.886 13.1217 2569.06 23.5104
138.986 2851.13 610.054 218.348 152.405 183.704 35966.8 329.146 1945.81 4.26 56

50.7003 101.456 21.7335 95.3416 7.72449 6.12921 6.17169 1231.64 10.678 73.8019 64.814 709.804 1420.39 304.269 1334.78
108.143 85.8089 86.4036 17242.9 149.492 1033.23 907.396 3.84043 0.851882 2.49632 1.71913 0.246903 16.6368 0.946929 14.88
53.766 11.9263 34.9484 24.0679 3.45664 232.915 13.257 208.321 204.306 43.7149 15.6519 10.9146 13.1652 2577.5 23.5904 139.383
2860.28 612.008 219.127 152.804 184.313 36085 330.265 1951.36 4.92 57

50.702 101.46 21.7337 95.3318 7.73806 6.11489 6.1749 1232.1 10.688 73.6906 64.8051 709.829 1420.44 304.271 1334.65 108.333
85.6085 86.4486 17249.3 149.632 1031.67 907.271 3.81774 0.846311 2.48279 1.70151 0.245084 16.4662 0.938971 14.7354 53.4483
11.8484 34.759 23.8212 3.43118 230.527 13.1456 206.296 204.38 43.729 15.6941 10.8771 13.179 2579.68 23.6275 139.111 2861.32
612.205 219.718 152.28 184.507 36115.5 330.785 1947.55 4.21 58

50.6846 101.425 21.726 95.2979 7.739 6.10748 6.17434 1231.88 10.689 73.6256 64.8255 709.585 1419.95 304.164 1334.17 108.346
85.5047 86.4408 17246.4 149.646 1030.76 907.558 3.8058 0.843556 2.47528 1.69466 0.244244 16.3999 0.935552 14.6777 53.2812
11.8098 34.6539 23.7253 3.41942 229.599 13.0977 205.488 203.6 43.5626 15.6272 10.8458 13.1259 2569.45 23.5286 138.656 2850.4
609.876 218.78 151.841 183.762 35972.3 329.401 1941.19 4.18 59

50.7185 101.493 21.7417 95.3858 7.71846 6.14043 6.17226 1231.85 10.6764 73.9001 62.6017 710.059 1420.9 304.384 1335.4
108.058 85.966 86.4117 17245.9 149.47 1034.6 876.424 3.85891 0.856418 2.50733 1.73348 0.248384 16.7756 0.95341 14.9978
54.0247 11.9899 35.1027 24.2687 3.47738 234.859 13.3477 209.969 204.461 43.7488 15.646 10.9398 13.1726 2579.07 23.5992
139.625 2862.45 612.483 219.044 153.157 184.416 36107 330.389 1954.75 4.46 60

95.9635 208.82 20.5451 89.6676 13.2443 4.96787 7.11738 1305.49 15.3074 75.7631 76.836 959.635 2088.2 205.451 896.676 132.443
49.6787 71.1738 13054.9 153.074 757.631 768.36 71.1038 0.714744 2.2247 2.25899 0.301552 21.3512 1.66821 24.7125 711.038
7.14744 22.247 22.5899 3.01552 213.512 16.6821 247.125 329.383 41.528 24.2146 6.98493 14.5701 2692.75 30.2926 120.901
3293.83 415.28 242.146 69.8493 145.701 26927.5 302.926 1209.01 4.7 61

74.7181 143.765 20.7113 89.24 14.8369 4.92104 7.03677 1300.61 14.551 62.4201 76.9022 747.181 1437.65 207.113 892.4 148.369
49.2104 70.3677 13006.1 145.51 624.201 769.022 31.3927 0.816995 3.14744 2.2099 0.0803601 6.69668 0.535734 16.5006 313.927
8.16995 31.4744 22.099 0.803601 66.9668 5.35734 165.006 250.232 41.5147 25.9609 6.89087 14.3957 2672.8 29.2231 104.412
2502.32 415.147 259.609 68.9087 143.957 26728 292.231 1044.12 5.43 62

74.9371 144.164 20.7301 89.308 14.8772 4.94659 7.04109 1301.32 14.5638 62.6235 76.8339 749.371 1441.64 207.301 893.08
148.772 49.4659 70.4109 13013.2 145.638 626.235 768.339 31.8614 0.829192 3.19443 2.2429 0.0815599 6.79666 0.543732 16.747
318.614 8.29192 31.9443 22.429 0.815599 67.9666 5.43732 167.47 251.934 41.7349 26.1358 6.9567 14.4692 2686.33 29.3776 105.17
2519.34 417.349 261.358 69.567 144.692 26863.3 293.776 1051.7 5.85 63

68.7551 133.232 20.8852 89.6683 13.6695 4.7128 6.8623 1288.49 13.7769 60.9686 76.836 687.551 1332.32 208.852 896.683 136.695
47.128 68.623 12884.9 137.769 609.686 768.36 25.4093 0.920343 2.48169 2.10479 0.147353 11.0712 0.743017 15.7689 254.093
9.20343 24.8169 21.0479 1.47353 110.712 7.43017 157.689 239.137 41.934 24.7222 6.68039 14.2655 2672.45 28.4654 103.238
2391.37 419.34 247.222 66.8039 142.655 26724.5 284.654 1032.38 4.33 64

51.0891 102.231 21.8888 94.9597 8.27635 6.00475 6.13075 1230.22 10.5538 72.4753 59.6182 715.247 1431.23 306.443 1329.44
115.869 84.0665 85.8304 17223 147.753 1014.65 834.655 4.30196 0.94429 2.26503 1.64293 0.269893 17.2958 1.01688 14.0802
60.2274 13.2201 31.7105 23.001 3.7785 242.141 14.2363 197.122 205.231 43.9011 16.2907 10.7798 13.1163 2575.77 23.4401 137.92
2873.24 614.615 228.07 150.918 183.628 36060.7 328.162 1930.88 5 65

51.7941 103.638 22.2219 96.7148 7.78558 6.83926 6.02997 1221.78 10.1244 79.2351 64.6439 828.706 1658.2 355.55 1547.44
124.569 109.428 96.4796 19548.5 161.991 1267.76 1034.3 4.39539 0.959862 2.89142 1.75746 0.272445 17.0077 1.01725 15.4346
70.3262 15.3578 46.2627 28.1194 4.35912 272.123 16.276 246.953 207.342 44.423 15.0602 12.5331 12.8752 2550.47 22.4994
152.051 3317.48 710.769 240.963 200.529 206.003 40807.6 359.991 2432.82 6.37 66

51.7925 103.634 22.2218 96.717 7.77426 6.85459 6.02543 1221.15 10.1109 79.3494 57.8402 828.681 1658.15 355.549 1547.47
124.388 109.673 96.4069 19538.4 161.774 1269.59 925.443 4.42133 0.965926 2.90758 1.77338 0.27432 17.1617 1.02501 15.5678
70.7412 15.4548 46.5212 28.374 4.38912 274.588 16.4001 249.084 207.965 44.5575 15.0858 12.5959 12.9074 2557.25 22.5472 152.7
3327.44 712.92 241.373 201.534 206.519 40916.1 360.755 2443.2 4.88 67

72.6181 140.111 20.8996 89.4781 14.3651 5.1924 6.8418 1281.2 13.852 64.3478 76.4553 798.799 1541.22 229.896 984.259 158.016
57.1164 75.2598 14093.2 152.372 707.825 841.008 29.3865 1.0067 2.88481 2.36384 0.152084 11.5455 0.790406 17.6996 323.251
11.0737 31.7329 26.0022 1.67293 127 8.69447 194.696 245.874 41.8386 25.4017 7.17868 14.2048 2657.44 28.4676 106.599 2704.62
460.225 279.418 78.9655 156.253 29231.8 313.144 1172.59 5.72 68

75.936 146.018 20.909 89.3169 14.9646 5.5929 6.82892 1275.51 13.931 67.1707 76.1321 911.232 1752.21 250.907 1071.8 179.576
67.1148 81.9471 15306.2 167.172 806.049 913.585 32.9998 1.07292 3.25415 2.58426 0.152496 11.7095 0.818848 19.3397 395.998
12.875 39.0498 31.0111 1.82995 140.514 9.82618 232.077 252.027 41.7733 26.0279 7.59855 14.1717 2647.21 28.5241 109.463
3024.32 501.28 312.335 91.1826 170.06 31766.5 342.289 1313.56 6.06 69