**Table 1S:** Lagnmuir separation fator (RL) from experimental isotherms at 0-60 min. time range and respective isotherm model.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cₒ / mg L⁻¹ | 0 – 60 min time range - SIPs model | | | | | | | | | | | | | | | | | |
| M-UW | | | M-SW | | | MAUW-UW | | | MAUW-SW | | | MASW-UW | | | MASW-SW | | |
| 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C |
| 20 | 0.96174 | 0.96734 | 0.97447 | 0.98168 | 0.97930 | 0.97930 | 0.96419 | 0.97299 | 0.97106 | 0.98112 | 0.97409 | 0.96628 | 0.96805 | 0.98001 | 0.98995 | 0.97790 | 0.97847 | 0.97886 |
| 40 | 0.92630 | 0.93675 | 0.95021 | 0.96402 | 0.95944 | 0.95944 | 0.93086 | 0.94740 | 0.94375 | 0.96294 | 0.94949 | 0.93475 | 0.93809 | 0.96080 | 0.98010 | 0.95675 | 0.95785 | 0.95859 |
| 60 | 0.89338 | 0.90803 | 0.92713 | 0.94699 | 0.94036 | 0.94036 | 0.89975 | 0.92312 | 0.91794 | 0.94542 | 0.92610 | 0.90522 | 0.90992 | 0.94233 | 0.97045 | 0.93650 | 0.93809 | 0.93914 |
| 80 | 0.86272 | 0.88103 | 0.90514 | 0.93054 | 0.92203 | 0.92203 | 0.87066 | 0.90006 | 0.89350 | 0.92853 | 0.90383 | 0.87750 | 0.88339 | 0.92456 | 0.96098 | 0.91709 | 0.91912 | 0.92047 |
| 100 | 0.83410 | 0.85558 | 0.88417 | 0.91466 | 0.90440 | 0.90440 | 0.84338 | 0.87812 | 0.87032 | 0.91223 | 0.88261 | 0.85143 | 0.85837 | 0.90744 | 0.95170 | 0.89847 | 0.90090 | 0.90253 |
| 200 | 0.71541 | 0.74761 | 0.79239 | 0.84274 | 0.82549 | 0.82549 | 0.72918 | 0.78272 | 0.77042 | 0.83862 | 0.78989 | 0.74129 | 0.75188 | 0.83056 | 0.90785 | 0.81566 | 0.81967 | 0.82237 |
| 300 | 0.62629 | 0.66383 | 0.71788 | 0.78131 | 0.75924 | 0.75924 | 0.64222 | 0.70602 | 0.69109 | 0.77600 | 0.71480 | 0.65638 | 0.66890 | 0.76570 | 0.86787 | 0.74683 | 0.75188 | 0.75529 |
| 400 | 0.55692 | 0.59694 | 0.65617 | 0.72823 | 0.70284 | 0.70284 | 0.57379 | 0.64300 | 0.62657 | 0.72209 | 0.65274 | 0.58893 | 0.60241 | 0.71023 | 0.83126 | 0.68871 | 0.69444 | 0.69832 |
| 500 | 0.50138 | 0.54230 | 0.60423 | 0.68190 | 0.65424 | 0.65424 | 0.51854 | 0.59032 | 0.57307 | 0.67518 | 0.60060 | 0.53405 | 0.54795 | 0.66225 | 0.79761 | 0.63898 | 0.64516 | 0.64935 |
| 600 | 0.45591 | 0.49682 | 0.55991 | 0.64111 | 0.61192 | 0.61192 | 0.47299 | 0.54561 | 0.52798 | 0.63399 | 0.55617 | 0.48852 | 0.50251 | 0.62035 | 0.76658 | 0.59595 | 0.60241 | 0.60680 |
| 700 | 0.41801 | 0.45838 | 0.52165 | 0.60492 | 0.57475 | 0.57475 | 0.43480 | 0.50720 | 0.48948 | 0.59754 | 0.51787 | 0.45015 | 0.46404 | 0.58343 | 0.73787 | 0.55835 | 0.56497 | 0.56948 |
| 800 | 0.38592 | 0.42546 | 0.48828 | 0.57261 | 0.54183 | 0.54183 | 0.40232 | 0.47384 | 0.45620 | 0.56505 | 0.48450 | 0.41736 | 0.43103 | 0.55066 | 0.71124 | 0.52521 | 0.53191 | 0.53648 |
| 900 | 0.35841 | 0.39695 | 0.45893 | 0.54357 | 0.51248 | 0.51248 | 0.37435 | 0.44460 | 0.42717 | 0.53592 | 0.45517 | 0.38903 | 0.40241 | 0.52138 | 0.68646 | 0.49579 | 0.50251 | 0.50710 |
| 1000 | 0.33456 | 0.37202 | 0.43290 | 0.51733 | 0.48614 | 0.48614 | 0.35002 | 0.41876 | 0.40161 | 0.50964 | 0.42918 | 0.36430 | 0.37736 | 0.49505 | 0.66335 | 0.46948 | 0.47619 | 0.48077 |

**Table 2S:** Lagnmuir separation fator (RL) from experimental isotherms at 0-10,080 min. time range and respective isotherm model.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cₒ / mg L⁻¹ | 0 – 10,080 min time range - Langmuir model | | | | | | | | | | | | | | | | | |
| M-UW | | | M-SW | | | MAUW-UW | | | MAUW-SW | | | MASW-UW | | | MASW-SW | | |
| 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C | 20°C | 35°C | 50°C |
| 20 | 0.29551 | 0.46395 | 0.69204 | 0.35336 | 0.67060 | 0.95363 | 0.50710 | 0.65703 | 0.86866 | 0.57386 | 0.60205 | 0.94447 | 0.31114 | 0.77137 | 0.95822 | 0.70641 | 0.60665 | 0.91281 |
| 40 | 0.17337 | 0.30204 | 0.52910 | 0.21459 | 0.50444 | 0.91138 | 0.33967 | 0.48924 | 0.76781 | 0.40238 | 0.43066 | 0.89478 | 0.18423 | 0.62783 | 0.91979 | 0.54609 | 0.43539 | 0.83960 |
| 60 | 0.12267 | 0.22390 | 0.42827 | 0.15408 | 0.40427 | 0.87271 | 0.25536 | 0.38971 | 0.68795 | 0.30981 | 0.33523 | 0.85005 | 0.13086 | 0.52933 | 0.88433 | 0.44508 | 0.33954 | 0.77727 |
| 80 | 0.09491 | 0.17789 | 0.35971 | 0.12019 | 0.33729 | 0.83718 | 0.20458 | 0.32383 | 0.62313 | 0.25186 | 0.27442 | 0.80959 | 0.10146 | 0.45754 | 0.85150 | 0.37560 | 0.27827 | 0.72355 |
| 100 | 0.07740 | 0.14756 | 0.31008 | 0.09852 | 0.28935 | 0.80444 | 0.17065 | 0.27701 | 0.56948 | 0.21218 | 0.23229 | 0.77280 | 0.08285 | 0.40290 | 0.82102 | 0.32489 | 0.23574 | 0.67677 |
| 200 | 0.04026 | 0.07966 | 0.18349 | 0.05181 | 0.16915 | 0.67286 | 0.09328 | 0.16077 | 0.39809 | 0.11868 | 0.13141 | 0.62972 | 0.04322 | 0.25227 | 0.69638 | 0.19395 | 0.13362 | 0.51146 |
| 300 | 0.02720 | 0.05455 | 0.13029 | 0.03515 | 0.11950 | 0.57827 | 0.06419 | 0.11325 | 0.30600 | 0.08238 | 0.09162 | 0.53135 | 0.02923 | 0.18362 | 0.60459 | 0.13824 | 0.09323 | 0.41105 |
| 400 | 0.02054 | 0.04148 | 0.10101 | 0.02660 | 0.09239 | 0.50700 | 0.04892 | 0.08741 | 0.24851 | 0.06308 | 0.07032 | 0.45956 | 0.02209 | 0.14434 | 0.53419 | 0.10739 | 0.07159 | 0.34360 |
| 500 | 0.01650 | 0.03346 | 0.08247 | 0.02139 | 0.07530 | 0.45137 | 0.03953 | 0.07117 | 0.20921 | 0.05111 | 0.05706 | 0.40486 | 0.01775 | 0.11891 | 0.47847 | 0.08780 | 0.05811 | 0.29516 |
| 600 | 0.01379 | 0.02804 | 0.06969 | 0.01789 | 0.06355 | 0.40674 | 0.03316 | 0.06002 | 0.18064 | 0.04296 | 0.04801 | 0.36180 | 0.01483 | 0.10109 | 0.43328 | 0.07425 | 0.04890 | 0.25869 |
| 700 | 0.01184 | 0.02413 | 0.06033 | 0.01537 | 0.05497 | 0.37014 | 0.02856 | 0.05189 | 0.15893 | 0.03705 | 0.04143 | 0.32701 | 0.01274 | 0.08792 | 0.39588 | 0.06433 | 0.04221 | 0.23025 |
| 800 | 0.01038 | 0.02118 | 0.05319 | 0.01348 | 0.04843 | 0.33958 | 0.02508 | 0.04570 | 0.14188 | 0.03257 | 0.03644 | 0.29833 | 0.01117 | 0.07779 | 0.36443 | 0.05674 | 0.03713 | 0.20743 |
| 900 | 0.00924 | 0.01887 | 0.04756 | 0.01200 | 0.04328 | 0.31369 | 0.02235 | 0.04083 | 0.12814 | 0.02906 | 0.03253 | 0.27427 | 0.00994 | 0.06975 | 0.33761 | 0.05076 | 0.03314 | 0.18874 |
| 1000 | 0.00832 | 0.01702 | 0.04301 | 0.01081 | 0.03912 | 0.29146 | 0.02016 | 0.03690 | 0.11682 | 0.02623 | 0.02937 | 0.25381 | 0.00895 | 0.06321 | 0.31447 | 0.04591 | 0.02992 | 0.17313 |