Table A1: Statistical analysis for non-foamed samples dried at 65°C

Table A2: Statistical analysis for non-foamed samples dried at 70°C

Table A3: Statistical analysis for non-foamed samples dried at 75°C

Table A4: Statistical analysis for SPI samples dried at 70°C

Table A5: Statistical analysis for SPI samples dried at 75°C

Table A6: Statistical analysis for PPI samples dried at 70°C

Table A7: Statistical analysis for PPI samples dried at 75°C

Table A1: Statistical analysis for non-foamed samples dried at 65°C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model No.** | **Coefficients** |  | **Pulp Thickness** | | |
| **3mm** | **5mm** | **7mm** |
| 1 | k | Coefficient | 1.533 | 0.7733 | 0.5195 |
| SSE | 0.001406 | 0.02015 | 0.03555 |
| R2 | 0.9982 | 0.9773 | 0.9689 |
| RMSE | 0.01677 | 0.05795 | 0.06285 |
| 2 | k/n | Coefficient | 1.478 /1.458 | 0.5671/1.675 | 0.3041/1.646 |
| **SSE** | **0.0005227** | **0.0006182** | **0.001623** |
| **R2** | **0.9993** | **0.9993** | **0.9986** |
| **RMSE** | **0.01143** | **0.01112** | **0.01424** |
| 3 | a/k | Coefficient | 1.001/1.534 | 1.027/0.7884 | 1.055/0.5418 |
| SSE | 0.001404 | 0.01934 | 0.0319 |
| R2 | 0.9982 | 0.9782 | 0.9721 |
| RMSE | 0.01874 | 0.06219 | 0.06314 |
| 4 | a/k/c | Coefficient | 0.9989/1.546/0.002462 | 1.06/0.7167/-0.03718 | 1.086/0.4928/-0.0375 |
| SSE | 0.001386 | 0.01658 | 0.02772 |
| R2 | 0.9982 | 0.9813 | 0.9757 |
| RMSE | 0.02149 | 0.06438 | 0.06293 |
| 5 | a/g/k | Coefficient | 1.922/1.056/1.27 | 4.823/0.4367/0.4898 | -5.424/0.3264/0.3003 |
| SSE | 0.001208 | 0.01452 | 0.02605 |
| R2 | 0.9984 | 0.9836 | 0.9772 |
| RMSE | 0.02006 | 0.06024 | 0.061 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model No.** | **Coefficients** |  | **Pulp Thickness** | | |
| **3mm** | **5mm** | **7mm** |
| 1 | k | Coefficient | 1.249 | 1.03 | 0.589 |
| SSE | 0.003802 | 0.004176 | 0.01599 |
| R2 | 0.9947 | 0.9948 | 0.9837 |
| RMSE | 0.03083 | 0.02638 | 0.04471 |
| 2 | k/n | Coefficient | 1.159/1.54 | 0.9535/1.296 | 0.4463/1.384 |
| **SSE** | **0.00123** | **0.002247** | **0.004356** |
| **R2** | **0.9983** | **0.9972** | **0.9955** |
| **RMSE** | **0.02025** | **0.0212** | **0.02495** |
| 3 | a/k | Coefficient | 1.004/1.252 | 1.005/1.034 | 1.029/0.6029 |
| SSE | 0.003788 | 0.004146 | 0.01505 |
| R2 | 0.9947 | 0.9948 | 0.9846 |
| RMSE | 0.03554 | 0.0288 | 0.04637 |
| 4 | a/k/c | Coefficient | 1.008/1.235/-0.004574 | 0.9977/1.061/0.008498 | 1.041/0.5783/-0.01528 |
| SSE | 0.003755 | 0.003928 | 0.01442 |
| R2 | 0.9947 | 0.9951 | 0.9853 |
| RMSE | 0.04333 | 0.03134 | 0.04903 |
| 5 | a/g/k | Coefficient | 6.129/0.9292/0.9734 | 4.604/0.7861/0.8315 | 1/-1.471/0.5907 |
| SSE | 0.003338 | 0.004018 | 0.01561 |
| R2 | 0.9953 | 0.995 | 0.984 |
| RMSE | 0.04085 | 0.03169 | 0.051 |

Table A2: Statistical analysis for non-foamed samples dried at 70°C

Table A3: Statistical analysis for non-foamed samples dried at 75°C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model No. | Coefficients |  | Pulp Thickness | | |
| **3mm** | **5mm** | **7mm** |
| 1 | k | Coefficient | 4.23 | 1.776 | 1.031 |
| SSE | 0.0001741 | 0.000331 | 0.00197 |
| R2 | 0.9998 | 0.9996 | 0.9977 |
| RMSE | 0.007618 | 0.009097 | 0.01677 |
| 2 | k/n | Coefficient | 4.259/0.1013 | 1.757/1.179 | 0.9654/1.22 |
| **SSE** | **1.878e-07** | **0.000234** | **0.0005009** |
| **R2** | **1** | **0.9997** | **0.9994** |
| **RMSE** | **0.0003065** | **0.008832** | **0.009137** |
| 3 | a/k | Coefficient | 1/4.23 | 1/1.776 | 1.005/1.035 |
| SSE | 0.0001741 | 0.0003309 | 0.001947 |
| R2 | 0.9998 | 0.9996 | 0.9977 |
| RMSE | 0.00933 | 0.0105 | 0.01801 |
| 4 | a/k/c | Coefficient | 0.9906/5.322/0.009407 | 0.9969/1.799/0.003455 | 1.005/1.033/-0.000293 |
| SSE | 7.131e-07 | 0.0003042 | 0.001946 |
| R2 | 1 | 0.9996 | 0.9977 |
| RMSE | 0.0008445 | 0.01233 | 0.01973 |
| 5 | a/g/k | Coefficient | 0.05774/7.918/1.278 | -0.1694/1.773/1.761 | -0.06364/1.029/0.8148 |
| SSE | 9.281e-05 | 0.000331 | 0.001973 |
| R2 | 0.9999 | 0.9996 | 0.9977 |
| RMSE | 0.009634 | 0.01286 | 0.01986 |

Table A4: Statistical analysis for SPI samples dried at 70°C

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model No.** | **Coefficients** |  |  |  | **Pulp Thickness** | | | |
| **5mm-0.5%** | **3mm-1.0%** | | **5mm-1%** | **7mm-1.0%** | **5mm-1.5%** |
| 1 | k | Coefficient | 0.7324 | 1.023 | | 1.201 | 0.3913 | 0.6353 |
| SSE | 0.001758 | 0.003131 | | 0.006714 | 0.0007311 | 0.005727 |
| R2 | 0.9977 | 0.9954 | | 0.9904 | 0.999 | 0.9931 |
| RMSE | 0.01712 | 0.02798 | | 0.03664 | 0.01209 | 0.0309 |
| 2 | k/n | Coefficient | 0.72/1.03 | 0.9476/1.276 | | 1.341/0.6118 | 0.3754/1.034 | 0.5357/1.249 |
| **SSE** | **0.001689** | **0.0012** | | **0.0004324** | **0.0006492** | **0.0002364** |
| **R2** | **0.9978** | **0.9982** | | **0.9994** | **0.9991** | **0.9997** |
| **RMSE** | **0.01838** | **0.02** | | **0.0104** | **0.01274** | **0.006876** |
| 3 | a/k | Coefficient | 1.003/0.734 | 1.006/1.027 | | 0.9937/1.195 | 1.002/0.392 | 1.019/0.6451 |
| SSE | 0.001751 | 0.0031 | | 0.006676 | 0.0007258 | 0.005333 |
| R2 | 0.9977 | 0.9955 | | 0.9904 | 0.999 | 0.9936 |
| RMSE | 0.01871 | 0.03215 | | 0.04085 | 0.01347 | 0.03266 |
| 4 | a/k/c | Coefficient | 0.992/  0.7631/0.01295 | 1.014/ 0.9995/  -0.00963 | | 0.9495/1.438/  0.04946 | 0.9978/0.398/  0.005246 | 1.054/0.5775/  -0.04252 |
| SSE | 0.00144 | 0.002994 | | 0.0005558 | 0.0006919 | 0.003085 |
| R2 | 0.9981 | 0.9956 | | 0.9992 | 0.999 | 0.9963 |
| RMSE | 0.01898 | 0.03869 | | 0.01361 | 0.01519 | 0.02777 |
| 5 | a/g/k | Coefficient | -0.06344/0.7322/  0.7306 | 2.471/0.6662/  0.7865 | | 0.1557/1.722/  0.2863 | 1/-1.099/  0.3933 | -1.737/0.4352/  0.3537 |
| SSE | 0.001758 | 0.002644 | | 0.0002024 | 0.0004579 | 0.00236 |
| R2 | 0.9977 | 0.9961 | | 0.9997 | 0.9994 | 0.9972 |
| RMSE | 0.02096 | 0.03636 | | 0.008213 | 0.01235 | 0.02429 |

Table A5: Statistical analysis for SPI samples dried at 75°C

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model No.** | **Coefficients** |  |  |  | **Pulp Thickness** | | | |
| **3mm-0.5%** | **7mm-0.5%** | | **5mm-1%** | **3mm-1.5%** | **7mm-1.5%** |
| 1 | k | Coefficient | 1.296 | 0.4561 | | 0.8532 | 1.584 | 0.4569 |
| SSE | 0.001721 | 0.002665 | | 0.003102 | 0.0009234 | 0.001445 |
| R2 | 0.9976 | 0.9965 | | 0.9957 | 0.9987 | 0.9978 |
| RMSE | 0.02074 | 0.02309 | | 0.02491 | 0.01519 | 0.019 |
| 2 | k/n | Coefficient | 1.242/1.287 | 0.3596/1.223 | | 0.8173/1.104 | 1.596/0.9267 | 0.3851/1.157 |
| **SSE** | **0.0008453** | **0.0006806** | | **0.002604** | **0.0008902** | **0.000301** |
| **R2** | **0.9988** | **0.9991** | | **0.9964** | **0.9987** | **0.9996** |
| **RMSE** | **0.01679** | **0.01304** | | **0.02551** | **0.01723** | **0.01002** |
| 3 | a/k | Coefficient | 1.002/1.298 | 1.007/0.4585 | | 1.005/0.8566 | 0.9999/1.584 | 1.005/0.4587 |
| SSE | 0.001717 | 0.002614 | | 0.003077 | 0.0009234 | 0.001418 |
| R2 | 0.9976 | 0.9965 | | 0.9957 | 0.9987 | 0.9979 |
| RMSE | 0.02392 | 0.02556 | | 0.02774 | 0.01754 | 0.02174 |
| 4 | a/k/c | Coefficient | 1.002/1.299/  0.0003322 | 1.016/0.4461/  -0.009546 | | 0.9937/ 0.8894/  0.01284 | 0.9842/1.679/  0.0163 | 1.03/0.426/  -0.02746 |
| SSE | 0.001716 | 0.002465 | | 0.002823 | 0.0003704 | 0.000792 |
| R2 | 0.9976 | 0.9967 | | 0.9961 | 0.9995 | 0.9988 |
| RMSE | 0.02929 | 0.02867 | | 0.03067 | 0.01361 | 0.0199 |
| 5 | a/g/k | Coefficient | -0.06344/0.7322/  0.7306 | 2.19/0.2968/  0.3586 | | 2.797/0.6761/  0.7324 | 0.0659/1.521/  21.77 | -2.018/0.6233/  0.7539 |
| SSE | 0.001758 | 0.002026 | | 0.003145 | 0.000916 | 0.0003266 |
| R2 | 0.9977 | 0.9973 | | 0.9956 | 0.9987 | 0.9995 |
| RMSE | 0.02096 | 0.02599 | | 0.03238 | 0.0214 | 0.01278 |

Table A6: Statistical analysis for PPI samples dried at 70°C

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Model No. | Coefficients |  |  |  | Pulp Thickness | | | |
| **5mm-0.5%** | **3mm-1.0%** | | **5mm-1%** | **7mm-1.0%** | **5mm-1.5%** |
| 1 | k | Coefficient | 1.081 | 1.716 | | 1.099 | 0.5313 | 1.196 |
| SSE | 0.002692 | 0.0003844 | | 0.001257 | 0.01063 | 0.002314 |
| R2 | 0.9959 | 0.9994 | | 0.9981 | 0.9871 | 0.9962 |
| RMSE | 0.02594 | 0.01132 | | 0.01773 | 0.04209 | 0.02777 |
| 2 | k/n | Coefficient | 1.086/0.9818 | 1.721/0.9589 | | 1.074/1.086 | 0.4228/1.269 | 1.134/1.291 |
| SSE | **0.002685** | **0.0003766** | | **0.001068** | **0.002669** | **0.001083** |
| R2 | **0.9959** | **0.9994** | | **0.9984** | **0.9968** | **0.9982** |
| RMSE | **0.02992** | **0.01372** | | **0.01886** | **0.02311** | **0.02327** |
| 3 | a/k | Coefficient | 1/1.081 | 1/1.716 | | 1.002/1.1 | 1.024/0.5423 | 1.003/1.198 |
| SSE | 0.002692 | 0.0003844 | | 0.001254 | 0.009947 | 0.002304 |
| R2 | 0.9959 | 0.9994 | | 0.9981 | 0.9879 | 0.9962 |
| RMSE | 0.02996 | 0.01386 | | 0.02044 | 0.0446 | 0.03394 |
| 4 | a/k/c | Coefficient | 0.9765/  1.172/0.02617 | 0.9893/ 1.786/  0.01099 | | 0.9946/1.126/  0.007819 | 1.097/0.4427/  -0.08668 | 1.018/1.148/  -0.01526 |
| SSE | 0.001767 | 0.0002347 | | 0.001173 | 0.004623 | 0.002148 |
| R2 | 0.9973 | 0.9996 | | 0.9983 | 0.9944 | 0.9965 |
| RMSE | 0.02972 | 0.01532 | | 0.02422 | 0.034 | 0.04634 |
| 5 | a/g/k | Coefficient | 2.305/1.106/  1.095 | 4.44e-06 /1.709/  -2772 | | -0.02968/1.086/  0.762 | -45.13/0.1964/  0.192 | -1.171/0.9184/  0.7461 |
| SSE | 0.002694 | 5.158e-05 | | 0.001254 | 0.01195 | 0.001914 |
| R2 | 0.9959 | 0.9999 | | 0.9981 | 0.9855 | 0.9969 |
| RMSE | 0.0367 | 0.007182 | | 0.02504 | 0.05466 | 0.04375 |

Table A7: Statistical analysis for PPI samples dried at 75°C

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Model No.** | **Coefficients** |  |  |  | **Pulp Thickness** | | | |
| **3mm-0.5%** | **7mm-0.5%** | | **5mm-1%** | **3mm-1.5%** | **7mm-1.5%** |
| 1 | k | Coefficient | 1.835 | 0.5625 | | 1.907 | 2.049 | 0.5396 |
| SSE | 0.0007627 | 0.002671 | | 0.003429 | 0.001794 | 0.01019 |
| R2 | 0.9989 | 0.9971 | | 0.995 | 0.9973 | 0.9876 |
| RMSE | 0.01381 | 0.01827 | | 0.02928 | 0.02446 | 0.04121 |
| 2 | k/n | Coefficient | 1.861/0.81 | 0.5205/1.094 | | 2.018/0.4454 | 2.129/0.4913 | 0.4278/1.286 |
| SSE | **0.0006254** | **0.00157** | | **0.0004671** | **0.0002895** | **0.001891** |
| R2 | **0.9991** | **0.9983** | | **0.9993** | **0.9996** | **0.9977** |
| RMSE | **0.01444** | **0.01498** | | **0.01248** | **0.01203** | **0.01945** |
| 3 | a/k | Coefficient | 0.9998/1.835 | 1.008/0.5665 | | 0.9991/1.906 | 0.9995/2.048 | 1.026/0.5518 |
| SSE | 0.0007626 | 0.002595 | | 0.003429 | 0.001794 | 0.009397 |
| R2 | 0.9989 | 0.9972 | | 0.9951 | 0.9973 | 0.9885 |
| RMSE | 0.01594 | 0.01925 | | 0.03381 | 0.02995 | 0.04335 |
| 4 | a/k/c | Coefficient | 0.9839/1.958/  0.01629 | 1.016/0.5487 /-0.01094 | | 0.9624/  2.261/0.03761 | 0.966/ 2.408/  0.03404 | 1.078/0.4755/  -0.06191 |
| SSE | 0.0001468 | 0.00232 | | 9.495e-08 | 2.279e-05 | 0.006258 |
| R2 | 0.9998 | 0.9975 | | 1 | 1 | 0.9924 |
| RMSE | 0.008568 | 0.01966 | | 0.0002179 | 0.004774 | 0.03955 |
| 5 | a/g/k | Coefficient | 0.997/0.502/  1.884 | 4.109/ 0.7976 /  0.7261 | | 0.255/19.87/  0.6622 | -6.944/2.022/  2.019 | -4.128/0.3276/  0.2912 |
| SSE | 6.714e-05 | 0.001551 | | 0.0008165 | 0.001795 | 0.005499 |
| R2 | 0.9999 | 0.9983 | | 0.9988 | 0.9973 | 0.9933 |
| RMSE | 0.00579**4** | 0.01608 | | 0.02021 | 0.04237 | 0.03708 |