Summary - Int 3

# *Intermediate 3*

## *Water*

### Full model

| formula | R.sq | Q.sq | MAE |
| --- | --- | --- | --- |
| Yield ~ NPA\_10 + NPA\_34 + NPA\_difference\_32\_33 + L | 0.6982996 | 0.5228062 | 7.404182 |
| Yield ~ Distance.33..34. + NPA\_10 + NPA\_difference\_32\_33 + Pol.iso | 0.6937081 | 0.5107012 | 7.700354 |
| Yield ~ NPA\_10 + NPA\_difference\_32\_33 + NPA\_difference\_33\_34 + L | 0.6880374 | 0.5093626 | 8.013258 |
| Yield ~ Vibration.33.34. + NPA\_difference\_32\_33 + NPA\_difference\_10\_35 + Pol.iso | 0.6539899 | 0.4921066 | 7.621243 |
| Yield ~ Distance.33..34. + NPA\_10 + NPA\_difference\_32\_33 + L | 0.6818615 | 0.4871511 | 7.888236 |
| Yield ~ NPA\_34 + NPA\_difference\_4\_10 + NPA\_difference\_32\_33 + L | 0.6646833 | 0.4861508 | 7.437216 |
| Yield ~ Distance.33..34. + NPA\_difference\_4\_10 + NPA\_difference\_32\_33 + L | 0.6547218 | 0.4850937 | 7.390206 |
| Yield ~ Distance.10..40. + NPA\_34 + NPA\_difference\_32\_33 + L | 0.6540345 | 0.4728098 | 8.465886 |
| Yield ~ Distance.30..31. + NPA\_difference\_32\_33 + NPA\_difference\_10\_35 + L | 0.6649933 | 0.4654003 | 8.228499 |
| Yield ~ NPA\_10 + NPA\_34 + NPA\_difference\_32\_33 + Pol.iso | 0.6755513 | 0.4601895 | 8.623470 |

***Multicollineartiy:***

|  | x |
| --- | --- |
| NPA\_10 | 1.220521 |
| NPA\_34 | 2.210417 |
| NPA\_difference\_32\_33 | 2.299509 |
| L | 1.453213 |

***Scaled Coefficients:***

|  | Estimate | Std. Error | t value | Pr(>|t|) |
| --- | --- | --- | --- | --- |
| (Intercept) | 56.285714 | 1.953103 | 28.818611 | 0.0000000 |
| NPA\_10 | 6.858827 | 2.211019 | 3.102112 | 0.0068495 |
| NPA\_34 | 5.304507 | 2.975479 | 1.782740 | 0.0936102 |
| NPA\_difference\_32\_33 | -14.702410 | 3.034851 | -4.844525 | 0.0001793 |
| L | -11.086159 | 2.412595 | -4.595119 | 0.0002988 |

## *Methanol*

### Full model

| formula | R.sq | Q.sq | MAE |
| --- | --- | --- | --- |
| Yield ~ Vibration.29.30. + Distance.4..10. + dip\_x + NPA\_35 | 0.7510835 | 0.5646022 | 7.699040 |
| Yield ~ Vibration.29.30. + NPA\_5 + NPA\_35 + Pol.iso | 0.7397812 | 0.5619403 | 7.677892 |
| Yield ~ Vibration.29.30. + NPA\_5 + NPA\_35 + L | 0.7117600 | 0.5449227 | 7.837819 |
| Yield ~ Vibration.29.30. + NPA\_5 + NPA\_difference\_30\_35 + Pol.iso | 0.7346291 | 0.4951924 | 7.568907 |
| **Yield ~ Vibration.29.30. + Distance.10..40. + NPA\_difference\_10\_35 + L** | 0.7381740 | 0.4878894 | 7.828153 |
| Yield ~ Vibration.29.30. + NPA\_5 + NPA\_difference\_30\_35 + L | 0.7148435 | 0.4872523 | 8.054579 |
| Yield ~ Vibration.29.30. + dip\_x + NPA\_35 + NPA\_40  # First 4 equations have high multicollinearity | 0.7112082 | 0.4514068 | 8.235860 |

***Multicollineartiy:***

|  | x |
| --- | --- |
| Vibration.29.30. | 3.600036 |
| Distance.10..40. | 2.022448 |
| NPA\_difference\_10\_35 | 3.970401 |
| L | 1.377214 |

***Scaled Coefficients:***

|  | Estimate | Std. Error | t value | Pr(>|t|) |
| --- | --- | --- | --- | --- |
| (Intercept) | 56.28571 | 1.819465 | 30.935316 | 0.0000000 |
| Vibration.29.30. | -20.63817 | 3.537461 | -5.834175 | 0.0000254 |
| Distance.10..40. | 12.12062 | 2.651411 | 4.571387 | 0.0003137 |
| NPA\_difference\_10\_35 | 18.12163 | 3.714971 | 4.878001 | 0.0001675 |
| L | -12.55389 | 2.187958 | -5.737719 | 0.0000305 |