
Scheme-9 Reactor-1

Part-1, Case-1

$t_a = 60 \text{ sec}$, $t_m = 600 \text{ sec}$
 $k_1 = 100$, $k_2 = 10$

$NB_t/NA_t = 1.01913$

Exponent $a = 1.5$
Exponent $b = 0.5$
Exponent $c = 1$
Exponent $d = 1$

$WA = 200$
 $WB = 50.9564$
 $NB_t = 2.71767$
 $V_t = 2.12548$
 $V_{at} = 1.02548$
 $Tot.Solv. = 2$
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$
 $NB_0 = 0$

Total input = 250.956 kg
Total output = 250.956 kg

Chemical Balance Error = $-5.14584e-05 \text{ kg}$ (% $-2.05049e-07$)

Solver: Explicit Runge-Kutta (4,5) Variable step (Dormand-Prince Pair)
Error tolerance: 0.1%

Final Concentrations with Step Size limited to 0.001

$NA \text{ (final)} = 0.0256227$
 $NB \text{ (final)} = 1.29083e-09$
 $NR \text{ (final)} = 2.56442$
 $NS \text{ (final)} = 0.076623$

Final Concentrations with Step Size limited to 0.01

$NA \text{ (final)} = 0.0266633$
 $NB \text{ (final)} = 7.18992e-08$
 $NR \text{ (final)} = 2.56224$
 $NS \text{ (final)} = 0.0777621$



