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# Scheme-9 Reactor-1

Part-2, Case-2

$t_a = 450 \text{ sec}$ ,  $t_m = 1200 \text{ sec}$   
 $k_1 = 0.1$ ,  $k_2 = 0.01$

$NB_t/NA_t = 1.3023$

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

$WA = 200$   
 $WB = 65.115$   
 $NB_t = 3.4728$   
 $V_t = 2.13256$   
 $V_{at} = 1.03256$   
 $Tot.Solv. = 2$   
 $SolA/(SolR+SolA) = 0.5$

$NA_0 = 2.66667$   
 $NB_0 = 0$

Total input = 265.115 kg  
Total output = 265.116 kg

Chemical Balance Error = 0.000846013 kg (% 3.19112e-06)

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

Final Concentrations with Step Size limited to 0.001

$NA \text{ (final)} = 0.0266921$   
 $NB \text{ (final)} = 3.93124e-15$   
 $NR \text{ (final)} = 1.80715$   
 $NS \text{ (final)} = 0.832824$

Final Concentrations with Step Size limited to 0.01

$NA \text{ (final)} = 0.0266918$   
 $NB \text{ (final)} = 3.93167e-13$   
 $NR \text{ (final)} = 1.80714$   
 $NS \text{ (final)} = 0.83283$



