

# Voorhaar Stress Engineering

## CHEMICAL BATCH PROCESS SIMULATIE VAN EEN CONTINUE DYNAMISCH SYSTEEM

Date: Vr 05-Apr-2024

Time: 10:00:24

Project: WERKEN AAN ALLERLEI PROGRAMMATUUR

Jobnr: 2024



### ABSTRACT:

#### Chemical Batch Process

A chemical batch process may be described as a reservoir, in which some materials are brought together to form a desired new material, and maybe a non-desired by-product.

The dynamics of the process are defined with reaction equations with reaction speed constants.

The following model is an example of such a reaction.

Materials A (black) and B (red) are brought together to form material C. (blue)

Material D (purple) is a by-product.

The reaction speed constants and initial values used for simulation are:

K1 = 0.4 l/hour CA(0) = 7 kmol/m<sup>3</sup>

K2 = 0.16 l/hour CB(0) = 2 kmol/m<sup>3</sup>

K3 = 0.13 l/hour CC(0) = 0 kmol/m<sup>3</sup>

K4 = 0.08 l/hour CD(0) = .5 kmol/m<sup>3</sup>

K5 = 0.10 l/hour

### REFERENCES:

1	PVo	Vr 05-Apr-2024	Modified colors of graph			
0	PVo	Za 24-Feb-2024	First Issue	PVo		
REV	BY	DATE	DESCRIPTION	CHECKED	PROJECT APPROVAL	THIRD PARTY APPROVAL
STATUS CODE			DOCUMENT NUMBER	REVISION	STATUS	
A	Preliminary for information only		<b>SP124003</b>	<b>1</b>	<b>A</b>	
B	For review					
C	Authorized for construction					

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1	Structuur	Parameters
2	1 INT 10	7.00000
3	2 INT 12 13	2.00000
4	3 INT 6	0.00000
5	4 INT 7 14	0.50000
6	5 GAI 1	0.40000
7	6 GAI 2	0.16000
8	7 GAI 2	0.13000
9	8 GAI 2	0.10000
10	9 GAI 4	0.08000
11	10 SUM 17 8	
12	11 SUM 16 9	
13	12 SUM 11 15	
14	13 GAI 6	-1.00000
15	14 GAI 9	-1.00000
16	15 GAI 7	-1.00000
17	16 GAI 10	-1.00000
18	17 GAI 5	-1.00000
19		
20	Uitvoer:	
21	Blok 1	
22	Blok 2	
23	Blok 3	
24	Blok 4	
25	Ondergrens :	0.100
26	Bovengrens :	10.000
27	Eindtijd	10.000 sec
28	Uitvoer om de	0.01000 sec
29	Aantal blokken =	17

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### Simulatie van een continue dynamisch systeem

