1 Variables

2 root

	var	symbol	documentation	type	units	tokens	eqs
5	F	F	incidence matrix of a directed graph	network		[]	
6	t	t	time	frame	s	[]	
7	to	to	starting time	frame	s	[]	4
8	te	te	end time	frame	s	[]	5
1	$value$	value	numerical value	constant		[]	
2	$zero$	zero	numerical value zero	constant		[]	1
3	one	one	numerical value one	constant		[]	2
4	$onehalf$	onehalf	numerical value one half	constant		[]	3

3   physical

	var	symbol	documentation	type	units	tokens	eqs
9	r_{xN}	r_x	x-coordinate	frame	m	[]	
10	r_{yN}	r_y	y-coordinate	frame	m	[]	
11	U_N	U	foundation state – internal energy	state	$kg\,m^2\,s^{-2}$	[]	
12	S_N	S	foundation state – entropy	state	$kg\,m^2\,K^{-1}\,s^{-2}$	[]	
13	V_N	V	foundation state – volume	state	m^3	[]	
14	n_N	n	foundation state – species mass	state	mol	[]	
15	p_N	p	thermodynamic pressure	effort	$kg\,m^{-1}\,s^{-2}$	[]	6

4 control

	var	symbol	documentation	type	units	tokens	eqs

5 reactions

	var	symbol	documentation	type	units	tokens	eqs

6 material

	var	symbol	documentation	type	units	tokens	eqs

7 macroscopic

	var	symbol	documentation	type	units	tokens	eqs

8 solid

	var	symbol	documentation	type	units	tokens	eqs

9 fluid

	var	symbol	documentation	type	units	tokens	eqs

10 liquid

	var	symbol	documentation	type	units	tokens	eqs

11 gas

	var	symbol	documentation	type	units	tokens	eqs

12 control–control

	var	symbol	documentation	type	units	tokens	eqs

13 gas–liquid

	var	symbol	documentation	type	units	tokens	eqs

14 gas–gas

	var	symbol	documentation	type	units	tokens	eqs

15 liquid–liquid

	var	symbol	documentation	type	units	tokens	eqs

16   gas–solid

	var	symbol	documentation	type	units	tokens	eqs

17   solid–solid

	var	symbol	documentation	type	units	tokens	eqs

18 liquid–solid

	var	symbol	documentation	type	units	tokens	eqs

19 material–material

	var	symbol	documentation	type	units	tokens	eqs

20 reactions–reactions

	var	symbol	documentation	type	units	tokens	eqs

21   Equations

22   Generic

no	equation	documentation	layer
1	$zero := \text{Instantiate}(value, value)$	numerical value zero	root
2	$one := \text{Instantiate}(value, value)$	numerical value one	root
3	$onehalf := \text{Instantiate}(value, value)$	numerical value one half	root
4	$to := \text{Instantiate}(t, value)$	starting time	root
5	$te := \text{Instantiate}(t, value)$	end time	root
6	$p_N := \frac{\partial U_N}{\partial V_N}$	thermodynamic pressure	physical