

CCPS Guidelines - Summary of Example Problems

Chapter 3

<u>Example Problem</u>	<u>Pages</u>	<u>Section</u>	<u>Chemicals</u>	<u>Computer Program</u>	<u>Computer Program Input / Data Files</u>		
					<u>COMFLOW</u>	<u>TPHEM</u>	<u>CCFLOW</u>
<u>Multi-Component Fire Exposure</u>							
Required Ideal Gas Flow Rate	139-145	3.3.2.1.4	Acetone / Ethanol / Water	SAFIRE / SC-DIERS	-	-	-
SRV Installation (Nozzle Vapor Flow)	181-193	3.6.2.1.1	Acetone	COMFLOW / TPHEM / CCFLOW	CS 3.6.2-1 (184)	CS 3.6.2-5 (195)	AcetoneExam.cps
SRV Installation (Inlet Pressure Loss)	181-193	3.6.2.1.1	Acetone	COMFLOW / TPHEM / CCFLOW	CS 3.6.2-2 (187)	CS 3.6.2-6 (196)	PRV_Evaluation.cps Exam3.6.2-6.cps
SRV Installation (Inlet Pipe Velocity Loss)	181-193	3.6.2.1.1	Acetone	COMFLOW	CS 3.6.2-3 (188)	-	-
SRV Installation (Discharge Back Pressure)	181-193	3.6.2.1.1	Acetone	COMFLOW / TPHEM / CCFLOW	CS 3.6.2-4 (192)	CS 3.6.2-7 (197)	PRV_Evaluation.cps
Required Non-ideal Gas Flow Rate	196-200	3.6.2.1.4	Acetone / Ethanol / Water	-	-	-	-
SRV Reaction Force (Vapor Flow)	219-223	3.7.3.2	Acetone	CCFLOW	-	-	PRV_Evaluation.cps
SRV Reaction Force (Two-Phase Flow)	223-224	3.7.3.3	Acetone	TPHEM	-	CS 3.7.3-1 (224)	-
SRV Sizing (Simulation)	249-250	3A.7.1	Acetone / Ethanol / Water	SAFIRE	-	-	-
SRV Flow (Simulation)	301-304	3C.1	Acetone / Ethanol / Water	SAFIRE	-	-	-
<u>Propane Reboiler Tube Failure</u>							
Required Flow Rates	151-153	3.3.5.1.1	Propane	CCFLOW	-	-	Gas_VaporFlow.cps
Tube Break - Long (Vapor Flow)	289-291	3B.4.3.2.1	Propane	COMFLOW / TPHEM / CCFLOW	CS 3B.4.3-2 (291)	Table 3B.4-11 (299) Table 3B.4-12 (299) combo.tp - Case 1	PropaneExam.cps
Tube Break - Short (Two-Phase Flow)	290-300	3B.4.3.2.2	Propane	TPHEM	-	CS 3B.4.3-2 (298) Table 3B.4-10 (298) combo.tp - Case 2	-
SRV Installation (Nozzle Two-Phase Flow)	193-197	3.6.2.1.3	Propane	TPHEM	-	CS 3.6.2-5 (195) combo.tp - Case 3	-

SRV Installation (Inlet Pressure Loss)	193-197	3.6.2.1.3	Propane	TPHEM	-	CS 3.6.2-6 (196) combo.tp - Case 4	-
SRV Installation (Discharge Back Pressure)	193-197	3.6.2.1.3	Propane	TPHEM	-	CS 3.6.2-7 (197) combo.tp - Case 5	-
<u>Runaway Reaction</u>	164-166	3.4.3.2	Phenol / Formaldehyde	-	-	-	-
<u>Complex Runaway Reaction</u>							
Ideal Nozzle (Simulation)	249-252	3A.7.2	Polymerization / Decomposition	SAFIRE	-	-	-
Rupture Disk (Simulation)	303-304	3C.2	Polymerization / Decomposition	SAFIRE / SC-DIERS	-	-	-
<u>Chapter 5</u>							
<u>Estimate Flare Radiation</u>	442-444	5.9.3.2	-	-	-	-	-
<u>Problem Statement</u>	455-463	5A.2	R113				
Rupture Disk System		Table 5A.1		-	-	-	-
Safety relief Valve System		Table 5A.2		CCFLOW	-	-	Case9PRV.cps Case10PRV.cps
<u>Quench Pool and Piping Design</u>							
Sizing the Quench Pool Vessel	463-471	5A.3.1 5A3.2	R113-Water	EXCEL QuenchPoolExample.xls QPExm4_0.xls	-	-	-
Size the Sparger	471-475	5A.3.3	R113				
Rupture Disk System		Table 5A.4		-	-	-	-
Safety Relief Valve System		Table 5A.5		CCFLOW	-	-	Case9PRV.cps Case10PRV.cps
Size the Manifold and Distributor	475	5A.3.4	R113	-	-	-	-
<u>Gravity Separator and Piping Design</u>							
Piping Sizes	476-477	5A.4 Table 5A.7	R113	CCFLOW	-	-	Case5.cps Case6.cps
Horizontal Separator Design	477-478	5A.4.2	R113	CCFLOW	-	-	APIGSep.cps

Table 5A.8

EXCEL

GravitySepSizing.xls
GrSep4_0.xls

Case5.cps
Case6.cps

Vertical Separator Design

478-480

5A.4.3

R113

CCFLOW

-

-

APIGSep.cps

Table 5A.9

EXCEL

GravitySepSizing.xls
GrSep4_0.xls

Case5.cps
Case6.cps

Cyclone Separator and Piping Design

480-485

5A.5

R113

CCFLOW

-

-

#2.cps

Rupture Disk System

Table 5A.11

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Safety Relief Valve System

Table 5A.12

CCFLOW

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Case9PRV.cps
Case10PRV.cps