

# APÉNDICE 1: Archivos input y resultados de las simulaciones con el software

## AspenOne.

```

;
; Input Summary created by Aspen Plus Rel. 13.2 at 10:28:38 Sat Apr 21, 2007
; Directory C:\AspenTech\Aspen Plus 2004.1 Filename
C:\DOCUMENT-1\119676\LOCALS-1\Temp\~ap523c.tmp
;

```

```

DYNAMICS
  DYNAMICS RESULTS=ON

IN-UNITS SI PRESSURE=kPa TEMPERATURE=C DELTA-T=C PDROP=kPa

```

```
DEF-STREAMS CONVEN ALL
```

```
DATABANKS PURE13 / AQUEOUS / SOLIDS / INORGANIC / &
NOASPENPCD
```

```
PROP-SOURCES PURE13 / AQUEOUS / SOLIDS / INORGANIC
```

```
COMPONENTS
  WATER H2O /
  ETHANOL C2H6O-2

```

```
FLWSHEET
  BLOCK B1 IN=1 OUT=2 3

```

```
PROPERTIES UNIQUAC
  PROPERTIES UNIFAC

```

```
PROP-DATA UNI Q-1
  IN-UNITS ENG
  PROP-LIST UNI Q
  BPVAL WATER ETHANOL -2.493600000 1362.505849 0.0 0.0 &
    76.98200338 212.0000023 0.0
  BPVAL ETHANOL WATER 2.004600000 -1312.146890 0.0 0.0 &
    76.98200338 212.0000023 0.0

```

```
STREAM 1
  IN-UNITS SI
  SUBSTREAM MIXED TEMP=92. <C> PRES=101. <kPa>
  MASS-FLOW WATER 0.84 / ETHANOL 0.16

```

```
BLOCK B1 FLASH2
  IN-UNITS SI
  PARAM TEMP=92. <C> VFRAC=1.

```

```
EO-CONV-OPTI
```

```
STREAM-REPOR MOLEFLOW
```

```

;
;
;
;
;
;

```

```
BLOCK: B1 MODEL: FLASH2
```

```

-----
INLET STREAM: 1
OUTLET VAPOR STREAM: 2
OUTLET LIQUID STREAM: 3
PROPERTY OPTION SET: UNIQUAC UNIQUAC / IDEAL GAS

```

	*** MASS AND ENERGY BALANCE ***		RELATIVE DIFF.
TOTAL BALANCE	IN	OUT	
MOLE(KMOL/SEC)	0.538183E-01	0.538183E-01	0.000000E+00
MASS(KG/SEC)	1.00000	1.00000	0.000000E+00
ENTHALPY(WATT)	-0.150944E+08	-0.128822E+08	-0.146559

```
*** INPUT DATA ***
```

```

TWO PHASE TV FLASH
SPECIFIED TEMPERATURE C 92.0000
VAPOR FRACTION 1.00000
MAXIMUM NO. ITERATIONS 30
CONVERGENCE TOLERANCE 0.00010000

```

```
*** RESULTS ***
```

```
OUTLET TEMPERATURE C 92.000
```

OUTLET PRESSURE            KPA                            77.012  
 HEAT DUTY                    WATT                            0.22122E+07  
 VAPOR FRACTION    1.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
WATER	0.97983	0.99835	0.97983	0.98145
ETHANOL	0.20167E-01	0.16462E-02	0.20167E-01	12.250

```

;
; Input Summary created by Aspen Plus Rel. 13.2 at 10:30:15 Sat Apr 21, 2007
; Directory                    C:\AspenTech\Aspen Plus                    2004.1                    File name
C:\DOCUME-1\119676\LOCALS-1\Temp\~ap523f.tmp
;

```

DYNAMICS  
 DYNAMICS RESULTS=ON

IN-UNITS SI PRESSURE=kPa TEMPERATURE=C DELTA-T=C PDR0P=kPa

DEF-STREAMS CONVEN ALL

DATABANKS PURE13 / AQUEOUS / SOLIDS / INORGANIC / &  
 NOASPENPCD

PROP-SOURCES PURE13 / AQUEOUS / SOLIDS / INORGANIC

COMPONENTS  
 WATER H2O /  
 ETHANOL C2H6O-2

FL0WSHEET  
 BLOCK B1 IN=1 OUT=2 3

PROPERTIES UNIQUAC  
 PROPERTIES UNIFAC

PROP-DATA UNIQ-1  
 IN-UNITS ENG  
 PROP-LIST UNIQ  
 BPVAL WATER ETHANOL -2.493600000 1362.505849 0.0 0.0 &  
 76.98200338 212.0000023 0.0  
 BPVAL ETHANOL WATER 2.004600000 -1312.146890 0.0 0.0 &  
 76.98200338 212.0000023 0.0

STREAM 1  
 IN-UNITS SI  
 SUBSTREAM MIXED TEMP=92. <C> PRES=101. <kPa>  
 MASS-FLOW WATER 0.95 / ETHANOL 0.05

BLOCK B1 FLASH2  
 IN-UNITS SI  
 PARAM TEMP=92. <C> VFRAC=1.

EO-CONV-OPTI

STREAM-REP0R MOLEFLOW

```

;
;
;
;
;
;
;

```

BLOCK: B1            MODEL: FLASH2

```

-----
INLET STREAM:            1
OUTLET VAPOR STREAM:    2
OUTLET LIQUID STREAM:   3
PROPERTY OPTION SET:    UNIQUAC    UNIQUAC / IDEAL GAS

```

	***	MASS AND ENERGY BALANCE	***	
	IN		OUT	RELATIVE DIFF.
TOTAL BALANCE				
MOLE (KMOL/SEC)	0.501001E-01		0.501001E-01	0.000000E+00
MASS (KG/SEC)	1.00000		1.00000	-0.222045E-15
ENTHALPY (WATT)	-0.137453E+08		-0.119692E+08	-0.129218

\*\*\* INPUT DATA \*\*\*

TWO PHASE TV FLASH  
 SPECIFIED TEMPERATURE C                                    92.0000  
 VAPOR FRACTION    1.00000  
 MAXIMUM NO. ITERATIONS    30

CONVERGENCE TOLERANCE 0.00010000

\*\*\* RESULTS \*\*\*  
OUTLET TEMPERATURE C 92.000  
OUTLET PRESSURE KPA 80.727  
HEAT DUTY WATT 0.17761E+07  
VAPOR FRACTION 1.0000

V-L PHASE EQUILIBRIUM :

COMP	F(I)	X(I)	Y(I)	K(I)
WATER	0.93068	0.99389	0.93068	0.93640
ETHANOL	0.69322E-01	0.61070E-02	0.69322E-01	11.351

; Input Summary created by Aspen Plus Rel. 13.2 at 15:03:28 Sun May 13, 2007  
; Directory C:\AspenTech\Aspen Plus 2004.1 Filename  
C:\DOCUMENT-1\119676\LOCALS-1\Temp\~ap734f.tmp

TGS

DYNAMICS  
DYNAMICS RESULTS=ON

IN-UNITS MET

DATABANKS PURE13 / AQUEOUS / SOLIDS / INORGANIC / &  
NOASPENPCD

PROP-SOURCES PURE13 / AQUEOUS / SOLIDS / INORGANIC

COMPONENTS  
WATER H2O /  
ETHANOL C2H6O-2

PROPERTIES UNIQUAC

ESTIMATE ALL  
UNIQ ALL ALL UNIFAC

PROP-DATA UNIQ-1  
IN-UNITS MET  
PROP-LIST UNIQ  
BPVAL WATER ETHANOL -2.493600000 756.9477000 0.0 0.0 &  
298.1400000 373.1500000 0.0  
BPVAL ETHANOL WATER 2.004600000 -728.9705000 0.0 0.0 &  
298.1400000 373.1500000 0.0

PROP-SET PS-1 SIGMAMX RHOMX UNITS='N/m' 'kg/cum' &  
SUBSTREAM=MIXED PHASE=L

PROPERTY-REPCES

PROP-TABLE PT-1 FLASHCURVE  
MASS-FLOW WATER 0.95 / ETHANOL 0.05  
STATE TEMP=20. <C> VFRAC=0.  
VARY MASS-FRAC COMP=WATER  
RANGE LIST=0.95 0.84  
TABULATE PROPERTIES=PS-1

ASPEN PLUS PLAT: WIN32 VER: 13.2 05/13/2007 PAGE 1

RUN CONTROL SECTION

RUN CONTROL INFORMATION

THIS COPY OF ASPEN PLUS LICENSED TO UNIV DE LAS AMERICAS

TYPE OF RUN: NEW

INPUT FILE NAME: \_1706bop.inm

OUTPUT PROBLEM DATA FILE NAME: \_1706bop  
LOCATED IN:

PDF SIZE USED FOR INPUT TRANSLATION:  
 NUMBER OF FILE RECORDS (PSIZE) = 0  
 NUMBER OF IN-CORE RECORDS = 256  
 PSIZE NEEDED FOR SIMULATION = 256

CALLING PROGRAM NAME: apmain  
 LOCATED IN: C:\PROGRA-1\ASPENT-1\ASPENP-1.1\Engin\exeq

TGS ONLY RUN

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PHYSICAL PROPERTIES SECTION

COMPONENTS

ID	TYPE	FORMULA	NAME OR ALIAS	REPORT NAME
WATER	C	H2O	H2O	WATER
ETHANOL	C	C2H6O-2	C2H6O-2	ETHANOL

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PROPERTY CONSTANT ESTIMATION SECTION

BINARY PARAMETERS

FOR COMPONENT PAIRS CONTAINING WATER

DESCRIPTION	PARAMETER NAME	ESTIMATED VALUE	METHOD OF ESTIMATION
UNIQUAC PARAMETERS			UNIQUAC
WATER ETHANOL	UNI Q /2	-203.9	
ETHANOL WATER	UNI Q /2	32.99	

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PHYSICAL PROPERTY TABLES SECTION

FLASH CURVE TABLE: PT-1

PROPERTIES ALONG A FLASH CURVE FOR THE MIXTURE: (KG/HR )  
 WATER 0.9500 , ETHANOL 0.5000E-01 ,

STATE SPECIFICATIONS:  
 TEMPERATURE: 293.2 K  
 VAPOR FRACTION: 0.0000E+00

VARIABLE(S): MASSFRAC

PROPERTY SET(S): PS-1

2 PHASE TV FLASHES WERE PERFORMED.

PROPERTY OPTION SET: UNIQUAC UNIQUAC / IDEAL GAS

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PHYSICAL PROPERTY TABLES SECTION

FLASH CURVE TABLE: PT-1 (CONTINUED)

MASSFRAC	SIGMAMX LIQUID	RHOMX LIQUID
WATER	N/M	KG/CUM
0.9500	7.2786-02	987.0366
0.8400	7.0263-02	962.8520

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PROBLEM STATUS SECTION

BLOCK STATUS

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```
*****  
*  
* Calculations were completed normally *  
* *  
* All Property Tables were completed normally *  
* *  
* Properties estimation was completed normally *  
* *  
*****
```

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