



a.b.s. s.r.l.

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Certificato n°5360/01/S

ABS FIRE FIGHTING

VdS-VERSION 3.1 (1997) SNR FM1997)

CUSTOMER : DEKA
PROJECT : 06FM004
FLOODING ZONE : VOLUME 780m³
DATE : 17/03/2006
REMARKS : 0
FILE-NAME : 06FM004

CALCULATION ZONE : 1.
V= 780.0 M**3 VG= .0 M**3 V%= 7.00
VR= 780.00 M**3 VOL-PERCENT FM200 = 7.00 % PIPE-TEMP = 20.0 C
NUMBER OF NOZZLES= 4. MIN. FM200 STORAGE QUANT = 428.03 KG
NOZZLES: 11001. 11002. 11003. 11004. 0. 0. 0. 0. 0. 0.

CONT VOL (L)	F-RATIO (KG/L)	PRESSURE	CONT TEMP (C)	DISCHARGE TIME (S)
80.0	1.00	42.00	15.00	10.00

DESIGN WITH INCLUDED GAS-DISCHARGE

SECTION	STA	END	L	DH	PIPE SYSTEM							
					PTYP	DIA	B90	B45	T0	T90	COM	NC/FD
1.	0.	1.	1.6	1.6	13.	21.7	.0	.0	0.	0.	334.0	6.0
2.	1.	2.	2.4	.0	11.	105.3	-1.0	.0	0.	0.	.0	.0
3.	2.	3.	12.2	.7	11.	105.3	-3.0	.0	0.	0.	.0	.0
4.	3.	4.	3.1	.0	11.	80.9	.0	.0	-1.	0.	.0	.0
5.	4.	11001.	2.1	-.1	11.	53.1	.0	.0	1.	0.	.0	.0
6.	4.	11002.	5.8	-.1	11.	53.1	.0	.0	0.	0.	.0	.0
7.	3.	5.	3.1	.0	11.	80.9	.0	.0	0.	0.	.0	.0
8.	5.	11003.	5.8	-.1	11.	53.1	.0	.0	1.	0.	.0	.0
9.	5.	11004.	6.8	-.1	11.	53.1	.0	.0	0.	0.	.0	.0



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** PRESSURE IN BARS ABSOLUTE **

MINIMUM FM200 DESIGN QUANTITY = 428.0 KG
 SUPPLEMENT FACTOR OF QUANTITY = 1.0 KG
 MINIMUM STORAGE QUANTITY = 428.0 KG
 ACTUAL STORAGE QUANTITY = 428.0 KG
 NUMBER OF CONTAINERS = 6
 FILLING RATIO = .89 KG/L
 FM200 MASS PER CONTAINER = 71.3 KG
 STARTING CONTAINER PRESSURE = 40.6 BAR **

DISCHARGE TIME AIR : .0 S
 TOTAL GAS DISCHARGE TIME : .0 S
 TWO-PHASE DISCHARGE TIME : 10.0 S
 TOTAL DISCHARGE TIME : 10.0 S

CONTAINER WORKING PRESSURE : 16.5 BAR**
 CONTAINER WORKING TEMPERATURE : 12.9 C
 TOTAL NETWORK VOLUME : 200.3 LITER
 MEDIUM PIPE CONTENT : 32.3 KG FM200
 FILLING PORTION IN PIPE SYSTEM : .08 KG FM200/KG FM200-STORAGE

SECTION	STA	END	PRESS	FLOW	PIPE DIMENSION	
			BAR**	KG/S	DI	INCH.
1.	0.	1.	1.00	7.13	21.7	3/4
2.	1.	2.	1.00	42.80	105.3	4
3.	2.	3.	1.00	42.80	105.3	4
4.	3.	4.	1.00	21.40	80.9	3
5.	4.	11001.	2.00	10.70	53.1	2
6.	4.	11002.	2.00	10.70	53.1	2
7.	3.	5.	1.00	21.40	80.9	3
8.	5.	11003.	2.00	10.70	53.1	2
9.	5.	11004.	2.00	10.70	53.1	2



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ZONE	NUMBER	TYP/NO	OR	PIPE-CON		ORIFICE	FM200
				MM	INCH.		
1.	11001.	1	1	53.1	2	14.0	107.0
1.	11002.	1	1	53.1	2	14.0	107.0
1.	11003.	1	1	53.1	2	14.0	107.0
1.	11004.	1	1	53.1	2	14.0	107.0

TWO-PHASE-DISCHARGE TIME : 10.0 S
RELEASED TWO-PHASE FM200 : 428.0 KG

ZONE	NOZZLE	0-VELOC M/S	TRANS TIME S	JETDISTANCE M
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GASCOMPOSITION AFTER DISCHARGE (PROZENT)
ZONE O2 FM200 N2
1 20.0 7.2 72.9
TOTAL FLOODED FM200-MASS : 428.0 KG

RECOMMENDED AREA AGAINST OVERPRESSURE
ZONE AREA M**2 OVERPRESSURE (MBAR)
1 1.512 1.0

COMPONENT	NUMBER	CODE	COEFFICIENT
VR33+TP+FRF+CLA	1	334.	6.50

NOZZLE-TYP	NUMBER	C1	C2	C3	C4	C5	C6
1	4	.107	.269	.232	-.203	.000	.000

PIPE-TYP	DI	INCH.	LENGTH
13.	21.70	3/4	1.600
11.	105.30	4	14.600
11.	80.90	3	6.200
11.	53.10	2	20.500

NUMBER OF BENDS (+) AND ELBOWS (-)

BEND-TYP	DI	INCH.	NUMBER
-90.	105.30	4	4.

NUMBER OF T-DISTRIBUTOR (IN- AND OUT-DIAMETER)

NUMBER	INPUT	90-OUT	90-OUT	0-OUT
1	105.3	80.9	80.9	.0
2	80.9	53.1	.0	53.1