



Project: Serwerownia MPWIK Bydgoszcz

Project-No:

Building:

Object:

Contractor:

Owner:

Project engineer:

Gureco

Date:

03/06/2022

Altitude above sealevel:

100 m

Regulation rule for calculation of FK-5-1-12 quantities:

NFPA 2001 (edition 2000)

Pipe catalogue:

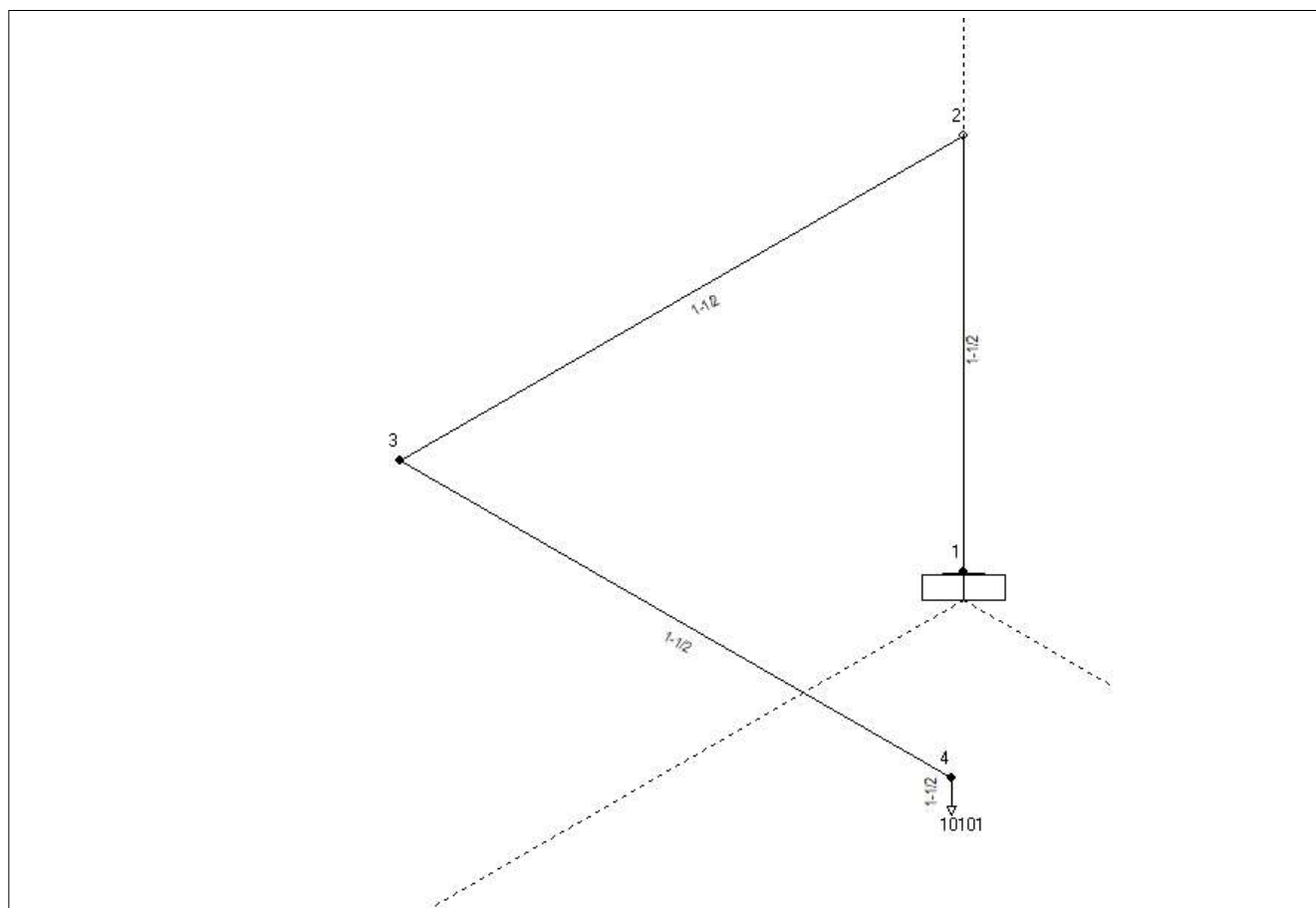
PIPES_19-00.rkl

Component catalogue:

RGSMAM-NC1230_VdS_19-00.arm

Nozzle catalogue:

FEDR-NC1230_VdS_19-00.noz





Pipesystem data:

Section-No:	Starting-node	Endnode	Length [m]	Height [m]	Pipetype	Diameter [mm] **	Fitting *	Component code	Component coefficient	Nb of containers FK-5-1-12 quantity
1	0	1	0,100	0,100	12	34,0		-	541,0000	1,0
2	1	2	1,580	1,580	11	41,9		-	-	0,0
3	2	3	2,350	0,000	11	41,9	E	-	-	0,0
4	3	4	2,300	0,000	11	41,9	E	-	-	0,0
5	4	10101	0,100	-0,100	11	41,9	E	-	-	0,0

* C=Component, B=Bend, T=T-Piece, E=Elbow

** If a pipe diameter is equal zero see the extra table of the calculated diameters

Legend of pipetypes

Type	Pipeclass	Pipe roughness
12	EN-10255 M	hose
11	EN-10255 M	galvanized

Nozzle data:

No.	Calculation zone	Diameter [mm]
10101	Przestrzen Glowna	15,0

Legend of nozzles:

Type	Number of orifices	C1	C2	C3	C4	C5	C6
1 FEDR	1	0,00014	0,70424	0,00000	0,00000	0,00000	0,00000



Calculation zone data:

Calculation of design quantity:

Zone	Total volume [m3]	Volume of building parts [m3]	Calculated volume [m3]	Total surface [m2]	Max. Over-pressure [mbar]	Design temp. [°C]	Extinguish- conc. [% Vol]	Design factor	Design conc. [% Vol]	Design quantity [kg]
1 Przestrzen Glowna	92,4	0,0	92,4	0,0	3,000	20,0	3,4	1,35	4,5	60,90

Regulation rule for calculation of FK-5-1-12 quantities: NFPA 2001 (edition 2000)

Altitude above sealevel: 100,0 m

FK-5-1-12 storage input data:

Container volume:	84,0 l
Filling ratio:	1,120 kg/l
Filling pressure:	25,0 bar abs
Storage temperature:	20,0 °C
Supplement factor:	1,02
Minimum storage quantity:	62,12 kg
Number of containers:	1

Discharge time (input value): 10,0 s

Further information:

Design with predetermined orifice diameters



Calculation results:

FK-5-1-12 storage data:

Design quantity:	60,9 kg
Supplement factor:	1,02
Minimum storage quantity:	62,1 kg
Container volume:	84,0 l
Filling ratio:	0,74 kg/l
Filling pressure:	25,0 bar abs
FK-5-1-12 -mass per container:	62,1 kg
Number of containers:	1
Actual storage quantity:	62,1 kg
Storage temperature:	20,0 °C
Starting container pressure:	25,0 bar abs

Discharge time:

Discharge time air:	0,3 s
Total gas discharge time:	0,3 s
Two-phase discharge time:	9,0 s
Total discharge time:	9,3 s

System information:

Container working pressure:	15,6 bar abs
Container working temperature:	20,0 °C
Total network volume:	8,6 l
Medium pipe content:	13,0 kg FK-5-1-12
Filling portion in pipe system:	0,21 kg FK-5-1-12 /kg FK-5-1-12 -storage



Pipe system:

Section-No:	Starting-node	Endnode	Pressure [bar abs]	Flowrate [kg/s]	Pipedimension Di [mm]	DN
1	0	1	15,00	6,42	34,0 *	--
2	1	2	14,72	6,45	41,9	1-1/2
3	2	3	14,51	6,45	41,9	1-1/2
4	3	4	14,31	6,45	41,9	1-1/2
5	4	10101	14,18	6,45	41,9	1-1/2

* Attention! This pipe dimension is not in the pipe catalogue!



Nozzle data:

Calculation- zone no:	Nozzle no.	Nozzle type	Number of orifices	Pipeconnection Di [mm]	DN	Orifice [mm]	FK-5-1-12 out- put [kg]
1	10101	1	1	41,9	1-1/2	15,0	61,2

Two-phase discharge time: 9,0 s

Calculation- zone no:	Nozzle no.	Outlet velocity [m/s]	Transport time [s]	Jetdistance [m]
1	10101	24,6	2,00	7,75



Concentrations:

Calculation- zone no:	O2	Gascomposition after discharge [%]	
		FK-5-1-12	N2
1	20,0	4,5	74,6

Pressure relief opening:

Calculation- zone no:	Recommended area against overpressure		Max. flow [kg/s]
	Area [m²]	Overpressure [mbar]	
1	0,035	3,0	



Component list:

Component	Number	Code	Coefficient
RGS-MAM-40 valve + h	1	541	3,400

Nozzle-type	Number	C1	C2	C3	C4	C5	C6
1	1	0,00010	0,70400	0,00000	0,00000	0,00000	0,00000

Pipe-type	Di [mm]	DN	Length [m]
12	34,00	--	0,100
11	41,90	1-1/2	6,400

Number of bends (+) and elbows (-)

Bend-type	Di [mm]	DN	Number
-90	41,90	1-1/2	3

Number of T-distributors (in- and outdiameter)

Number	Input	90-out	90-out	0-out
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