

Results for NFPA® 750 Standard on Water Mist Fire Protection Systems (2015 Edition) submitted by :-
Your name and address will appear here

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Q1] Name of project = Second Demonstration Project
 Q2] Number / reference =
 Q3] Name of building owner = This information is reset each time you
 Q4] Address / location = you click on "DEMO 2" so you can make
 Q5] Occupancy = whatever changes and experiment with all
 Q6] Description of hazard = the options / features of FREEWATERMIST
 Q7] Water mist system application type = without erasing this original data
 Q8] Protected area reference =
 Q9] Total area covered m² = 108.00
 Q10] Density of coverage mm/min = 1.25
 Q11] List of other drawings =
 Q12] Any comments =
 Q13] Any limitations =
 Q14] Name of designer = Alan Ashfield
 Q15] Approving agency =
 Q16] Nozzle type / make / ref =
 Q17] Nozzle size / ports =
 Q18] Nozzle "K" factor = 1.20
 Q19] Nozzle min pressure bars = 100.00
 Q20] Nozzle area of coverage m² = 9.00
 Q21] Pressure loss formula H-W/D-W = Darcy-Weisbach
 Q22] Water temp °C (+density viscosity) = 20 (Density = 998.2 kg/m³ and Absolute Viscosity = 1.00 centipoise)
 Q23] Include velocity pressure at nozzles = Yes
 Q24] Source reference =
 Q25] Static pressure bars = 120.00
 Q26] Residual pressure bars = 120.00
 Q27] At flow L/min = 500
 Q28] Start node number = 100
 Q29] Node increment = 10
 Q30] Source height m = 3.00
 Q31] Pipe types/sizes/fittings database = FreeWaterMistData.txt (Latest = 10:13 Wednesday 25 November 2015)

Data file name used = D:\FREEWATERMIST\AlansDemo2.3wm

Source = Node 100 = 153.3 L/min at 120.000 bars

Summary for 24 pipes and 12 nozzles given below :-

Node numbers	=	100	to	340	
Pipe sizes	=	12	to	20	mm
Pipe bores	=	13.39	to	18.92	mm
Pipe lengths	=	0.750	to	6.000	m
Pipe static changes	=	-2.500	to	3.000	m
Total equivalent lengths of pipes	=	1.000	to	6.610	m
Flow rates in pipes	=	12.8	to	153.3	L/min
Pressures at nodes	=	112.994	to	120.000	bars all balanced to within 0.001 bar
Pipe pressure drops	=	0.066	to	2.395	bars
Pipe pressure drop rates	=	0.022	to	0.362	bar/metre
Pipe velocities	=	1.5	to	9.1	m/s
Pipe velocity pressures	=	0.011	to	0.412	bars
Reynolds numbers for Darcy-Weisbach	=	20146	to	171307	
"K" factors of nozzles	=	1.20	to	1.20	
Minimum nozzle flow rates	=	12.0	to	12.0	L/min
Minimum operating pressures	=	100.000	to	100.000	bars
Nozzle areas of coverage	=	9.00	to	9.00	m ²
Actual nozzle flow rates	=	12.8	to	12.8	L/min
Actual nozzle "normal" pressures	=	112.994	to	113.605	bars
Nozzle densities of coverage	=	1.42	to	1.42	mm/min
Heights above node 100	=	4.500	to	4.500	m

12 operating nozzles of type

Nozzle no	Node no	"K" factor	Flows in L/min		Area sq. m	Density mm/min	Height m	Pipe to nozzle		Pressures bars				
			Minimum	Actual				no	m/s	Minimum	Normal	Vel P	Total	
1	180	1.20	12.0	12.8	9.00	1.42	4.500	8	12	4.5	100.000	113.605	0.103	113.708
2	190	1.20	12.0	12.8	9.00	1.42	4.500	9	12	3.0	100.000	113.435	0.046	113.480
3	200	1.20	12.0	12.8	9.00	1.42	4.500	10	12	1.5	100.000	113.414		113.414
4	220	1.20	12.0	12.8	9.00	1.42	4.500	12	12	4.5	100.000	113.185	0.102	113.287
5	230	1.20	12.0	12.8	9.00	1.42	4.500	13	12	3.0	100.000	113.015	0.046	113.061
6	240	1.20	12.0	12.8	9.00	1.42	4.500	14	12	1.5	100.000	112.994		112.994
7	280	1.20	12.0	12.8	9.00	1.42	4.500	18	12	4.5	100.000	113.605	0.103	113.708
8	290	1.20	12.0	12.8	9.00	1.42	4.500	19	12	3.0	100.000	113.435	0.046	113.480
9	300	1.20	12.0	12.8	9.00	1.42	4.500	20	12	1.5	100.000	113.414		113.414
10	320	1.20	12.0	12.8	9.00	1.42	4.500	22	12	4.5	100.000	113.185	0.102	113.287
11	330	1.20	12.0	12.8	9.00	1.42	4.500	23	12	3.0	100.000	113.015	0.046	113.061
12	340	1.20	12.0	12.8	9.00	1.42	4.500	24	12	1.5	100.000	112.994		112.994

24 pipes in 0 loops to 12 operating nozzles

Pipe no	Node numbers		Type	Size mm	Bore mm	Flow L/min	Length m	Direction @ slope	Fittings +KLMB	Total eq length m	Vel m/s	Height m	Rate bar/m	Vel P bar	Pressures bars			
	Start	End													Start	Fri	Static	End
1	100	110	CuK	20	18.92	153.3	1.000	Up		1.000	9.1	4.000	0.362	0.412	120.000	-0.362	-0.098	119.540
2	110	120	CuK	20	18.92	153.3	6.000	West	E	6.610	9.1	4.000	0.362	0.412	119.540	-2.395		117.144
3	120	130	CuK	20	18.92	153.3	1.000	North	E	1.610	9.1	4.000	0.362	0.412	117.144	-0.583		116.561
4	130	140	CuK	20	18.92	153.3	2.500	Down	E	3.110	9.1	1.500	0.362	0.412	116.561	-1.127	0.245	115.679
5	140	150	CuK	16	16.56	76.6	0.750	West	T	1.360	5.9	1.500	0.196	0.176	115.679	-0.266		115.412
6	150	160	CuK	16	16.56	76.6	3.000	Up	E+GATE	3.460	5.9	4.500	0.196	0.176	115.412	-0.677	-0.294	114.441
7	160	170	CuK	16	16.56	76.6	2.000	North	E	2.460	5.9	4.500	0.196	0.176	114.441	-0.482		113.960
8	170	180	CuK	12	13.39	38.4	1.000	West	T	1.610	4.5	4.500	0.157	0.103	113.960	-0.252		113.708
9	180	190	CuK	12	13.39	25.6	3.000	West		3.000	3.0	4.500	0.076	0.046	113.708	-0.227		113.480
10	190	200	CuK	12	13.39	12.8	3.000	West		3.000	1.5	4.500	0.022	0.011	113.480	-0.067		113.414
11	170	210	CuK	12	13.39	38.3	3.000	North	TT	3.000	4.5	4.500	0.156	0.102	113.960	-0.468		113.492
12	210	220	CuK	12	13.39	38.3	1.000	West	E	1.310	4.5	4.500	0.156	0.102	113.492	-0.204		113.287
13	220	230	CuK	12	13.39	25.5	3.000	West		3.000	3.0	4.500	0.075	0.046	113.287	-0.226		113.061
14	230	240	CuK	12	13.39	12.8	3.000	West		3.000	1.5	4.500	0.022	0.011	113.061	-0.066		112.994
15	140	250	CuK	16	16.56	76.6	0.750	East	T	1.360	5.9	1.500	0.196	0.176	115.679	-0.266		115.412
16	250	260	CuK	16	16.56	76.6	3.000	Up	E+GATE	3.460	5.9	4.500	0.196	0.176	115.412	-0.677	-0.294	114.441
17	260	270	CuK	16	16.56	76.6	2.000	North	E	2.460	5.9	4.500	0.196	0.176	114.441	-0.482		113.960
18	270	280	CuK	12	13.39	38.4	1.000	East	T	1.610	4.5	4.500	0.157	0.103	113.960	-0.252		113.708
19	280	290	CuK	12	13.39	25.6	3.000	East		3.000	3.0	4.500	0.076	0.046	113.708	-0.227		113.480
20	290	300	CuK	12	13.39	12.8	3.000	East		3.000	1.5	4.500	0.022	0.011	113.480	-0.067		113.414
21	270	310	CuK	12	13.39	38.3	3.000	North	TT	3.000	4.5	4.500	0.156	0.102	113.960	-0.468		113.492
22	310	320	CuK	12	13.39	38.3	1.000	East	E	1.310	4.5	4.500	0.156	0.102	113.492	-0.204		113.287
23	320	330	CuK	12	13.39	25.5	3.000	East		3.000	3.0	4.500	0.075	0.046	113.287	-0.226		113.061
24	330	340	CuK	12	13.39	12.8	3.000	East		3.000	1.5	4.500	0.022	0.011	113.061	-0.066		112.994

E = Standard 90° elbow
 T = Tee - side branch
 TT = Tee - straight run
 GATE = Gate valve
 H-W "C" Factor = 150 and D-W Roughness = 0.0015 mm

CuK = Copper Tube Type "K"

FREEWATERMIST [14/12/2015] by Alan Ashfield is in metric SI units only so not acceptable in America or Myanmar
 For more information about my other 18 FREE programs and how to download them, please visit <https://www.freehc.net>