

Theatrical Fog and Haze Testing: Calibration Factors

Actor’s Equity productions that use haze and/or fog effects are required to meet the following peak exposure guidelines:

Glycols: 40 mg/m ³	Mineral oil: 25 mg/m ³	Glycerol/glycerin: 50 mg/m ³
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To ensure that peak exposure concentrations are below these guidelines, theatres may either (1) use the fog and haze machines in accordance with the Time and Distance (T&D) Guidelines developed by Ramboll or (2) conduct production-specific testing using calibrated aerosol monitors. A production that is able to block its scenes in accordance with the T&D guidelines would not be required to conduct production-specific testing.

Ramboll has developed a protocol for using several different aerosol monitors to measure concentrations of theatrical fog and haze during production-specific testing. The monitors report the results in terms of mass concentration (milligrams per cubic meter, or mg/m³) with the assumption that the particles in the air are a fine dust. Because different types of particles have different light scattering properties, the readings from the monitor need to be adjusted (or calibrated) when measuring something other than dust (such as fog droplets). The user converts the aerosol readings to the correct mg/m³ readings for the fog droplets by multiplying the aerosol readings by a calibration factor for the particular fog fluid/fog machine combination being used for the fog or haze effect, as follows:

$$CONC = CF_{MON} \times MON$$

where:

- CONC = air concentration of total glycols, mineral oil, or glycerol, mg/m³
- CF_{MON} = aerosol monitor calibration factor (mg/m³)/ (mg/m³ aerosol)
- MON = aerosol monitor reading, mg/m³ aerosol

The following table lists calibration factors that have been developed and approved by Actors' Equity Association and the Broadway League for use in measuring theatrical fog and haze:

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Advanced Entertainment Systems (AES) / MT-Electronic	Vario 6	Cryo Fog Fluid	Glycol	0.86	0.48	1.19	0.73	(49)
Advanced Entertainment Systems (AES) / MT-Electronic	Vario 6	Cryo Fog Fluid	Glycol	1.40	0.78	1.94	1.18	(49)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Advanced Entertainment Systems (AES) / MT-Electronic	Vario 8	Cryo Fog Fluid	Glycol	0.66	0.37	0.91	0.56	(49)
Advanced Entertainment Systems (AES) / MT-Electronic	Vario 8	Cryo Fog Fluid	Glycol	0.70	0.39	0.97	0.59	(49)
American DJ (ADJ)	Fog Fury 3000	Froggy's Fog Backwood Bay	Glycol	0.39	0.22	0.54	0.33	(35)
American DJ (ADJ)	Fog Fury 3000	Froggy's Fog Bog Fog	Glycol	1.62	0.91	2.24	1.37	(35)
American DJ (ADJ)	Fog Fury 3000	Froggy's Fog Cryo Freeze	Glycol	0.64	0.36	0.89	0.54	(35)
American DJ (ADJ)	Fog Fury 3000	Froggy's Fog Quick Blast	Glycol	0.64	0.36	0.89	0.54	(35)
American DJ (ADJ)	Fog Fury 3000	Froggy's Fog Velocity	Glycol	0.64	0.36	0.89	0.54	(35)
American DJ (ADJ)	Fog Storm 1700 HD	Froggy's Fog Cryo Freeze	Glycol	2.67	1.50	3.69	2.26	(35)
American DJ (ADJ)	Fog Storm 1700 HD	Froggy's Fog Quick Blast	Glycol	2.67	1.50	3.69	2.26	(35)
American DJ (ADJ)	Fog Storm 1700 HD	Froggy's Fog Velocity	Glycol	2.67	1.50	3.69	2.26	(35)
Antari	1520 RGB Upshot	Froggy's Fog Quick Blast	Glycol	1.28	0.72	1.77	1.08	(35)
Antari	CH-1 Cinema Hazer	Antari CHL-2 Fluid	Mineral Oil	0.30	0.17	0.41	0.25	(66)
Antari	DNG-200 Low Fog	Antari FLC Fog Fluid	Glycol	3.40	1.90	4.70	2.88	(45)
Antari	DNG-200 Low Fog	Froggy's Fog Cryo Freeze	Glycol	4.99	2.79	6.90	4.22	(35)
Antari	DNG-250 Low Fogger	Antari FLL Low Fog Fluid	Glycol	3.89	2.18	5.38	3.29	(66)
Antari	F-1 Fazer	Antari FLG Fog Fluid	Glycol	0.68	0.38	0.94	0.58	(45)
Antari	F-4 Fazer	Antari FLG Fog Fluid	Glycol	1.06	0.59	1.47	0.90	(45)
Antari	F-5/F-5D Fazer	Froggy's Fog Faze Haze	Glycol	0.69	0.39	0.95	0.58	(35)

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				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Antari	F-7 Smaze	Antari FLG Fog Fluid	Glycol	0.97	0.54	1.34	0.82	(45)
Antari	ICE	Froggy's Fog Cryo Freeze	Glycol	2.54	1.42	3.51	2.15	(35)
Antari	M-5	Froggy's Fog Amusement Park Fluid	Glycol	1.41	0.79	1.95	1.19	(35)
Antari	M-5	Froggy's Fog Backwood Bay	Glycol	1.41	0.79	1.95	1.19	(35)
Antari	M-5	Froggy's Fog Bog Fog	Glycol	1.03	0.58	1.42	0.87	(35)
Antari	M-5	Froggy's Fog Cryo Freeze	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	M-5	Froggy's Fog Quick Blast	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	M-5	Froggy's Fog Velocity	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	M-8	Antari FLG Fog Fluid	Glycol	2.17	1.22	3.00	1.84	(45)
Antari	M-8	Froggy's Fog Amusement Park Fluid	Glycol	1.35	0.76	1.87	1.14	(35)
Antari	M-8	Froggy's Fog Backwood Bay	Glycol	1.35	0.76	1.87	1.14	(35)
Antari	M-8	Froggy's Fog Bog Fog	Glycol	1.29	0.72	1.78	1.09	(35)
Antari	M-8	Froggy's Fog Cryo Freeze	Glycol	2.65	1.48	3.66	2.24	(35)
Antari	M-8	Froggy's Fog Quick Blast	Glycol	2.65	1.48	3.66	2.24	(35)
Antari	M-8	Froggy's Fog Velocity	Glycol	2.65	1.48	3.66	2.24	(35)
Antari	M-10	Froggy's Fog Bog Fog	Glycol	2.62	1.47	3.62	2.22	(35)
Antari	M-10	Froggy's Fog Cryo Freeze	Glycol	2.46	1.38	3.40	2.08	(35)
Antari	M-10	Froggy's Fog Quick Blast	Glycol	2.46	1.38	3.40	2.08	(35)
Antari	M-10	Froggy's Fog Velocity	Glycol	2.46	1.38	3.40	2.08	(35)
Antari	W-515D	Antari FLG Fog Fluid	Glycol	1.12	0.63	1.55	0.95	(45)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Antari	W-715x Fog Jet	Antari FLC Fog Fluid	Glycol	1.58	0.88	2.19	1.34	(44,45)
Antari	X-515	Froggy's Fog Amusement Park Fluid	Glycol	1.07	0.60	1.48	0.91	(35)
Antari	X-515	Froggy's Fog Backwood Bay	Glycol	1.07	0.60	1.48	0.91	(35)
Antari	X-515	Froggy's Fog Bog Fog	Glycol	1.43	0.80	1.98	1.21	(35)
Antari	X-515	Froggy's Fog Cryo Freeze	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	X-515	Froggy's Fog Quick Blast	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	X-515	Froggy's Fog Velocity	Glycol	1.74	0.97	2.41	1.47	(35)
Antari	Z-350	Froggy's Fog Beam Splitter	Glycol	1.90	1.06	2.63	1.61	(35)
Antari	Z-380 Fazer	Antari FLG Fog Fluid	Glycol	0.49	0.27	0.68	0.41	(45)
Aspire	K4 Vape Pen**	Damokee E-Liquid Daily Dose Fluid	Glycol	0.10	0.06	0.14	0.08	(48,72)
Aspire	K4 Vape Pen**	American Patriot by Naked 100 E-Liquid	Glycol	0.02	0.01	0.03	0.02	(69,72)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Amusement Park Fluid	Glycol	1.07	0.60	1.48	0.91	(35)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Backwood Bay	Glycol	1.07	0.60	1.48	0.91	(35)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Bog Fog	Glycol	1.43	0.80	1.98	1.21	(35)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Cryo Freeze	Glycol	1.74	0.97	2.41	1.47	(35)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Quick Blast	Glycol	1.74	0.97	2.41	1.47	(35)
Blue Haze Entertainment (BHE)	1550	Froggy's Fog Velocity	Glycol	1.74	0.97	2.41	1.47	(35)
Chauvet	Amhaze ECO	Premium Haze Fluid	Glycol	0.17	0.10	0.24	0.14	(53)
Chauvet	Amhaze II	Froggy's Fog Faze Haze	Glycol	0.83	0.46	1.15	0.70	(35)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Chauvet	Amhaze Stadium	Grignard Pure	Glycol	0.16	0.09	0.22	0.14	(60)
Chauvet	Amhaze Stadium	Premium Haze Fluid	Glycol	0.33	0.18	0.46	0.28	(57)
Chauvet	Cloud 9	LLG Fog Fluid	Glycol & Glycerol	0.47	0.26	0.65	0.40	(57)
Chauvet	Geyser	Froggy's Fog Quick Blast	Glycol	1.62	0.91	2.24	1.37	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Amusement Park Fluid	Glycol	1.00	0.56	1.38	0.85	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Backwood Bay	Glycol	1.00	0.56	1.38	0.85	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Beam Splitter	Glycol	2.94	1.65	4.07	2.49	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Bog Fog	Glycol	1.07	0.60	1.48	0.91	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Cryo Freeze	Glycol	0.76	0.43	1.05	0.64	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Quick Blast	Glycol	0.76	0.43	1.05	0.64	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Techno	Glycol	2.94	1.65	4.07	2.49	(35)
Chauvet	Hurricane 1800 Flex	Froggy's Fog Velocity	Glycol	0.76	0.43	1.05	0.64	(35)
Chauvet	Hurricane 1800 Flex	Grignard Pure	Glycol	0.31	0.17	0.43	0.26	(60)
Chauvet	Hurricane Haze 1XD	Grignard Pure	Glycol	0.21	0.12	0.29	0.18	(60)
Chauvet	Vesuvio II	Ultratec Quick Dissipating Fluid	Glycol	1.20	0.67	1.66	1.02	(65)
CITC	AquaMax	Organic Haze Fluid	Glycerol	1.36	0.76	1.88	1.15	(33)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
CITC	Fantasy FX spray can	Fantasy FX Professional Haze	Mineral Oil	0.87	0.49	1.20	0.74	(20)
CITC	Fog Max	Natural Fogging Fluid	Glycol	0.66	0.37	0.91	0.56	(4)
CITC	HazeMax	Water Vapor Haze Fluid	Glycerol	1.87	1.05	2.59	1.58	(33)
CITC	Starhazer	High Performance Fluid	Mineral Oil	0.87	0.49	1.20	0.74	(4)
Concept Smoke Systems	ViCount	Smoke Oil 135	Mineral Oil	0.34	0.19	0.47	0.29	(75)
Concept Smoke Systems	ViCount	Smoke Fluid A	Glycerol	0.46	0.26	0.64	0.39	(75)
Elation	Magma Prime	AEF Fog Fluid	Glycol	0.43	0.24	0.59	0.36	(58)
ePuffer	D-1500/Robusto Electronic Cigar**	e-Liquid	Glycol	1.04	0.58	1.44	0.88	(30,42,72)
ePuffer	Snaps Rev4 E-Cigarette**	e-Liquid	Glycol	0.05	0.03	0.07	0.05	(63,72)
FireBase	SG-1300	Froggy's Fog Training Smoke FR-Fire Rescue Formula	Glycol	0.58	0.32	0.80	0.49	(35)
FireBase	SG-1300	Froggy's Fog Training Smoke Q-Quick Dissipating	Glycol	1.69	0.95	2.34	1.43	(35)
FireBase	SG-1300	Froggy's Fog Training Smoke XD-Extreme Density	Glycol	0.86	0.48	1.19	0.73	(35)
FireBase	SG-2600	Froggy's Fog Training Smoke FR-Fire Rescue Formula	Glycol	0.99	0.55	1.37	0.84	(35)
FireBase	SG-2600	Froggy's Fog Training Smoke XD-Extreme Density	Glycol	3.11	1.74	4.30	2.63	(35)

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				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
FireBase	SG-M1500	Froggy's Fog Training Smoke FR-Fire Rescue Formula	Glycol	1.41	0.79	1.95	1.19	(35)
FireBase	SG-M1500	Froggy's Fog Training Smoke Q-Quick Dissipating	Glycol	1.74	0.97	2.41	1.47	(35)
FireBase	SG-M1500	Froggy's Fog Training Smoke XD-Extreme Density	Glycol	1.03	0.58	1.42	0.87	(35)
FireBase	SG-M1800	Froggy's Fog Training Smoke FR-Fire Rescue Formula	Glycol	1.35	0.76	1.87	1.14	(35)
FireBase	SG-M1800	Froggy's Fog Training Smoke Q-Quick Dissipating	Glycol	2.65	1.48	3.66	2.24	(35)
FireBase	SG-M1800	Froggy's Fog Training Smoke XD-Extreme Density	Glycol	1.29	0.72	1.78	1.09	(35)
FireBase	SG-M3000	Froggy's Fog Training Smoke Q-Quick Dissipating	Glycol	2.46	1.38	3.40	2.08	(35)
FireBase	SG-M3000	Froggy's Fog Training Smoke XD-Extreme Density	Glycol	2.62	1.47	3.62	2.22	(35)
Froggy's Fog	Poseidon	Froggy's Fog Aqua Fog Fluid/Long Distance Formula	Glycol	0.43	0.24	0.59	0.36	(54)
Froggy's Fog	Poseidon	Froggy's Fog Aqua Fog Fluid/Long Distance Formula	Glycol	0.55	0.31	0.76	0.47	(54)
Froggy's Fog	Poseidon	Froggy's Fog Aqua Fog Fluid/Short Distance Formula	Glycol	0.67	0.38	0.93	0.57	(54)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
hazebase	Base Classic	Froggy's Fog Amusement Park Fluid	Glycol	0.58	0.32	0.80	0.49	(35)
hazebase	Base Classic	Froggy's Fog Backwood Bay	Glycol	0.58	0.32	0.80	0.49	(35)
hazebase	Base Classic	Froggy's Fog Bog Fog	Glycol	0.86	0.48	1.19	0.73	(35)
hazebase	Base Classic	Froggy's Fog Cryo Freeze	Glycol	1.69	0.95	2.34	1.43	(35)
hazebase	Base Classic	Froggy's Fog Quick Blast	Glycol	1.69	0.95	2.34	1.43	(35)
hazebase	Base Classic	Froggy's Fog Velocity	Glycol	1.69	0.95	2.34	1.43	(35)
hazebase	Base Classic	Ultratec Molecular Fog Fluid	Glycol	2.15	1.20	2.97	1.82	(43)
hazebase	Base Hazer Pro	Base Hazer Liquid	Glycol	0.43	0.24	0.59	0.36	(35)
hazebase	Base Hazer Pro	Froggy's Fog Faze Haze	Glycol	0.76	0.43	1.05	0.64	(35)
hazebase	Base Highpower 220V	Froggy's Fog Backwood Bay	Glycol	0.99	0.55	1.37	0.84	(35)
hazebase	Base Highpower 220V	Froggy's Fog Bog Fog	Glycol	3.11	1.74	4.30	2.63	(35)
hazebase	Cube Hazer2	Base V Fluid	Glycerol	0.00	0.00	0.00	0.00	(67)
hazebase	FAB	Base V Fluid	Glycerol	0.00	0.00	0.00	0.00	(67)
High End Systems (ETC)	F-100	Atmosphere HQ Fluid	Glycol	1.21	0.68	1.67	1.02	(10)
High End Systems (ETC)	F-100	Atmosphere Cold Flow Formula	Glycol	2.41	1.35	3.33	2.04	(1)
High End Systems (ETC)	F-100	Atmosphere Stage Formula	Glycol	0.25	0.14	0.35	0.21	(1)
High End Systems (ETC)	FQ-100	Atmosphere HQ Fluid	Glycol	1.30	0.73	1.80	1.10	(26)
High End Systems (ETC)	FQ-100	Atmosphere Stage Formula	Glycol	0.96	0.54	1.33	0.81	(26)
High End Systems (ETC)	HQ100 Hazer	HQ100 Haze Fluid	Glycol	0.41	0.23	0.57	0.35	(56)

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Kandypens	Rube Vape Pen**	Lava Flow by Naked 100 E-Liquid	Glycol	0.02	0.01	0.03	0.02	(61,72)
Le Maitre Ltd.	G300	Molecular Fog Fluid	Glycol	0.53	0.30	0.73	0.45	(4,24,25)
Le Maitre Ltd.	G300	Quick Dissipating	Glycol	2.65	1.48	3.66	2.24	(4,24,25)
Le Maitre Ltd.	G300	Regular Haze (C-Beam) Fluid	Glycerol	0.09	0.05	0.12	0.08	(10,24,25)
Le Maitre Ltd.	G300	Standard Smoke Fluid	Glycol	0.30	0.17	0.41	0.25	(4,9,24,25)
Le Maitre Ltd.	G300/LSG/Freezefog Pro or equivalent chiller*	Molecular Fog Fluid	Glycol	4.95	2.77	6.85	4.19	(7,25,28)
Le Maitre Ltd.	G-Force, Gforce3	Molecular Fog Fluid	Glycol	0.53	0.30	0.73	0.45	(4,24,28,47)
Le Maitre Ltd.	G-Force, Gforce3	Quick Dissipating	Glycol	2.65	1.48	3.66	2.24	(4,24,28,47)
Le Maitre Ltd.	G-Force, Gforce3	Standard Smoke Fluid	Glycol	0.30	0.17	0.41	0.25	(4,9,24,25, 47)
Le Maitre Ltd.	G-Force/Gforce3/LSG/Freezefog Pro or equivalent chiller*	Molecular Fog Fluid	Glycol	4.95	2.77	6.85	4.19	(7,25,28,47)
Le Maitre Ltd.	Mini Mist	Standard Smoke Fluid	Glycol	2.24	1.25	3.10	1.90	(10,25)
Le Maitre Ltd.	MVS	Froggy's Fog Neutronic Haze Fluid	Glycerol	0.35	0.20	0.48	0.30	(35)
Le Maitre Ltd.	Neutron XS	Froggy's Fog Neutronic Haze Fluid	Glycerol	0.09	0.05	0.12	0.08	(35)
Le Maitre Ltd.	Neutron XS	Neutron Haze Fluid	Glycerol	0.12	0.07	0.17	0.10	(2,25)
Le Maitre Ltd.	Opti Mist Ranger	Mini Mist Canister	Glycol	3.01	1.69	4.16	2.55	(1,25)
Look Solutions	Cobra (1.8, 3.1)	Quick-Fog Fluid	Glycol	1.51	0.85	2.09	1.28	(52,74)
Look Solutions	Cobra (1.8, 3.1)	Regular-Fog Fluid	Glycol	0.76	0.43	1.05	0.64	(52,74)

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Look Solutions	Cobra (1.8, 3.1)	Slow-Fog Fluid	Glycol	1.10	0.62	1.52	0.93	(52,74)
Look Solutions	Cobra (1.8, 3.1) / CryoGate	Cryo-Fog Fluid	Glycol	3.93	2.20	5.44	3.32	(52,74)
Look Solutions	Cobra (1.8, 3.1) / LSG	Cryo-Fog Fluid	Glycol	1.72	0.96	2.38	1.46	(51,74)
Look Solutions	Cryo-Fog	Cryo-Fog Fluid	Glycol	0.91	0.51	1.26	0.77	(16,21)
Look Solutions	Orka	Regular-Fog Fluid	Glycol	0.23	0.13	0.32	0.19	(8)
Look Solutions	Power Tiny	Tiny Fluid	Glycol	0.49	0.27	0.68	0.41	(15)
Look Solutions	Tiny Compact/Tiny C07	Tiny Fluid	Glycol	0.76	0.43	1.05	0.64	(4,21)
Look Solutions	Tiny Fogger/Tiny F07	Tiny Fluid	Glycol	0.76	0.43	1.05	0.64	(4,21)
Look Solutions	Tiny FX/Tiny CX	Tiny Fluid	Glycol	0.71	0.40	0.98	0.60	(31,37)
Look Solutions	Tiny S	Tiny Fluid	Glycol	0.69	0.39	0.95	0.58	(31)
Look Solutions	Unique/Unique2 Hazer	Unique Fluid	Glycol	0.30	0.17	0.41	0.25	(4,12)
Look Solutions	Unique Hazer fitted with an accumulator box	Unique Fluid	Glycol	0.26	0.15	0.36	0.22	(46)
Look Solutions	Viper (NT, S, 2.6)	Quick-Fog Fluid	Glycol	2.02	1.13	2.79	1.71	(17,50)
Look Solutions	Viper (NT, S, 2.6)	Regular-Fog Fluid	Glycol	1.46	0.82	2.02	1.24	(4,12,50)
Look Solutions	Viper (NT, S, 2.6)	Slow-Fog Fluid	Glycol	0.90	0.50	1.24	0.76	(31,50)
Look Solutions	Viper / LSG MKII or equivalent chiller	Quick-Fog Fluid	Glycol	0.89	0.50	1.23	0.75	(32,50)
Martin Professional	Jem Compact Hazer Pro	JEM C-Plus Haze Fluid	Glycol	0.70	0.39	0.97	0.59	(38,55)

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Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Martin Professional	Jem Glaciator	JEM Low-Fog Fluid	Glycol	3.41	1.91	4.72	2.88	(4,55)
Martin Professional	Jem Glaciator Dynamic	JEM Low-Fog Fluid, High Density	Glycol	1.80	1.01	2.49	1.52	(71)
Martin Professional	Jem Glaciator X-Stream	JEM Low-Fog Fluid, High Density	Glycol	3.23	1.81	4.47	2.73	(23,55)
Martin Professional	Jem Hazer Pro	JEM C-Plus Fluid	Glycol	0.88	0.49	1.22	0.74	(38,55)
Martin Professional	Jem Ready 365	JEM R365 Haze Fluid	Glycol & Glycerol	0.24	0.13	0.33	0.20	(38)
Martin Professional	Jem Roadie	JEM Pro-Fog Fluid	Glycol	0.62	0.35	0.86	0.52	(27,55)
Martin Professional	Jem ZR12-DMX	JEM Pro-Fog Fluid	Glycol	1.12	0.63	1.55	0.95	(4,55)
Martin Professional	Jem ZR24/7 Hazer	RUSH & THRILL Haze Fluid	Glycol	0.76	0.43	1.05	0.64	(5,41,55)
Martin Professional	Jem ZR33 Hi-Mass	Froggy's Fog Cryo Freeze	Glycol	2.20	1.23	3.04	1.86	(35)
Martin Professional	Jem ZR33 Hi-Mass	Froggy's Fog Quick Blast	Glycol	2.20	1.23	3.04	1.86	(35)
Martin Professional	Jem ZR33 Hi-Mass	Froggy's Fog Velocity	Glycol	2.20	1.23	3.04	1.86	(35)
Martin Professional	Jem ZR33 Hi-Mass	JEM Pro-Fog Fluid	Glycol	0.79	0.44	1.09	0.67	(23,55)
Martin Professional	Jem ZR33 Hi-Mass	JEM Pro-Fog Fluid, Extra Quick Dissipating	Glycol	2.31	1.29	3.19	1.95	(23,55)
Martin Professional	Jem ZR44	Froggy's Fog Backwood Bay	Glycol	0.77	0.43	1.06	0.65	(35)
Martin Professional	Jem ZR44	Froggy's Fog Bog Fog	Glycol	1.40	0.78	1.94	1.18	(35)
Martin Professional	Jem ZR44	Froggy's Fog Cryo Freeze	Glycol	0.95	0.53	1.31	0.80	(35)
Martin Professional	Jem ZR44	Froggy's Fog Quick Blast	Glycol	0.95	0.53	1.31	0.80	(35)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Martin Professional	Jem ZR44	Froggy's Fog Velocity	Glycol	0.95	0.53	1.31	0.80	(35)
Martin Professional	K-1	Froggy's Fog K-razy Haze	Glycol	0.49	0.27	0.68	0.41	(35)
Martin Professional	Magnum 2000	Froggy's Fog Backwood Bay	Glycol	0.93	0.52	1.29	0.79	(35)
Martin Professional	Magnum 2000	Froggy's Fog Bog Fog	Glycol	1.21	0.68	1.67	1.02	(35)
Martin Professional	Magnum 2000	Froggy's Fog Cryo Freeze	Glycol	1.01	0.57	1.40	0.85	(35)
Martin Professional	Magnum 2000	Froggy's Fog Quick Blast	Glycol	1.01	0.57	1.40	0.85	(35)
Martin Professional	Magnum 2000	Froggy's Fog Velocity	Glycol	1.01	0.57	1.40	0.85	(35)
Martin Professional	Magnum 2500Hz	RUSH & THRILL Haze Fluid	Glycol	0.28	0.16	0.39	0.24	(23,41,55)
MDG Fog Generators	Mini-Max	MDG Dense Fluid	Glycol	3.21	1.80	4.44	2.72	(1)
MDG Fog Generators	ATMe	MDG Neutral Fluid	Mineral Oil	0.78	0.44	1.08	0.66	(70)
MDG Fog Generators	Atmosphere APS	MDG Neutral Fluid	Mineral Oil	0.78	0.44	1.08	0.66	(1)
MDG Fog Generators	MAX 3000 APS	MDG Neutral Fluid	Mineral Oil	0.78	0.44	1.08	0.66	(1)
MDG Fog Generators	MDG MAX 3000 APS through accumulator box	MDG Neutral Fluid	Mineral Oil	0.27	0.15	0.37	0.23	(6)
New Rule FX	Electronic Actor Cigarette Prop**	Cartridge Fluid	Glycol	0.44	0.25	0.61	0.37	(36,72)
Practical Magic & Innovation Co., Ltd.	SmokeGENIE	Cloud Liquid	Glycol & Glycerol	0.09	0.05	0.12	0.08	(62)
Practical Magic & Innovation Co., Ltd.	SmokeNINJA	Cloud Liquid	Glycol & Glycerol	0.07	0.04	0.10	0.06	(73)
Pure Smoke	Electronic Cigarette**	Electronic Cigarette Flavors	Glycol	0.33	0.18	0.46	0.28	(29,72)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Reel EFX, Inc.	DF-50	Diffusion Fluid	Mineral Oil	0.78	0.44	1.08	0.66	(1)
Reel EFX, Inc.	DF-50	Froggy's Fog DaFiddy Oil-Based Haze	Mineral Oil	0.40	0.22	0.55	0.34	(35)
Reel EFX, Inc.	DF-50	Master Fog DEE-EFF-50	Mineral Oil	0.37	0.21	0.51	0.31	(40)
Robe	Fog 1550 FT	Froggy's Fog Amusement Park Fluid	Glycol	1.07	0.60	1.48	0.91	(35)
Robe	Fog 1550 FT	Froggy's Fog Backwood Bay	Glycol	1.07	0.60	1.48	0.91	(35)
Robe	Fog 1550 FT	Froggy's Fog Bog Fog	Glycol	1.43	0.80	1.98	1.21	(35)
Robe	Fog 1550 FT	Froggy's Fog Cryo Freeze	Glycol	1.74	0.97	2.41	1.47	(35)
Robe	Fog 1550 FT	Froggy's Fog Quick Blast	Glycol	1.74	0.97	2.41	1.47	(35)
Robe	Fog 1550 FT	Froggy's Fog Velocity	Glycol	1.74	0.97	2.41	1.47	(35)
Rosco Laboratories	1500 / 1600	Rosco Clear Fog Fluid	Glycol	1.82	1.02	2.52	1.54	(1)
Rosco Laboratories	1500 / 1600	Rosco Fog Fluid	Glycol	1.27	0.71	1.76	1.07	(1)
Rosco Laboratories	1500 / 1600	Rosco Light Fog Fluid	Glycol	1.38	0.77	1.91	1.17	(1)
Rosco Laboratories	1500 / 1600	Rosco Stage & Studio Fluid	Glycol	1.56	0.87	2.16	1.32	(1)
Rosco Laboratories	1750	Rosco Fog Fluid	Glycol	0.58	0.32	0.80	0.49	(19)
Rosco Laboratories	1750	Rosco Stage & Studio Fluid	Glycol	0.67	0.38	0.93	0.57	(19)
Rosco Laboratories	Alpha 900	Rosco Clear Fog Fluid	Glycol	1.82	1.02	2.52	1.54	(1)
Rosco Laboratories	Alpha 900	Rosco Fog Fluid	Glycol	1.27	0.71	1.76	1.07	(1)
Rosco Laboratories	Alpha 900	Rosco Light Fog Fluid	Glycol	1.38	0.77	1.91	1.17	(1)
Rosco Laboratories	Alpha 900	Rosco Stage & Studio Fluid	Glycol	1.56	0.87	2.16	1.32	(1)
Rosco Laboratories	Delta 3000	Rosco Clear Fog Fluid	Glycol	1.43	0.80	1.98	1.21	(4)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Rosco Laboratories	Delta 3000	Rosco Fog Fluid	Glycol	1.00	0.56	1.38	0.85	(4)
Rosco Laboratories	Delta 3000	Rosco Light Fog Fluid	Glycol	1.35	0.76	1.87	1.14	(4)
Rosco Laboratories	Delta 3000	Rosco Stage & Studio Fluid	Glycol	1.97	1.10	2.72	1.67	(4)
Rosco Laboratories	Delta Hazer	Rosco Delta Hazer Fluid	Glycol	0.71	0.40	0.98	0.60	(18)
Rosco Laboratories	Mini-V	Rosco Fog Fluid	Glycol	0.55	0.31	0.76	0.47	(34)
Rosco Laboratories	Mini-V	Rosco Stage & Studio Fluid	Glycol	0.85	0.48	1.18	0.72	(34)
Rosco Laboratories	PF-1000	Rosco Clear Fog Fluid	Glycol	1.82	1.02	2.52	1.54	(1)
Rosco Laboratories	PF-1000	Rosco Fog Fluid	Glycol	1.27	0.71	1.76	1.07	(1)
Rosco Laboratories	PF-1000	Rosco Light Fog Fluid	Glycol	1.38	0.77	1.91	1.17	(1)
Rosco Laboratories	PF-1000	Rosco Stage & Studio Fluid	Glycol	1.56	0.87	2.16	1.32	(1)
Rosco Laboratories	V-Hazer	Rosco V-Hazer Fluid	Glycol	0.68	0.38	0.94	0.58	(34)
Rosco Laboratories	Vapour	Rosco Fog Fluid	Glycol	0.44	0.25	0.61	0.37	(34)
Rosco Laboratories	Vapour	Rosco Stage & Studio Fluid	Glycol	0.85	0.48	1.18	0.72	(34)
Rosco Laboratories	Vapour Plus	Rosco Fog Fluid	Glycol	0.82	0.46	1.13	0.69	(34)
Rosco Laboratories	Vapour Plus	Rosco Stage & Studio Fluid	Glycol	0.78	0.44	1.08	0.66	(34)
SFX Design	Fog Master FM-1	AquaFog Fluid	Glycol	0.19	0.11	0.26	0.16	(3)
Smoke Factory	Captain D	Gotham Fog Fluid	Glycol	0.57	0.32	0.79	0.48	(64)
Smoke Factory	Tour Hazer	Gotham Haze Fluid	Glycol	0.30	0.17	0.41	0.25	(4)
Smoke Factory	Tour Hazer II	Gotham Haze Fluid	Glycol	0.43	0.24	0.59	0.36	(64)
Smoke In Style	Electronic Pipe Prop**	FeelLife E-Liquid	Glycol & Glycerol	0.42	0.24	0.58	0.36	(39,72)
Ultratec Special Effects	G100	Director's Choice	Glycol	4.17	2.34	5.77	3.53	(1,9,25)
Ultratec Special Effects	G100	Extra Quick Dissipating	Glycol	3.17	1.78	4.38	2.68	(1,25)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Ultratec Special Effects	G100	Quick Dissipating	Glycol	3.45	1.93	4.77	2.92	(1,25)
Ultratec Special Effects	G150	Director's Choice	Glycol	4.17	2.34	5.77	3.53	(1,9,25)
Ultratec Special Effects	G150	Extra Quick Dissipating	Glycol	3.17	1.78	4.38	2.68	(1,25)
Ultratec Special Effects	G150	Molecular Fog Fluid	Glycol	2.58	1.44	3.57	2.18	(1,25)
Ultratec Special Effects	G150	Pro Beam (Long Lasting)	Glycol	1.42	0.80	1.96	1.20	(4,25)
Ultratec Special Effects	G150	Quick Dissipating	Glycol	3.45	1.93	4.77	2.92	(1,25)
Ultratec Special Effects	G3000	Director's Choice	Glycol	0.30	0.17	0.41	0.25	(4,9,24,25)
Ultratec Special Effects	G3000	Molecular Fog Fluid	Glycol	0.53	0.30	0.73	0.45	(4,24,25)
Ultratec Special Effects	G3000	Pro Beam (Long Lasting)	Glycol	0.67	0.38	0.93	0.57	(4,24,25)
Ultratec Special Effects	G3000	Quick Dissipating	Glycol	2.65	1.48	3.66	2.24	(4,24,25)
Ultratec Special Effects	G3000	Regular Haze Fluid	Glycerol	0.09	0.05	0.12	0.08	(10,24,25)
Ultratec Special Effects	G3000	Froggy's Fog Amusement Park Fluid	Glycol	1.07	0.60	1.48	0.91	(25,35)
Ultratec Special Effects	G3000	Froggy's Fog Backwood Bay	Glycol	1.07	0.60	1.48	0.91	(25,35)
Ultratec Special Effects	G3000	Froggy's Fog Bog Fog	Glycol	0.88	0.49	1.22	0.74	(25,35)
Ultratec Special Effects	G3000	Froggy's Fog Cryo Freeze	Glycol	2.96	1.66	4.09	2.50	(25,35)
Ultratec Special Effects	G3000	Froggy's Fog Quick Blast	Glycol	2.96	1.66	4.09	2.50	(25,35)
Ultratec Special Effects	G3000	Froggy's Fog Velocity	Glycol	2.96	1.66	4.09	2.50	(25,35)
Ultratec Special Effects	G3000/LSG or equivalent chiller*	Molecular Fog Fluid	Glycol	4.95	2.77	6.85	4.19	(7,25)
Ultratec Special Effects	Handy Fogger	Director's Choice	Glycol	0.49	0.27	0.68	0.41	(59)
Ultratec Special Effects	Handy Fogger	Quick Dissipating	Glycol	1.60	0.90	2.21	1.35	(59)
Ultratec Special Effects	Handy Fogger	Pro Beam	Glycol	1.18	0.66	1.63	1.00	(59)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Ultratec Special Effects	Power Fog Industrial (PFI) or PFI 9D	Director's Choice	Glycol	0.99	0.55	1.37	0.84	(4,9,11,25)
Ultratec Special Effects	Power Fog Industrial (PFI) or PFI 9D	Molecular Fog Fluid	Glycol	2.77	1.55	3.83	2.34	(4,11,25)
Ultratec Special Effects	Power Fog Industrial (PFI) or PFI 9D	Pro Beam (Long Lasting)	Glycol	1.36	0.76	1.88	1.15	(4,11,25)
Ultratec Special Effects	Power Fog Industrial (PFI) or PFI 9D	Quick Dissipating	Glycol	1.37	0.77	1.89	1.16	(4,11,25)
Ultratec Special Effects	Power Fog Industrial 9D (PFI 9D) with LSG-MKII or equivalent chiller	Extra Quick Dissipating	Glycol	1.23	0.69	1.70	1.04	(22,25)
Ultratec Special Effects	Power Fog Industrial 9D (PFI 9D) with LSG-MKII or equivalent chiller	Molecular Fog Fluid	Glycol	0.75	0.42	1.04	0.63	(13,25)
Ultratec Special Effects	Power Fog Industrial 9D (PFI 9D) with LSG-MKII or equivalent chiller	Quick Dissipating	Glycol	0.21	0.12	0.29	0.18	(22,25)
Ultratec Special Effects	Radiance Hazer	Froggy's Fog Neutronic Haze Fluid	Glycerol	1.06	0.59	1.47	0.90	(25,35)
Ultratec Special Effects	Radiance Hazer	Neutron/Luminous 7 Haze Fluid	Glycerol	0.26	0.15	0.36	0.22	(14,25)
Ultratec Special Effects	Show Fogger Pro	Director's Choice	Glycol	0.44	0.25	0.61	0.37	(4,9,25)
Ultratec Special Effects	Show Fogger Pro	Pro Beam (Long Lasting)	Glycol	0.44	0.25	0.61	0.37	(4,25)

Approved Calibration Factors for Monitoring Theatrical Fog and Haze (Updated August 2026)								
Machine Manufacturer	Machine	Fluid	Fluid Type	Calibration Factor				Reference
				PDR-1000	PDR-1500	Dust Trak DRX 8534	SidePak AM520	
Ultratec Special Effects	Show Fogger Pro	Quick Dissipating	Glycol	2.56	1.43	3.54	2.17	(4,25)
Ultratec Special Effects	Stage Fogger DMX	Director's Choice	Glycol	0.99	0.55	1.37	0.84	(4,9,25)
Ultratec Special Effects	Stage Fogger DMX	Molecular Fog Fluid	Glycol	2.77	1.55	3.83	2.34	(4,25)
Ultratec Special Effects	Stage Fogger DMX	Pro Beam (Long Lasting)	Glycol	1.36	0.76	1.88	1.15	(4,25)
Ultratec Special Effects	Stage Fogger DMX	Quick Dissipating	Glycol	1.37	0.77	1.89	1.16	(4,25)
Vosentech	Microfogger 3 & 4 Pro	Fog Fluid	Glycol	0.10	0.06	0.14	0.08	(68)

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53. Environmental Testing of Theatrical Fog Equipment: Chauvet Amhaze ECO, prepared by Ramboll, October 2019.
54. Environmental Testing of Theatrical Fog Equipment: Poseidon, prepared by Ramboll, November 2019.
55. Effect Fluids Cross References. August 29, 2018. Available at https://adn.harmanpro.com/site_elements/resources/15128_1535576658/Martin%20Atmospheric%20Effects%20Fluids%20-%20Cross%20References%20-%20B_08-2018_original.pdf
56. Environmental Testing of Theatrical Fog Equipment: HQ100 Hazer, prepared by Ramboll, August 2020.
57. Environmental Testing of Theatrical Fog Equipment: Chauvet Amhaze Stadium Hazer and Cloud 9 Fogger, prepared by Ramboll, August 2020.
58. Environmental Testing of Theatrical Fog Equipment: Magma Prime Fogger, prepared by Ramboll, August 2020.
59. Environmental Testing of Theatrical Fog Equipment: Handy Fogger, prepared by Ramboll, October 2020.
60. Environmental Testing of Theatrical Fog Equipment: Amhaze Stadium Hazer, Hurricane 1800 Flex Fogger, and Hurricane Haze 1XD Hazer with Grignard Pure, prepared by Ramboll, October 2020.
61. Environmental Testing of Theatrical Fog Equipment: Kandypens Rubi Vape Pen with Lava Flow by Naked 100 E-Liquid, prepared by Ramboll, August 2022.
62. Environmental Testing of Theatrical Fog Equipment: SmokeGENIE with Cloud Fluid, prepared by Ramboll, October 2022 (revised April 2024).
63. Environmental Testing of Theatrical Fog Equipment: Puffer Snaps Rev4 E-Cigarette with E-Liquid, prepared by Ramboll, October 2022.
64. Environmental Testing of Theatrical Fog Equipment: Tour Hazer II with Gotham Haze Fluid and Captain D with Gotham Fog Fluid, prepared by Ramboll, March 2023.

65. Environmental Testing of Theatrical Fog Equipment: Chauvet Vesuvio II with Ultratec Quick Dissipating Fluid, prepared by Ramboll, April 2023.
66. Environmental Testing of Theatrical Fog Equipment: DNG-250 Low Fogger with FLL Low Fog Fluid and CH-1 Cinema Hazer with CHL-2 Fluid, prepared by Ramboll, April 2023.
67. Environmental Testing of Theatrical Fog Equipment: FAB and Cube Hazer2 with Base V Fluid, prepared by Ramboll, May 2023.
68. Environmental Testing of Theatrical Fog Equipment: Vosentech Microfogger 3 Pro, prepared by Ramboll, October 2021.
69. Environmental Testing of Theatrical Fog Equipment: Aspire K4 Vape Pen with American Patriots by Naked 100 E-Liquid, prepared by Ramboll, November 2021.
70. Letter from Ramboll to Actors' Equity Association regarding MDG ATMe, June 26, 2023.
71. Environmental Testing of Theatrical Fog Equipment: JEM Glaciator Dynamic with JEM Low Fog High Density Fluid, prepared by Ramboll, December 2023.
72. Memo from Ramboll to Actors' Equity Association regarding Time & Distance Guidelines for E-Cigarettes and Vape Pens, March 28, 2024.
73. Environmental Testing of Theatrical Fog Equipment: SmokeNINJA with Cloud Fluid, prepared by Ramboll, April 2024.
74. Letter from Look Solutions to Ramboll regarding Cobra foggers, April 15, 2024.
75. Environmental Testing of Theatrical Fog Equipment: ViCount Smoke Generator with Smoke Oil 135 and Smoke Fluid A Formula, prepared by Ramboll, August 2026.

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