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	Tyco LFP <sup>*</sup> Antifreeze Pre-mixed antifreeze solution	
Appearance	Liquid, colorless	
Minimum Use Temperature	-10°F (-23.3°C)	
Refractive Index	1.3960 - 1.3995	
рН	7-8	
Specific Gravity	1.122 – 1.129	
Electrical Conductivity	1000 – 1400 microsiemens/cm	
Compatible Piping	CPVC, PEX, steel, brass, stainless steel, black steel, copper, cast iron, fusion bonded epoxy coated materials	
Compatible Materials	EPDM natural rubber, SBR, BUNA-N elastomeric materials	

## Tyco LFP® Antifreeze Testing Requirements and Usage Limitations

NFPA 13D	No volume limitations
	Antifreeze may only be used in above-ground piping
NFPA 13R	No volume limitations
	<ul> <li>Dwelling-only buildings are limited to above-ground use of antifreeze</li> </ul>
NFPA 13R Mixed-	No volume limitations for system size in buildings containing only dwellings
Use Occupancies	<ul> <li>System size limitation of 40 gal. for sprinkler systems in non-dwelling buildings</li> </ul>
	<ul> <li>System size limitation of 40 gal. in mixed-use occupancies fed by a single sprinkler system</li> </ul>
	<ul> <li>If future building renovations result in occupancy classification changes, a fire sprinkler system evaluation must be performed to determine if any changes are required for the use of antifreeze</li> </ul>
	Only above-ground piping may be filled with antifreeze
NFPA 13	<ul> <li>Buildings with occupancy classifications of Light Hazard and Ordinary Hazard Group 1 and 2 are limited to a sprinkler system volume of 40 gal.</li> </ul>
	<ul> <li>Storage applications using non-ESFR sprinklers are limited to a sprinkler system volume of 40 gal.</li> </ul>
	<ul> <li>LFP<sup>*</sup> antifreeze is not listed for use in protecting Extra Hazard occupancies, flammable liquids or use with ESFR sprinklers.</li> </ul>





















Expar	ision	Tank	(S							tyco
<ul> <li>An exp system</li> </ul>	pansion	tank i	s rec	omme	ended	on all	systen	ns incl	uding e	existing
					Tempera	ture Change				
	Initial Fluid Volume	20°F (-7°C)	40°F (4°C)	60°F (16°C)	80°F (27°C)	100°F (38°C)	120°F (49°C)	140°F (60°C)	160°F (71°C)	
	gal (L)			Appro	oximate Fluid	Expansion/Control	ntraction			
	25 (95)	0.2 (0,8)	0.4 (1,5)	0.6 (2,3)	0.8 (3,0)	1.0 (3,8)	1.2 (4,5)	1.4 (5,3)	1.6 (6,1)	
	50 (189)	0.4 (1,5)	0.8 (3,0)	1.1 (4,2)	1.5 (5,7)	1.9 (7,2)	2.3 (8,7)	2.8 (10,6)	3.2 (12,1)	
	75 (284)	0.6 (2,3)	1.1 (4,2)	1.7 (6,4)	2.3 (8,7)	2.9 (11,0)	3.5 (13,2)	4.1 (15,5)	4.8 (18,2)	
	100 (379)	0.8 (3,0)	1.5 (5,7)	2.3 (8,7)	3.1 (11,7)	3.9 (14,8)	4.7 (17,8)	5.5 (20,8)	6.4 (24,2)	
	150 (568)	1.1 (4,2)	2.3 (8,7)	3.4 (12,9)	4.6 (17,4)	5.8 (22,0)	7.0 (26,5)	8.3 (31,4)	9.5 (36,0)	
	200 (757)	1.5 (5,7)	3.0 (11,4)	4.6 (17,4)	6.2 (23,5)	7.8 (29,5)	9.4 (35,6)	11.0 (41,6)	12.7 (48,1)	
	250 (946)	1.9 (7,2)	3.8 (14,4)	5.7 (21,6)	7.7 (29,1)	9.7 (36,7)	11.7 (42,3)	13.8 (52,2)	15.9 (60,2)	
	300 (1136)	2.3 (8,7)	4.6 (17,4)	6.9 (26,1)	9.2 (34,8)	11.6 (44,0)	14.1 (53,4)	16.6 (62,8)	19.1 (72,3)	
	Interpolation and     For examples on	d extrapolation can b n calculating fluid exp	be calculated for v bansion and contr	alues outside temp action, see the sect LFP <sup>®</sup> AN	eratures and volum tions titled Expansio TABLE A ITIFREEZE E	es listed in Table A. on Example and Con EXPANSION	traction Example, res	apectively.		
Interpola	ation Exan	nple for	40 gal, :	100°F ch	ange:		$x - x_0$	= 40 - 2	5 = 15	
	$y = y_0$	+ ( <i>x</i> – <i>x</i>	$(x_0)\left(\frac{y_1}{x_1}-\frac{y_1}{x_1}\right)$	$\left(\frac{-y_0}{-x_0}\right)$			$y_1 - y_0$ $x_1 - x_0$	= 1.9 - = 50 -	-1.0 = 0.9 25 = 25	)
	$x_0 = 2$	.5	$y_0 = 3$	1.0			y = 1.0	$+15*(\frac{0}{2})$	0.9	
	x = 40	)	y = ?				-	1	257	
	$x_1 = 5$	0	$y_1 = 1$	1.9			<i>y</i> = 1.54	gallons		Johnson
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