



# PCM

**Phase Change Materials**  
Thermal Energy Storage

## ULTRA LOW TEMPERATURE PCM OPTIONS

2020-1

PCM	supercooling (°C)	Freeze temp (°C)	Melt temp (°C)	Latent Heat (kJ/kg)	Density (g/cm <sup>3</sup> )	Freezer type	Notes
E-48	6	-51	-48	202	1.51	standard ULT	
E-49	8	2-3 deg below melt temp	-49	200 to 230	1.5	standard ULT	
E-50			-50		↓		
E-51			-51		↓		
E-52			-52		↓		
E-53			-53		↓		
E-54			-54		↓		
E-55			-55		↓		
E-56			-56		↓		
E-57			-57		1.38		
E-58	12	3-4 deg below melt temp	-58	200 to 230	1.35	standard ULT	
E-59			-59		↓		
E-60			-60		↓		
E-61			-61		↓		
E-62			-62		↓		
E-63			-63		1.2		
E-65	15	-65	-64	220	1.18	medical ULT	
E-67	3	-72	-67	200	1.38	standard ULT	
E-69	2	-80	-70	230	1.29	medical ULT	
E-70	3	3-4 deg below melt temp	-70	200 to 230	1.35	standard ULT (E-73 & E-74 borderline)	Are all double peaks 2nd peak is 12-15 deg lower than melt temp
E-71			-71		↓		
E-72			-72		↓		
E-73			-73		↓		
E-74			-74		1.28		

Notes:  
1) Standard ULT @ -80C  
2) Medical ULT @ -86C

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