

**MICRO-LOK® EQUIVALENT R-VALUE CHART**
**Nominal Pipe Size (NPS)**

NPS (in.)	R-Value @ ½"		R-Value @ 1"		R-Value @ 1½"		R-Value @ 2"		R-Value @ 2½"		R-Value @ 3"		R-Value @ 3½"		R-Value @ 4"		R-Value @ 4½"		R-Value @ 5"	
	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value
¾	0.788	3.4	2.082	9.1	2.879	12.5	4.28	18.6	5.873	25.5										
½	0.736	3.2	1.621	7	2.921	12.7	4.219	18.3	4.978	21.6										
¾	0.689	3	1.274	5.5	2.437	10.6	3.613	15.7	5.725	24.9	7.133	31								
1	0.655	2.8	1.556	6.8	2.573	11.2	3.763	16.4	5.079	22.1	6.388	27.8								
1¼	0.647	2.8	1.221	5.3	2.645	11.5	3.229	14	4.441	19.3	5.653	24.6								
1½	0.631	2.7	1.374	6	2.28	9.9	3.957	17.2	5.095	22.2	6.3	27.4	7.563	32.9						
2	0.626	2.7	1.374	6	2.281	9.9	3.308	14.4	4.348	18.9	5.454	23.7	6.618	28.8	7.997	34.8				
2½	0.603	2.6	1.315	5.7	2.675	11.6	3.619	15.7	4.628	20.1	5.696	24.8	6.966	30.3	6.966	30.3				
3	0.583	2.5	1.21	5.3	2.028	8.8	2.871	12.5	3.781	16.4	4.748	20.6	5.904	25.7	6.977	30.3	8.092	35.2	9.542	41.5
3½	0.507	2.2	1.509	6.6	2.274	9.9	3.106	13.5	3.996	17.4	5.064	22	6.06	26.3	6.06	26.3	7.098	30.9	8.451	36.7
4	0.563	2.4	1.206	5.2	1.925	8.4	2.711	11.8	3.554	15.5	4.57	19.9	5.519	24	6.51	28.3	7.805	33.9	8.881	38.6
4½	0.51	2.2	1.458	6.3	2.181	9.5	2.964	12.9	3.91	17	4.798	20.9	5.729	24.9	6.947	30.2	6.947	30.2	7.962	34.6
5	0.559	2.4	1.127	4.9	1.806	7.9	2.545	11.1	3.441	15	4.284	18.6	5.17	22.5	6.333	27.5	7.303	31.8	8.307	36.1
6	0.547	2.4	1.061	4.6	1.712	7.4	2.511	10.9	3.268	14.2	4.068	17.7	5.122	22.3	6.006	26.1	6.924	30.1	7.873	34.2
7	0.548	2.4	1.04	4.5	1.759	7.6	2.446	10.6	3.175	13.8	4.142	18	4.955	21.5	5.803	25.2	6.681	29	7.589	33
8	0.539	2.3	1.095	4.8	1.719	7.5	2.387	10.4	3.276	14.2	4.028	17.5	4.813	20.9	5.63	24.5	6.476	28.2	7.35	32
9	0.536	2.3	1.084	4.7	1.698	7.4	2.519	11	3.217	14	3.948	17.2	4.711	20.5	5.503	23.9	6.323	27.5	7.169	31.2
10	0.544	2.4	0.999	4.3	1.752	7.6	2.395	10.4	3.071	13.4	3.778	16.4	4.515	19.6	5.28	23	6.071	26.4	6.887	29.9
11	0.537	2.3	1.132	4.9	1.73	7.5	2.362	10.3	3.025	13.2	3.718	16.2	4.438	19.3	5.185	22.5	5.957	25.9	6.753	29.4
12	0.535	2.3	1.125	4.9	1.717	7.5	2.34	10.2	2.992	13	3.672	16	4.378	19	5.11	22.2	5.865	25.5	6.643	28.9
14	0.517	2.2	0.966	4.2	1.542	6.7	2.148	9.3	2.781	12.1	3.441	15	4.125	17.9	4.834	21	5.566	24.2	6.319	27.5
15	0.516	2.2	0.963	4.2	1.534	6.7	2.133	9.3	2.759	12	3.409	14.8	4.084	17.8	4.781	20.8	5.5	23.9	6.24	27.1
16	0.515	2.2	0.96	4.2	1.527	6.6	2.12	9.2	2.739	11.9	3.381	14.7	4.047	17.6	4.734	20.6	5.442	23.7	6.169	26.8
17	0.514	2.2	0.946	4.1	1.509	6.6	2.096	9.1	2.708	11.8	3.343	14.5	3.999	17.4	4.677	20.3	5.374	23.4	6.09	26.5
18	0.514	2.2	0.938	4.1	1.497	6.5	2.08	9	2.686	11.7	3.314	14.4	3.963	17.2	4.631	20.1	5.319	23.1	6.026	26.2
19	0.513	2.2	0.936	4.1	1.492	6.5	2.071	9	2.672	11.6	3.294	14.3	3.936	17.1	4.597	20	5.277	22.9	5.974	26
20	0.512	2.2	0.928	4	1.482	6.4	2.057	8.9	2.653	11.5	3.269	14.2	3.905	17	4.559	19.8	5.231	22.7	5.92	25.7
21	0.512	2.2	0.926	4	1.478	6.4	2.05	8.9	2.642	11.5	3.253	14.1	3.883	16.9	4.53	19.7	5.195	22.6	5.877	25.6
22	0.511	2.2	0.925	4	1.474	6.4	2.043	8.9	2.631	11.4	3.238	14.1	3.862	16.8	4.504	19.6	5.163	22.4	5.838	25.4
23	0.511	2.2	0.923	4	1.47	6.4	2.036	8.9	2.621	11.4	3.224	14	3.844	16.7	4.48	19.5	5.133	22.3	5.801	25.2
24	0.51	2.2	0.911	4	1.456	6.3	2.019	8.8	2.6	11.3	3.199	13.9	3.814	16.6	4.445	19.3	5.092	22.1	5.754	25

The unit of measure for the equivalent thickness columns is in inches

# MICRO-LOK® EQUIVALENT R-VALUE CHART

## Copper Tube Size (CTS)

CTS (in.)	R-Value @ 1/2"		R-Value @ 1"		R-Value @ 1 1/2"		R-Value @ 2"		R-Value @ 2 1/2"		R-Value @ 3"		R-Value @ 3 1/2"		R-Value @ 4"		R-Value @ 4 1/2"		R-Value @ 5"	
	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value	Equiv. thickness	R-Value
5/8	0.788	3.4	2.082	9.1	2.879	12.5	4.28	18.6	5.873	25.5										
7/8	0.736	3.2	1.621	7	2.921	12.7	4.219	18.3	4.978	21.6										
1 1/8	0.689	3	1.274	5.5	2.437	10.6	3.613	15.7	5.725	24.9	7.133	31								
1 3/8	0.655	2.8	1.556	6.8	2.573	11.2	3.763	16.4	5.079	22.1	6.388	27.8								
1 5/8	0.647	2.8	1.221	5.3	2.645	11.5	3.229	14	4.441	19.3	5.653	24.6								
2 1/8	0.608	2.6	1.201	5.2	2.064	9	3.669	16	4.764	20.7	5.925	25.8	7.145	31.1	8.586	37.3				
2 5/8	0.591	2.6	1.153	5	2.008	8.7	2.983	13	3.973	17.3	5.029	21.9	6.144	26.7	7.467	32.5				
3 1/8	0.578	2.5	1.119	4.9	2.415	10.5	3.319	14.4	4.289	18.6	5.317	23.1	6.542	28.4	7.676	33.4	7.676	33.4	8.853	38.5
3 5/8	0.569	2.5	1.128	4.9	1.931	8.4	2.761	12	3.657	15.9	4.612	20.1	5.754	25	6.814	29.6	7.918	34.4	9.352	40.7
4 1/8	0.562	2.4	1.509	6.6	2.275	9.9	3.107	13.5	3.998	17.4	5.067	22	6.063	26.4	7.102	30.9	7.102	30.9	8.456	36.8
5 1/8	0.552	2.4	1.458	6.3	2.182	9.5	2.965	12.9	3.912	17	4.8	20.9	5.732	24.9	5.732	24.9	6.95	30.2	7.966	34.6
6 1/8	0.544	2.4	1.422	6.2	2.116	9.2	2.963	12.9	3.762	16.4	4.605	20	5.713	24.8	5.713	24.8	6.64	28.9	7.6	33
7 1/8	0.539	2.3	1.395	6.1	2.157	9.4	2.881	12.5	3.648	15.9	4.662	20.3	5.514	24	5.514	24	6.399	27.8	7.315	31.8
8 1/8	0.535	2.3	1.456	6.3	2.115	9.2	2.817	12.2	3.749	16.3	4.535	19.7	5.355	23.3	5.355	23.3	6.206	27	7.086	30.8
9 1/8	0.532	2.3	1.438	6.3	2.082	9.1	2.942	12.8	3.67	16	4.432	19.3	5.225	22.7	5.225	22.7	6.048	26.3	6.898	30
10 1/8	0.529	2.3	1.423	6.2	2.218	9.6	2.895	12.6	3.605	15.7	4.346	18.9	5.117	22.2	5.117	22.2	5.916	25.7	6.741	29.3
12 1/8	0.525	2.3	1.55	6.7	2.17	9.4	2.822	12.3	3.503	15.2	4.211	18.3	4.947	21.5	4.947	21.5	5.707	24.8	6.491	28.2

The unit of measure for the equivalent thickness columns is in inches

Equivalent thickness based upon manufacture thickness.

The attached table reflects the equivalent R-Values (@ 75°F mean temperature) for Micro-Lok® fiberglass pipe insulation. The formula used to calculate these values was derived as follows:

$$R = \text{Thickness} / "K"$$

For a circular pipe insulation: Thickness = equivalent thickness

$$\text{Equivalent thickness} = 12 \ln(r_2/r_1)$$

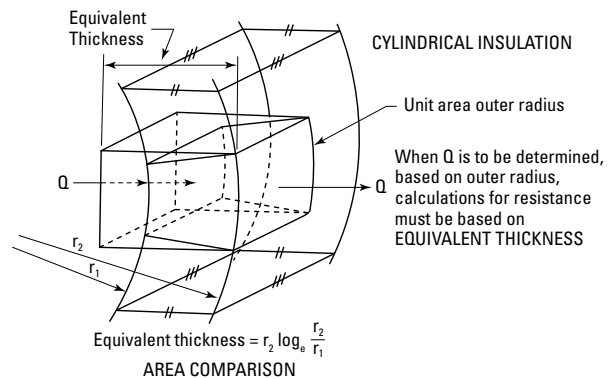
Where  $r_2$  = outside diameter/2

$r_1$  = inside diameter/2

Dimensions used as per manufacturing specifications and for Micro-Lok (@75 F): "K" = .23 btu in/sqft hr F.

Defined in Thermal Insulation Handbook by William C. Turner & John F. Malloy

The following is an illustration from the "Thermal Insulation Handbook," by William C. Turner and John F. Malloy, explaining the Equivalent Thickness concept for cylindrical pipe insulation:



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