

## Carpet guide for radiant floor heat

**General rule:** combined insulating value of less than R-2.5  
 Use charts below to determine R value of carpet

CARPET THICKNESS	R-Value
1/8"	R-0.6
1/4"	R-1.0
1/2"	R-1.4
3/4"	R-1.8
1"	R-2.2
<i>approximate R-Value of synthetic carpet. For wool carpets multiply R-Value by 1.5</i>	

<b>Carpet Cushion R-Values</b>			
<i>Use of lowest R-value recommended.</i>			
<i>Add carpet and cushion R-Values together to get total R-Value of floor covering.</i>			
GROUP ONE-			
Cushion	Density	Thickness	R-value
Prime Urethane	2.2 lb/cu ft	1/4"	R-1.08
		3/8"	R-1.62
		1/2"	R-2.15
Bonded Urethane	4-8 lb/cu ft	1/4"	R-1.05
		3/8"	R-1.57
		1/2"	R2.09
GROUP TWO-			
Fiber/Hair/Jute	6-8 lb/cu ft	1/4"	R-0.97
		3/8"	R-1.46
		1/2"	R-1.94
Waffle Rubber	25 lb/cu ft	1/4"	R-0.62
		3/8"	R-1.00
		1/2"	R-1.33
Slab Foam Rubber	33 lb/cu ft	1/4"	R-0.31
		3/8"	R-0.47
		1/2"	R-0.62
<i>Note: All R-values listed are approximate. Check with product supplier for actual values.</i>			

Density determines the minimum cushion thickness recommended by the carpet manufacturer. The minimum recommended Prime Urethane cushion is 3/8" while the minimum rubber cushion is 1/4". The difference in R-value between these two minimums is dramatic. The 3/8" prime urethane has an R-value of 1.62, while the 1/4" slab rubber foam is only R-0.31; that's over five times less restrictive. This means that the floor under the prime urethane cushion must be approximately 40 degrees warmer than under the rubber cushion to transfer an equal amount of heat to the surface. It will also take longer for the heat to transfer through the prime urethane on the initial start-up.

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**Here's advice from the national Carpet Cushion Association:**

In the case of radiant heating, you do not want a cushion that is an exceptionally effective insulator, but one that allows the heat from the subflooring to penetrate the carpet system and heat the room. A relatively thin, flat cellular sponge rubber or synthetic fiber cushion works well under these circumstances.