

Determining Effective R-Value of Insulation



Blown Cellulose, Blown Fiberglass & Rolled Batt

EFFECTIVE R-VALUE OF BLOWN CELLULOSE AND BLOWN FIBERGLASS INSULATION

Determine the minimum depth you think covers 98% of the attic.

GOOD	<ul style="list-style-type: none">» Insulation looks new and is at a consistent level throughout the attic, with no visible deterioration from heat, wind or weather» Insulation covers all can lights, bath fans and ceiling joists
FAIR	<ul style="list-style-type: none">» Insulation may be original to home and level is fairly consistent throughout the attic; may show slight compression due to light foot traffic in attic» Can lights and bath fans are covered; ceiling joists are mostly covered» No open spots or exposed ceiling
POOR	<ul style="list-style-type: none">» Insulation is probably original to home and level is compressed, showing evidence of heavy foot traffic throughout attic» Can lights and bath fans are exposed; ceiling joists are mostly exposed» No open spots or exposed ceiling
VERY POOR	<ul style="list-style-type: none">» Insulation is old and weathered» Can lights, bath fans and ceiling joists are exposed» Large areas of exposed ceiling

EFFECTIVE R-VALUE OF ROLLED BATT INSULATION

GOOD	<ul style="list-style-type: none">» Insulation looks new and is fluffed to full thickness; in contact with all surfaces, with no gaps or voids» Insulation covers all ceiling joists—if cross batted, both layers appear to be the same condition
FAIR	<ul style="list-style-type: none">» Insulation appears to be fairly new, tight to edges» Ceiling joists are 90% covered — if cross batted, the condition of the second layer is consistent with the first
POOR	<ul style="list-style-type: none">» Insulation looks old and dirty, with 1/2" gaps along edges» Can lights, bath fans and ceiling joists are exposed — if cross batted, second layer is in much worse condition than the first, with open and inconsistently covered areas; edges of second layer do not touch
VERY POOR	<ul style="list-style-type: none">» Insulation is old, deteriorating and very dirty» Can lights, bath fans and ceiling joists are exposed; ceiling has open spots

Installation Examples



EFFECTIVE R-VALUE / Fiberglass Batts

2x4x24 OC

		EXPOSED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	2	5	5	6	6
	3	6	7	8	9
	3.5	7	8	9	10
	4	9	10	11	11
	4.5	11	12	12	12
	5	12	13	13	13
	5.5	13	14	14	14
	6	14	14	15	15
	6.5	15	15	15	15
	7	16	16	16	16
	7.5	16	17	17	17
	8	17	17	18	18
8.5	18	18	18	18	
9	18	19	19	19	
9.5	19	19	19	19	
10	20	20	20	20	
10.5	20	20	20	20	
11	21	21	21	21	
11.5	21	21	21	21	
12	22	22	22	22	

2x4x16 OC

		EXPOSED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	2	4	5	5	5
	3	6	7	8	8
	3.5	7	8	9	9
	4	9	10	10	10
	4.5	10	11	11	11
	5	11	12	12	12
	5.5	12	13	13	13
	6	13	13	13	13
	6.5	14	14	14	14
	7	14	15	15	15
	7.5	15	15	15	15
	8	16	16	16	16
8.5	16	16	16	16	
9	17	17	17	17	
9.5	17	17	17	17	
10	18	18	17	17	
10.5	18	18	18	18	
11	18	19	18	18	
11.5	19	19	18	18	
12	19	19	19	19	

		COVERED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	4	10	11	12	12
	4.5	12	13	13	14
	5	14	15	15	15
	6	18	18	19	19
	9	28	28	29	29
	12	38	38	39	39

		COVERED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	4	7	9	10	10
	4.5	10	12	12	12
	5	13	14	14	14
	6	17	17	18	18
	9	27	28	28	28
	12	37	38	38	38

EFFECTIVE R-VALUE / Fiberglass Batts

2x6x24 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	4	5	5	6
3	6	7	8	8
3.5	7	8	9	10
4	7	9	10	11
4.5	8	10	12	12
5	8	11	13	14
5.5	9	12	14	15
6	9	13	15	17
6.5	14	16	17	18
7	16	17	18	18
7.5	17	18	19	19
8	19	20	20	20
8.5	20	20	21	21
9	21	21	22	22

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
6	9	13	15	17
9	25	27	27	27
12	36	37	37	38

2x6x16 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	4	5	5	5
3	6	7	8	8
3.5	6	8	9	9
4	7	9	10	10
4.5	8	10	11	12
5	8	10	12	13
5.5	9	11	13	14
6	9	12	15	16
6.5	13	15	16	17
7	15	16	17	17
7.5	16	17	18	18
8	17	18	19	19
8.5	18	19	19	20
9	19	20	20	20
9.5	20	20	21	21

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
6.5	14	16	17	18
9	25	26	26	27
12	35	36	37	37

EFFECTIVE R-VALUE / Blown Fiberglass

2x4x24 OC

INSULATION DEPTH	EXPOSED JOISTS			
	VERY POOR	POOR	FAIR	GOOD
2	4	4	5	5
3	5	6	7	7
3.5	6	7	8	8
4	7	8	9	9
4.5	9	9	10	10
5	10	10	11	11
5.5	11	11	12	12
6	12	12	12	12
6.5	13	13	13	13
7	13	14	14	14
7.5	14	14	14	14
8	15	15	15	15
8.5	15	16	16	16
9	16	16	16	16
9.5	16	17	17	17
10	17	17	17	17
10.5	17	18	18	18
11	18	18	18	18
11.5	18	19	19	19
12	19	19	19	19
12.5	19	19	20	20
13	20	20	20	20

2x4x16 OC

INSULATION DEPTH	EXPOSED JOISTS			
	VERY POOR	POOR	FAIR	GOOD
2	4	4	4	4
3	5	6	6	7
3.5	6	7	8	8
4	6	8	9	9
4.5	8	9	9	10
5	9	10	10	10
5.5	10	11	11	11
6	11	11	12	12
6.5	12	12	12	12
7	12	13	13	13
8	13	14	14	14
9	14	15	15	15
10	15	15	16	16
11	16	16	16	16
12	17	17	17	17
13	17	18	18	18
14	18	18	18	18
15	19	19	19	19
16	19	19	19	19
17	19	20	20	20
18	20	20	20	20

INSULATION DEPTH	COVERED JOISTS			
	VERY POOR	POOR	FAIR	GOOD
4	7	8	9	9
4.5	9	10	10	11
5	11	11	12	12
6	14	14	15	15
7	16	17	17	17
8	19	20	20	20
9	22	22	23	23

INSULATION DEPTH	COVERED JOISTS			
	VERY POOR	POOR	FAIR	GOOD
4	6	8	9	9
4.5	9	10	10	10
5	10	11	12	12
6	13	14	14	14
7	16	17	17	17
8	19	19	20	20
9	22	22	22	22

EFFECTIVE R-VALUE / Blown Fiberglass

2x6x24 OC

		EXPOSED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	2	4	4	5	5
	3	5	6	7	7
	3.5	6	7	8	8
	4	7	8	9	9
	4.5	7	9	10	10
	5	8	9	11	12
	5.5	8	10	12	13
	6	8	11	13	14
	6.5	12	13	14	15
	7	13	15	15	16
	7.5	15	16	16	16
	8	16	17	17	17
	8.5	17	17	16	16
	9	17	18	19	19
9.5	18	19	19	19	
10	19	20	20	20	
10.5	20	20	21	21	

2x6x16 OC

		EXPOSED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	2	4	4	4	4
	3	5	6	6	7
	4	6	8	8	9
	5	7	9	11	11
	6	8	11	13	13
	6.5	11	13	14	14
	7	13	14	15	15
	8	15	16	16	16
	9	16	17	17	17
	10	18	18	19	19
	11	19	19	20	20
	12	20	20	21	21

		COVERED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	6	8	11	13	14
	6.5	12	14	15	15
	7	14	15	16	17
	8	17	19	19	19
	9	20	21	22	22

		COVERED JOISTS			
		VERY POOR	POOR	FAIR	GOOD
INSULATION DEPTH	6	8	11	13	13
	6.5	12	13	14	15
	7	14	15	16	16
	8	17	18	19	19
	9	20	21	21	22

EFFECTIVE R-VALUE / Cellulose

2x4x24 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	5	5	6	6
3	6	7	8	8
3.5	7	8	9	10
4	7	9	11	11
4.5	10	11	12	12
5	12	13	13	13
6	14	15	15	15
7	16	16	16	16
8	17	18	18	18
9	19	19	19	19
10	20	20	20	20

2x4x16 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	4	5	5	5
3	6	7	8	8
4	7	9	10	11
5	11	12	12	12
6	13	13	14	14
7	14	15	15	15
8	16	16	16	16
9	17	17	17	17
10	17	18	18	18
11	18	18	18	18
12	19	19	19	19
13	19	20	20	20

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
4.5	11	12	13	13
5	13	14	15	15
6	17	18	19	19
7	21	22	22	22

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
4.5	11	12	12	13
5	13	14	14	15
6	17	18	18	18
6.5	19	20	20	20
7	21	21	22	22

EFFECTIVE R-VALUE / Cellulose

2x6x24 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	5	5	6	6
3	6	7	8	8
4	7	9	11	11
5	8	11	13	14
6	9	13	16	17
7	16	18	19	19
8	19	20	20	21
9	21	22	22	22

2x6x16 OC

INSULATION DEPTH

EXPOSED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
2	4	5	5	5
3	6	7	8	8
4	7	9	10	11
5	8	11	13	13
6	9	12	15	16
7	15	17	17	18
8	18	19	19	19
9	19	20	20	20

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
6.5	14	17	18	19
7	17	19	20	21
7.5	20	21	22	23

INSULATION DEPTH

COVERED JOISTS				
	VERY POOR	POOR	FAIR	GOOD
6.5	14	16	18	18
7	17	19	20	20
7.5	19	21	22	22



R-0 – R-11



R-12 – R-19



R-20+