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TECHNICAL INFORMATION ON BUILDING MATERIALS  
FOR USE IN THE DESIGN OF LOW-COST-HOUSING

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THE NATIONAL BUREAU OF STANDARDS  
UNITED STATES DEPARTMENT OF COMMERCE  
WASHINGTON, D. C.



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May 18, 1936.

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THERMAL INSULATION

Insulating Values for Frame Wall Construction--  
4" Brick Veneer with Various Types of Interior Finishes

This is a brief presentation of calculated thermal insulating values for frame wall construction--4" brick veneer with various types of interior finishes, based on tests conducted by the National Bureau of Standards and presented in detail in former Letter Circular No. 227, "Thermal Insulation", (April 19, 1927);<sup>1</sup> and Bureau of Standards Research Paper No. 291, "Heat Transfer Through Building Walls", (August 6, 1930),<sup>2</sup> by M. S. Van Dusen and J. L. Finck.

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<sup>1</sup>Out of print.

<sup>2</sup>Out of print and not available by purchase but may be consulted in Government depository libraries.

TRANS. BUREAU OF STANDARDS, FEBRUARY 1943

COMPARATIVE INSULATING VALUES (I.V.) FOR FRAME WALL CONSTRUCTION---  
4" BRICK VENEER WITH VARIOUS TYPES OF INTERIOR FINISHES<sup>1</sup>

Exterior Wall Construction	Commercial Insulating Materials	Interior Plaster	Plaster Applied on
Type of Sheathing:	3/4" Studding (1 5/8" x 3 5/8" Dressed)	3/4" Plaster and Metal Lath or 1/2" Plaster:Lath	1/2" Rigid Insulation Boards : (If plaster is omitted, deduct 0.22)
Finish	Type of Sheathing:	Board or Wall	Thickness of Board
	Thick- ness Inches	I.V. <sup>1</sup>	1/2" : 3/4" : 1"
	Type	I.V. <sup>1</sup>	I.V. <sup>1</sup> : I.V. <sup>1</sup> : I.V. <sup>1</sup>
4" Brick Veneer	Unfilled Air Space	3.7	5.1 : 5.8 : 6.5
	Flexible Insulation	5.5	6.9 : 7.7 : 8.4
	Placed against one side;	6.5	7.9 : 8.7 : 9.4
	with one air space	7.4	8.8 : 9.6 : 10.3
	3/4" Wood:	11.1	12.5 : 13.3 : 14.0
	Sheathing: Rigid Insulation Board	5.9	7.3 : 8.1 : 8.8
	and Centered, with 2 air	6.7	8.1 : 8.9 : 9.6
	Building: spaces of equal thick- <sup>3</sup>	7.4	8.8 : 9.6 : 10.3
	Paper <sup>3,4,5</sup> , <sup>5</sup> ness		
	Flexible Insulation	6.2	7.6 : 8.4 : 9.2
	Centered, with 2 air	7.2	8.6 : 9.4 : 10.1
	spaces of equal thick- <sup>3</sup>	8.1	9.5 : 10.3 : 11.1
	ness	11.8	13.2 : 14.0 : 14.7
	"Fill" Insulation	15.1	16.5 : 17.2 : 18.0
	Flexible Insulation	16.0	17.4 : 18.1 : 18.9

<sup>1</sup>The insulating value is defined as the number of hours required for the passage of 1 Btu of heat through 1 square foot of wall area, per degree Fahrenheit temperature difference between the air on one side of the wall and the air on the other.

<sup>2</sup>If 1/2" plaster is applied to plaster board or wall board, add 0.22.

<sup>3</sup>If wood sheathing is replaced by 1/2", 3/4", or 1" rigid insulation boards, add 0.77, 1.52, or 2.28 respectively.

<sup>4</sup>If 1/2", 3/4", or 1" rigid insulation board is used with wood sheathing, add 1.52, 2.27, or 3.03 respectively.

<sup>5</sup>If 1/2", 3/4", or 1" flexible insulation is used with sheathing, add 1.85, 2.78, or 3.70 respectively.