

Table 11.... Coefficients of Transmission (U) of Frame Construction Ceilings and Floors*
Coefficients are expressed in Btu per (hour) (square foot) (Fahrenheit degree difference in temperature between the air on the two sides) and are based on still air (no wind) conditions on both sides

Example—Floor E 5		Example of Substitution	
Resistances used are given below in this table or in Table 3 or 4		Resistances used are given below in this table or in Table 3 or 4	
Heated room below unheated space		Assume heated room is above unheated space so heat flow is down	
Construction (Heat flow up)	Resistance (R)	Total resistance	4.41
1. Top surface (still air).....	0.61	Deduct 1. Top surface (heat flow up).....	0.61
2. Linoleum or tile (av. R).....	0.06	6. Air space (heat flow up).....	0.85
3. Felt.....	0.06	8. Bottom surface (heat flow up).....	0.61
4. Plywood (3/4 in.).....	0.78	Difference.....	2.34
5. Wood subfloor (3/4 in.).....	0.38	Add 1. Top surface (heat flow down).....	0.92
6. Air space (3/4 in.).....	0.85	6. Air space (heat flow down).....	1.25
7. Metal lath and 1/2 in. plas. (lt. wt. agg.).....	0.47	8. Bottom surface (heat flow down).....	0.92
8. Bottom surface (still air).....	0.61	Total resistance.....	5.43
Total resistance.....	4.41	U = 1/R = 1/5.43 =	0.18
U = 1/R = 1/4.41 =	0.23		
See value 0.23 in boldface type in table below.			

To Adjust U Values for Construction with Added Insulation between Framing Members, See Table 16

Direction of Heat		Heat Flow Upward (Winter Conditions)										Heat Flow Downward (Summer Conditions)									
Type of Ceiling		Type of Floor																			
		Wood subfloor (3/4 in., felt, and—)																			
		Wood subfloor (3/4 in.)																			
		Cement (1 1/4 in.) and floor tile or linoleum (1/2 in.)																			
		Hardwood floor (3/4 in.)																			
Resistance		Type of Floor																			
Material	R	Wood subfloor (3/4 in., felt, and—)																			
		Wood subfloor (3/4 in.)																			
		Cement (1 1/4 in.) and floor tile or linoleum (1/2 in.)																			
		Wood subfloor (3/4 in.)																			
		Cement (1 1/4 in.) and floor tile or linoleum (1/2 in.)																			
		Hardwood floor (3/4 in.)																			
		Plywood (3/4 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (3/4 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/8 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/16 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/32 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/64 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/128 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/256 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/512 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1024 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2048 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4096 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/8192 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/16384 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/32768 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/65536 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/131072 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/262144 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/524288 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1048576 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2097152 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4194304 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/8388608 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/16777216 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/33554432 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/67108864 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/134217728 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/268435456 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/536870912 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1073741824 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2147483648 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4294967296 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/8589934592 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/17179869184 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/34359738368 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/68719476736 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/137438953472 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/274877906944 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/549755813888 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1099511627776 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2199023255552 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4398046511104 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/8796093022208 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/17592186044416 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/35184372088832 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/70368744177664 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/140737488355328 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/281474976710656 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/562949953421312 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1125899906842624 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2251799813685248 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4503599627370496 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9007199254740992 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/18014398509481984 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/36028797018963968 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/72057594037927936 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/144115188075855872 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/288230376151711744 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/576460752303423488 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1152921504606846976 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2305843009213693952 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4611686018427387904 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9223372036854775808 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/18446744073709551616 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/36893488147419103232 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/73786976294838206464 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/147573952589676412928 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/295147905179352825856 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/590295810358705651712 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1180591620717411303424 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2361183241434822606848 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4722366482869645213696 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9444732965739290427392 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/18889465931478580854784 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/37778931862957161709568 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/75557863725914323419136 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/151115727451828646838272 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/302231454903657293676544 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/604462909807314587353088 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1208925819614629174706176 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2417851639229258349412352 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4835703278458516698824704 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9671406556917033397649408 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/19342813113834066795298816 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/38685626227668133590597632 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/77371252455336267181195264 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/154742504910672534362390528 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/309485009821345068724781056 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/618970019642690137449562112 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1237940039285380274899124224 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2475880078570760549798248448 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4951760157141521099596496896 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9903520314283042199192993792 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/19807040628566084398385987584 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/39614081257132168796771975168 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/79228162514264337593543950336 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/158456325028528675187087900672 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/316912650057057350374175801344 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/633825300114114700748351602688 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1267650600228229401496703205376 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2535301200456458802993406410752 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5070602400912917605986812821504 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/10141204801825835211973625643008 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/20282409603651670423947251286016 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/40564819207303340847894502572032 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/81129638414606681695789005144064 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/162259276829213363391578010288128 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/324518553658426726783156020576256 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/649037107316853453566312041152512 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1298074214633706907132624082305024 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2596148429267413814265248164610048 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5192296858534827628530496329220096 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/10384593717069655257060992658440192 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/20769187434139310514121985316880384 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/41538374868278621028243970633760768 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/83076749736557242056487941267521536 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/166153499473114484112975882535043072 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/332306998946228968225951765070086144 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/664613997892457936451903530140172288 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1329227995784915872903807060280344576 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2658455991569831745807614120560689152 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5316911983139663491615228241121378304 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/10633823966279326983230456482242756608 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/21267647932558653966460912964485513216 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/42535295865117307932921825928971026432 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/85070591730234615865843651857942052864 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/170141183460469231731687303715884105728 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/340282366920938463463374607431768211456 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/680564733841876926926749214863536422912 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1361129467683753853853498429727072845824 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2722258935367507707706996859454145691536 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5444517870735015415413993718908291383072 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/10889035741470030830827987437816582766144 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/21778071482940061661655974875633165532288 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/43556142965880123323311949751266331064576 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/87112285931760246646623899502532662129152 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/174224571863520493293247799005065244258304 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/348449143727040986586495598010130488516608 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/696898287454081973172991196020260977033216 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1393796574908163946345982392040521954066432 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2787593149816327892691964784081043908132864 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5575186299632655785383929568162087816265728 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/11150372599265311570767859136324175632531456 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/22300745198530623141535718272648351265062912 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/44601490397061246283071436545296702530125824 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/89202980794122492566142873090593405060251648 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/178405961588244985132285746181186810120503296 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/35681192317648997026457149236237362024100608 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/71362384635297994052914298472474724048201216 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/142724769270595988105828596944949448096402432 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/285449538541191976211657193889898896192804864 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/570899077082383952423314387779797792385609728 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1141798154164767904846628775559595584771219456 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2283596308329535809693257551119191169542438912 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4567192616659071619386515102238382339084877824 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9134385233318143238773030204476764678169755648 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/18268770466636286477546060408953529356339511296 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/36537540933272572955092120817907058712679022592 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/73075081866545145910184241635814117425358045184 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/146150163733090291820368483271628234850716090368 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/292300327466180583640736966543256469701432180736 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/584600654932361167281473933086512939402864361472 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/1169201309864722334562947866173025878805728722944 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/2338402619729444669125895732346051757611456445888 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/4676805239458889338251791464692103515222912891776 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/9353610478917778676503582929384207030445825783552 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/18707220957835557353007165858768414060891651567104 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/37414441915671114706014331717536828121783303134208 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/74828883831342229412028663435073656243566606268416 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/149657767662684458824057326870147312487133212536832 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/299315535325368917648114653740294624974266425073664 in.) and floor tile or linoleum (1/2 in.)																			
		Insul. bd. (1/5986310706507378352																			