

SELECTING HI E OR LO E BASED ON EMISSIVITY TABLE

Metals	Emissivity Range	IRt/c Selection
Aluminum		
highly polished plate, pure	0.04 - 0.06	Lo E
oxidized at 1110 F (600 C)	0.11 - 0.19	Lo E
commercial sheet	0.09	Lo E
Brass		
highly polished plate, pure	0.1	Lo E
oxidized at 1110 F (600 C)	0.61 - 0.59	Lo E
Chromium, polished	0.08 - 0.36	Lo E
Copper		
polished	0.05	Lo E
heated at 1110 F (600 C)	0.57	Lo E
Gold, pure, highly polished	0.02 - 0.03	Lo E
Iron and steel (excluding stainless)		
iron, polished	0.14 - 0.38	Lo E
cast iron, polished	0.21	Lo E
cast iron, oxidized at 1100 F (600 C)	0.64 - 0.78	Lo E
wrought iron, polished	0.28	Lo E
wrought iron, dull oxidized	0.94	Hi E
iron plate, rusted	0.69	Lo E
steel, polished	0.07	Lo E
steel, oxidized at 1110 F (600 C)	0.79	Lo E
rolled sheet steel	0.66	Lo E
steel plate, rough	0.94 - 0.97	Hi E
Lead, gray oxidized	0.28	Lo E
Mercury	0.09 - 0.12	Lo E
Molybdenum filament	0.10 - 0.20	Lo E
Nickel		
polished	0.07	Lo E
plate, oxidized at 1110 F (600 F)	0.37 - 0.48	Lo E
Platinum		
polished plate, pure	0.05 - 0.10	Lo E
wire	0.07 - 0.18	Lo E
Silver, pure, polished	0.02 - 0.03	Lo E
Stainless steel		
polished	0.07	Lo E
type 310, oxidized from furnace service	0.90 - 0.97	Hi E
Tin, bright	0.06	Lo E
Tungsten filament, aged	0.03 - 0.35	Lo E
Zinc		
commercial pure, polished	0.05	Lo E
galvanized sheet	0.21	Lo E

Nonmetals	Emissivity Range	IRt/c Selection
Asbestos	0.93 - 0.94	Hi E
Brick		
red, rough	0.93	Hi E
fire clay	0.75	Hi E
Carbon		
filament	0.53	Hi E
lampblack, rough deposit	0.78 - 0.84	Hi E
Glass (Pyrex, lead, soda)	0.85 - 0.95	Hi E
Marble, light gray, polished	0.93	Hi E
Paints, lacquers, and varnishes		
white enamel	0.91	Hi E
flat black lacquer	0.96 - 0.98	Hi E
aluminum paints	0.27 - 0.67	Lo E
oil paints, 16 colors	0.92 - 0.96	Hi E
Porcelain, glazed	0.92	Hi E
Quartz, opaque	0.68 - 0.92	Hi E
Water	0.95 - 0.96	Hi E
Wood, oak, planed	0.90	Hi E

Note: Lower emissivity surfaces require more stable conditions than high emissivity surfaces for accurate temperature control. These tables include approximate values, which can vary significantly with surface condition. For best results, install an IRt/c and test. Emissivity data from Heat, Mass, and Momentum Transfer by Rohsenow and Choi (Prentice-Hall, 1961).

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