Table I-3
Velocity Pressure Exposure Coefficients, K_z

Height Above Ground Level, z, ft (m) [Note (1)]	Exposure		
	B	C	D
0–15 (0–4.6)	0.57	0.85	1.03
20 (6.1)	0.62	0.90	1.08
25 (7.6)	0.66	0.94	1.12
30 (9.1)	0.70	0.98	1.16
40 (12.2)	0.76	1.04	1.22
50 (15.2)	0.81	1.09	1.27
60 (18.0)	0.85	1.13	1.31
70 (21.3)	0.89	1.17	1.34
80 (24.4)	0.93	1.21	1.38
90 (27.4)	0.96	1.24	1.40
100 (30.5)	0.99	1.26	1.43
120 (36.6)	1.04	1.31	1.48
140 (42.7)	1.09	1.36	1.52
160 (48.8)	1.13	1.39	1.55
180 (54.9)	1.17	1.43	1.58
200 (61.0)	1.20	1.46	1.61
250 (76.2)	1.28	1.53	1.68
300 (91.4)	1.35	1.59	1.73
350 (106.7)	1.41	1.64	1.78
400 (121.9)	1.47	1.69	1.82
450 (137.2)	1.52	1.73	1.86
500 (152.4)	1.56	1.77	1.89

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(b) Exposure categories are defined in para. 4.3.3.4.

NOTE: (1) Linear interpolation for intermediate values of height, z, is acceptable.

Table I-4
Force Coefficients, C_f

Cross Section	Type of Surface	h/D		
		1	7	25
Square (wind normal to face)	All	1.3	1.4	2.0
Square (wind along diagonal)	All	1.0	1.1	1.5
Hexagonal or octagonal	All	1.0	1.2	1.4
Round ($D\sqrt{q_z} > 2.5$)	Moderately smooth	0.5	0.6	0.7
($D\sqrt{q_z} > 5.3$, D in m, q_z in N/m^2)	Rough (D'/D = 0.02)	0.7	0.8	0.9
	Very rough (D'/D = 0.08)	0.8	1.0	1.2
Round ($D\sqrt{q_z} \leq 2.5$)	All	0.7	0.8	1.2
($D\sqrt{q_z} \leq 5.3$, D in m, q_z in Nn/m^2)				

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(b) The design wind force shall be calculated based on the area of the structure projected on a plane normal to the wind direction. The force shall be assumed to act parallel to the wind direction.

(c) Linear interpolation is permitted for h/D values other than shown.

(d) Nomenclature:

D = diameter of circular cross section and least horizontal dimension of square, hexagonal, or octagonal cross sections at elevation under consideration, ft (m)

D' = depth of protruding elements such as ribs, corrugated jackets, or other surface irregularities that affect the roughness of the stack, ft (m)

h = height of structure, ft (m)

q_z = velocity pressure evaluated at height z above ground, psf (N/m^2)

NONMANDATORY APPENDIX A
MECHANICAL DESIGN

(21)

See Figures A-1 through A-13 and Table A-1.

Figure A-1
Friction Factor, *f*, as Related to Reynolds Number and Stack Diameter

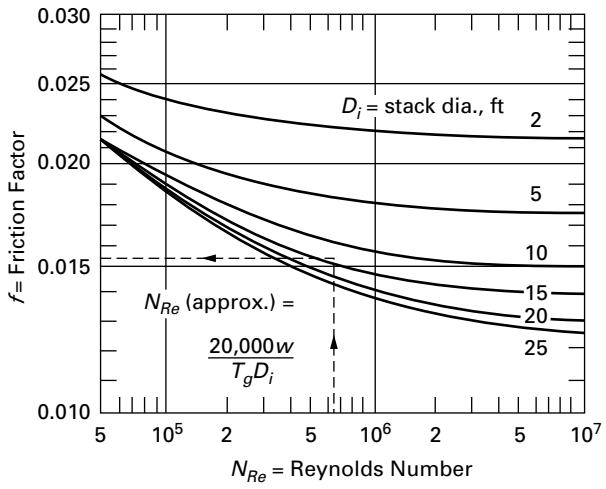


Figure A-2
External Heat Transfer Coefficient for Forced and Natural Convection

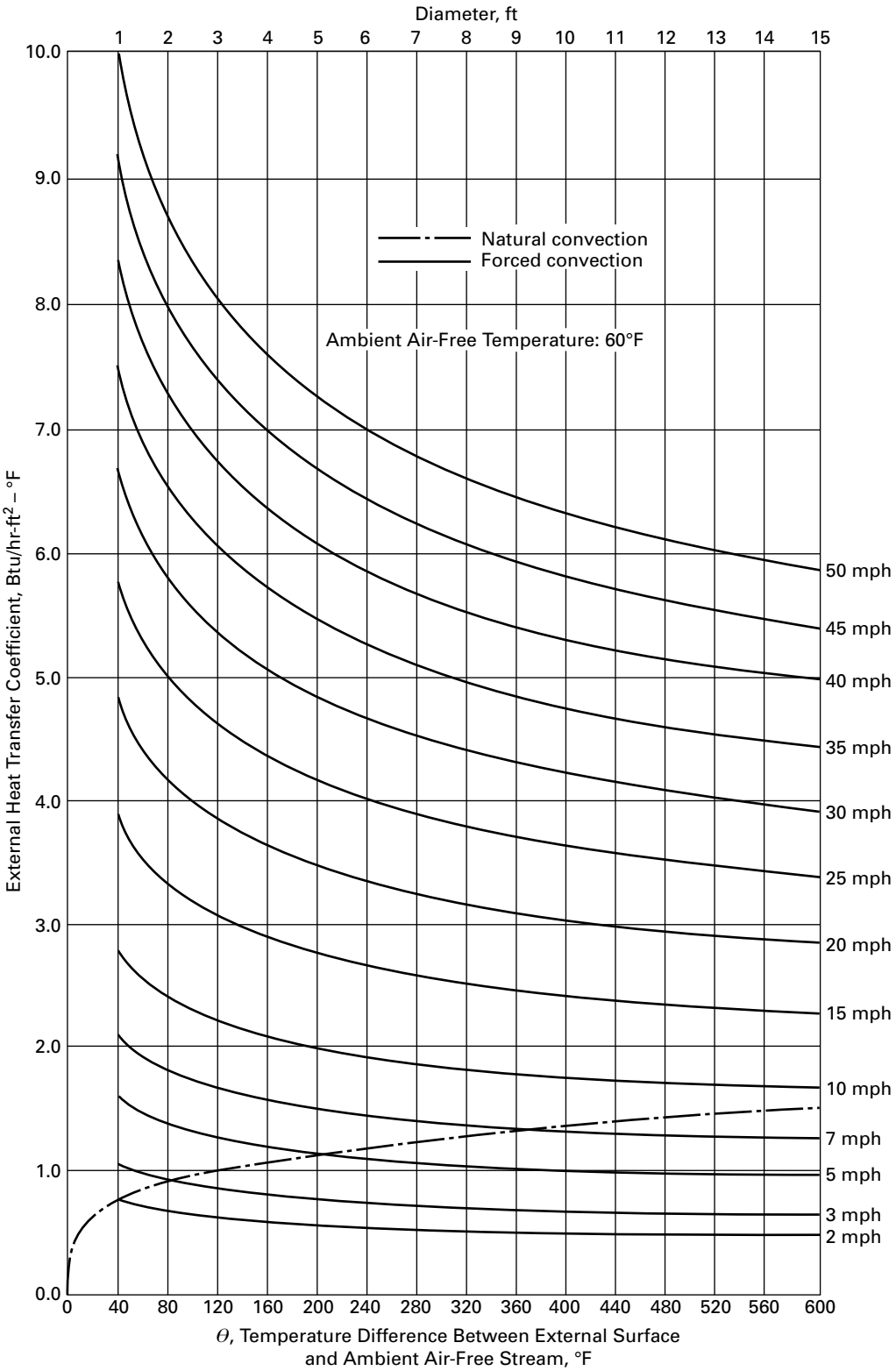
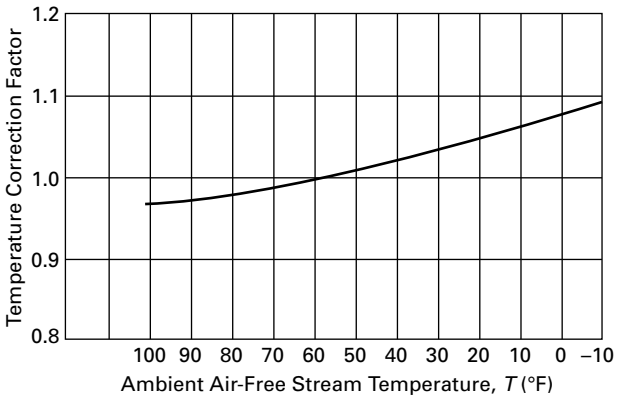


Figure A-3
Effect of a Change in the Ambient Air-Free Stream Temperature on the External Heat Transfer Coefficient for Forced Convection



GENERAL NOTE:

$h_T = (h_{60°F})$ (Temperature Correction Factor)$_T$, where

h_T = the external heat transfer coefficient for forced convection when the ambient air-free stream temperature is T (°F)

$h_{60°F}$ = the external heat transfer coefficient for forced convection for a T (°F) of 60°F (see Figure A-2)

Figure A-4
Heat Transfer Coefficient for the Air Gap Between Two Walls of a Double-Walled Metal Chimney
(Mean Temperature 200°F Through 400°F)

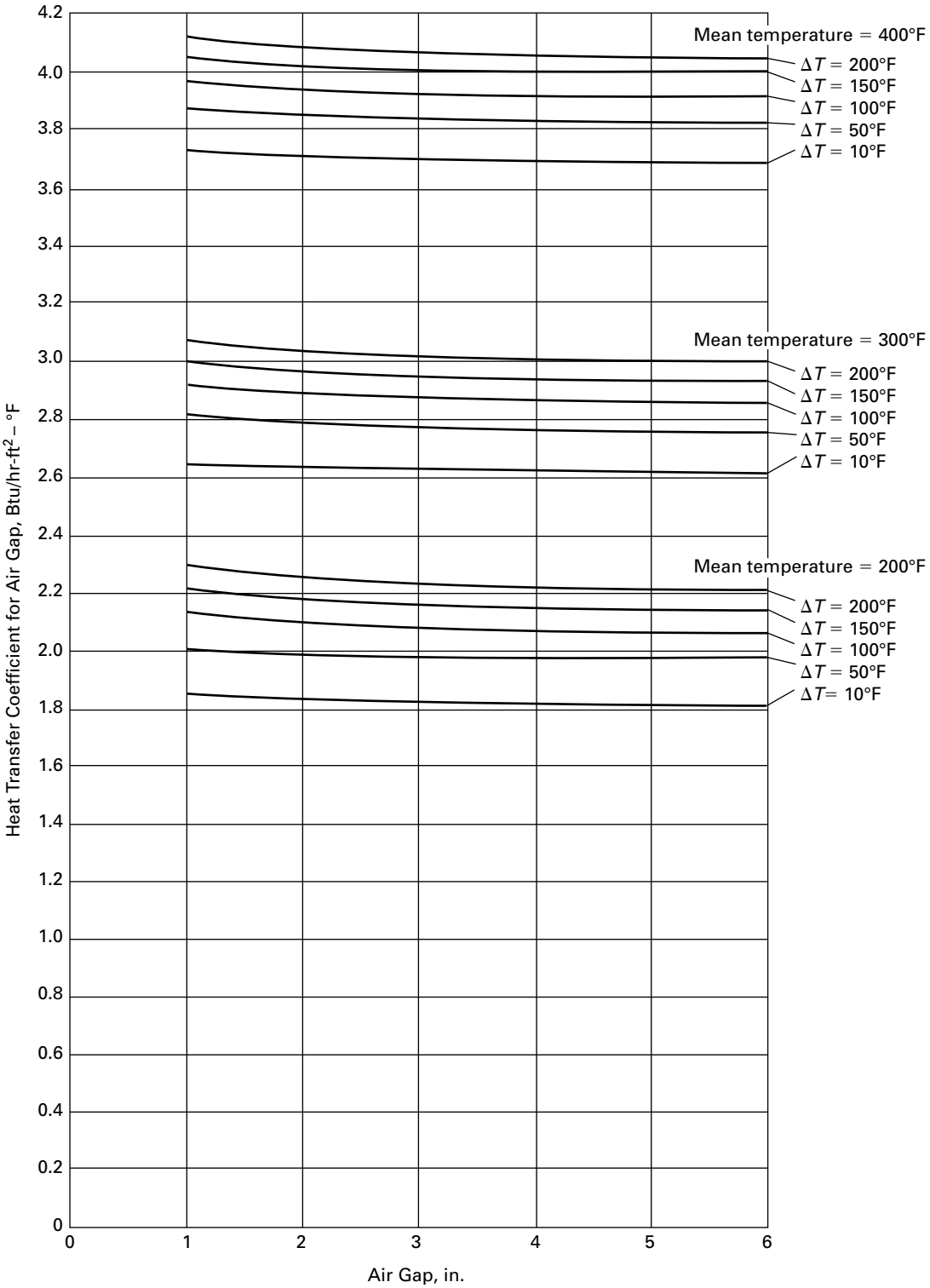


Figure A-5
Heat Transfer Coefficient for the Air Gap Between Two Walls of a Double-Walled Metal Chimney (Mean Temperature 500°F and 600°F)

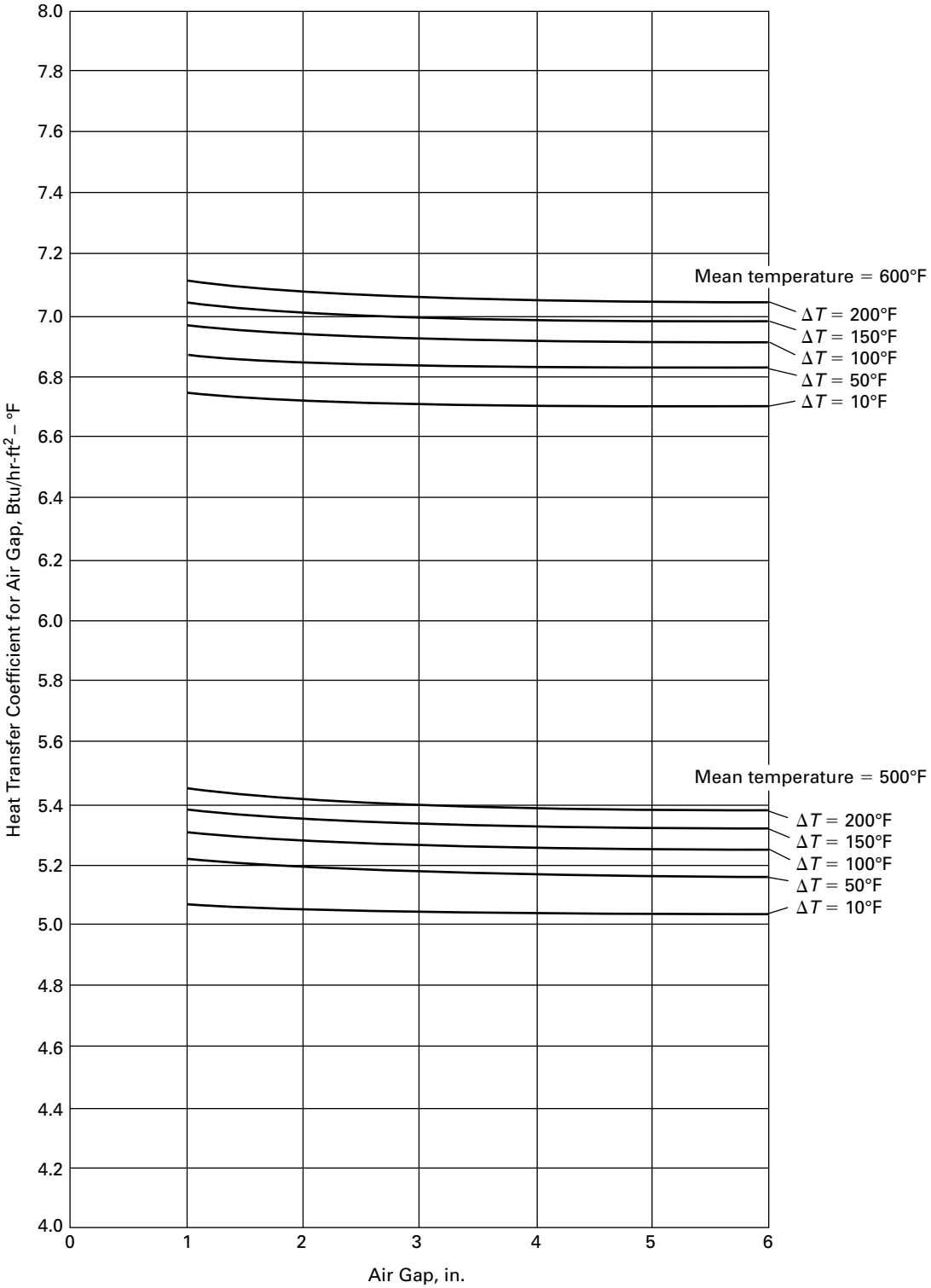


Figure A-6
Internal Heat Transfer Coefficient vs. Velocity at Film Temperature: 200°F

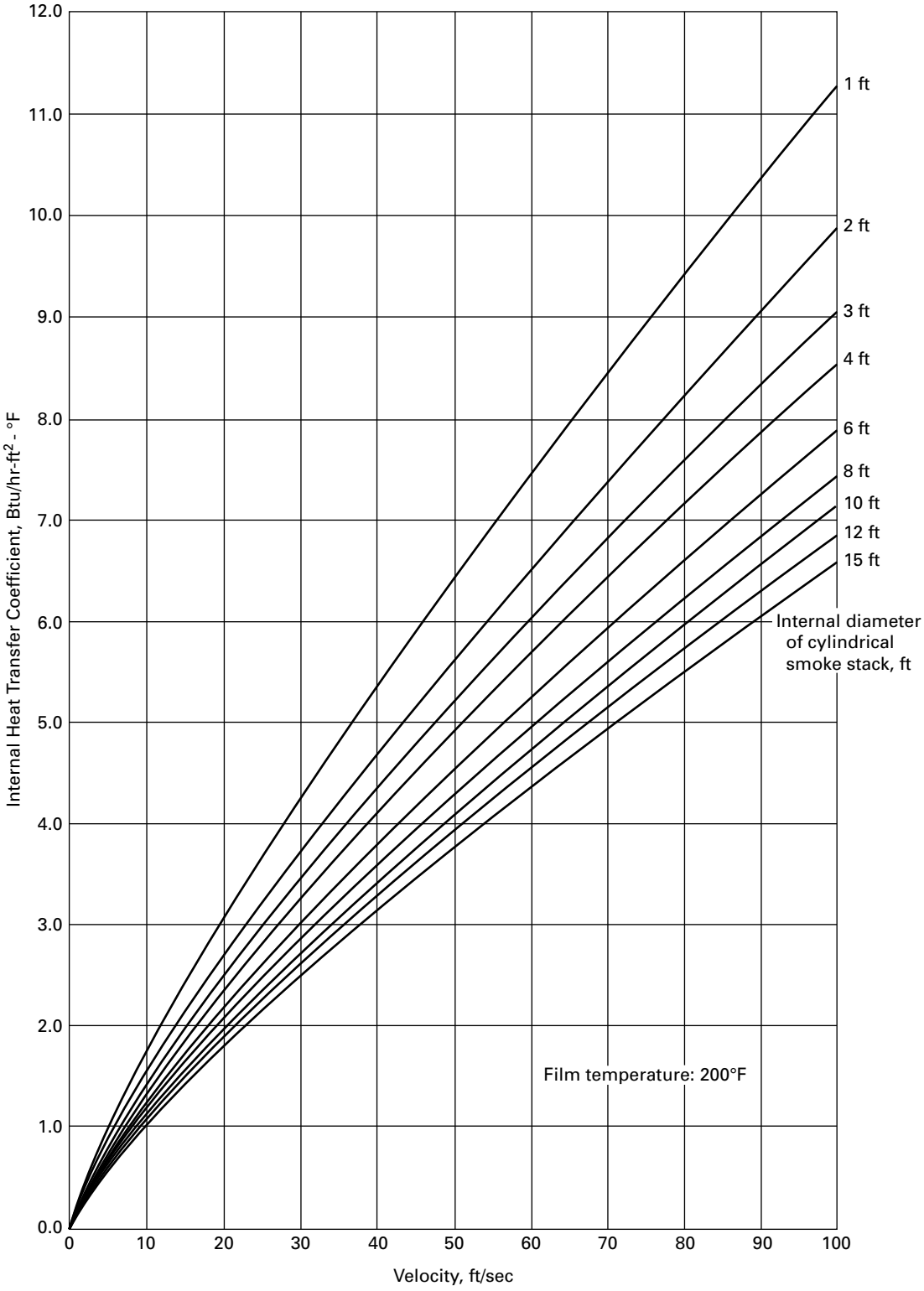


Figure A-7
Internal Heat Transfer Coefficient vs. Velocity at Film Temperature: 300°F

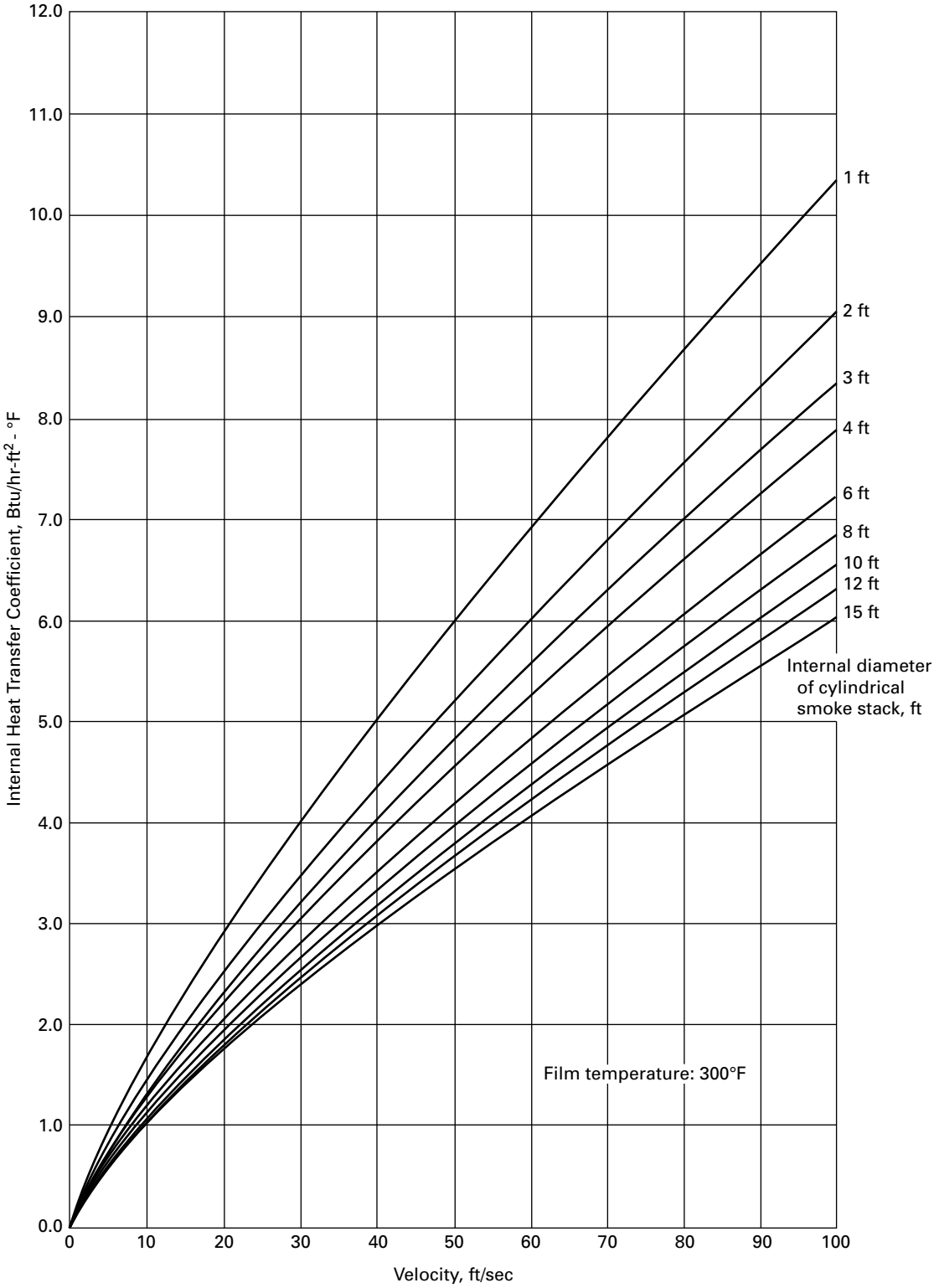


Figure A-8
Internal Heat Transfer Coefficient vs. Velocity at Film Temperature: 500°F

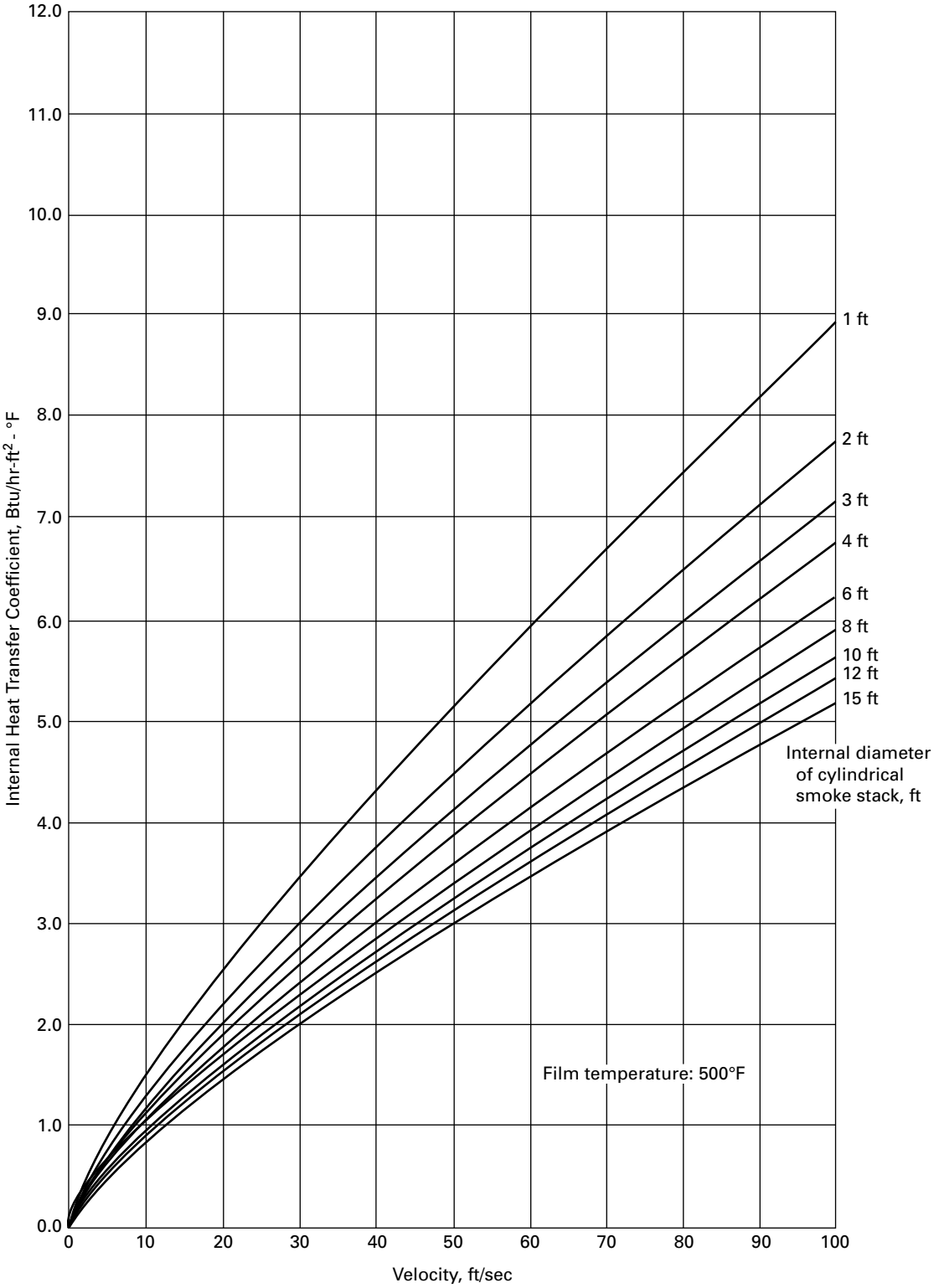


Figure A-9
Internal Heat Transfer Coefficient vs. Velocity at Film Temperature: 1,000°F