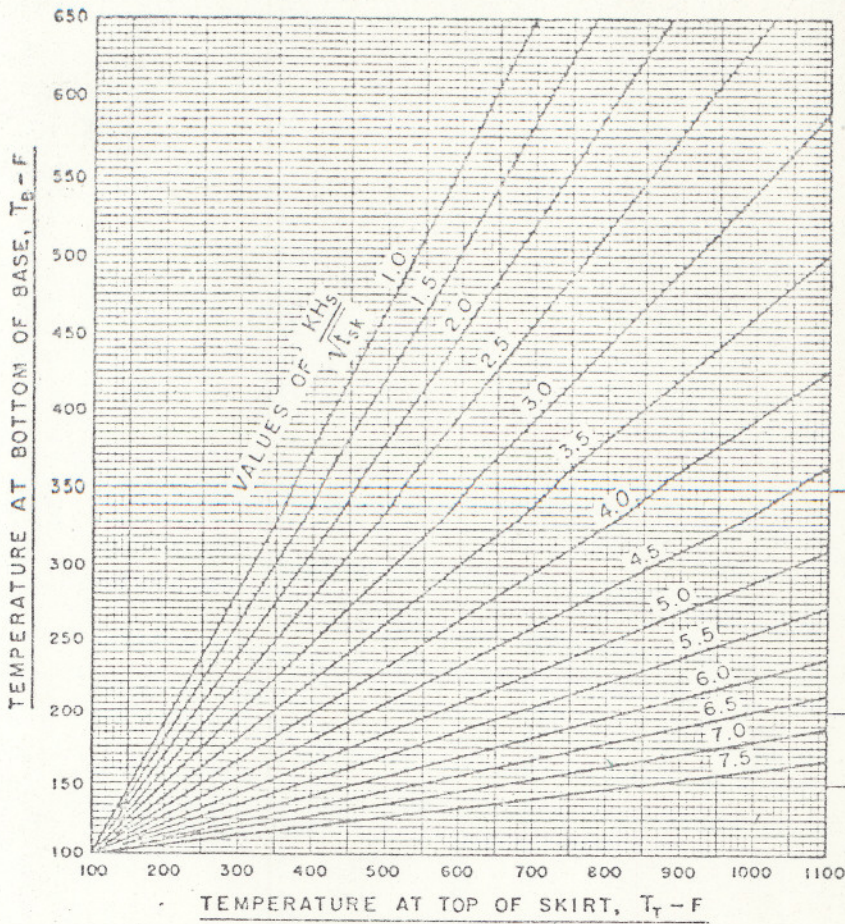


DATE
10-1-54

THE M. W. KELLOGG COMPANY
DESIGN ENGINEERING DEPARTMENT - VESSEL DIVISION
PRESSURE VESSEL DESIGN MANUAL - PRODUCTION



ABOVE 350 F USE VENTILATED BASE WHEN SUPPORTED ON CONCRETE OR FIREPROOFED STEEL. ON CONCRETE USE DETAIL AS SHOWN; ON STEEL PROVIDE 2" HIGH VENT SPACES BY STEEL PADS AND SUPPORT FROM 30 TO 50 PERCENT OF THE BASE RING PERIMETER.

ABOVE 200 F USE SLIDING PLATE WHEN SUPPORTED ON CONCRETE

NO PIPE SLEEVES ON ANCHOR BOLTS BELOW 150 F.

FACTOR K FOR SKIRT INSULATION

INSULATION THICKNESS (Inside and Outside)	MATERIAL	CONDUCTIVITY Btu x in. hr x sq ft x F	K
1 1/2"	Calcium silicate block - "Kaylo"	0.48	1.0
	Expanded mica block - "Vermiculite"		
	Mineral wool block - "Kel-Block"		
1 1/2"	Plastic No. 2 - "Thermostic No. 2"	0.85	1.25
4 1/2"	Fire brick	6.5	1.7
2"	Concrete, 2:1 mix	6.5	2.1
0			2.7

0.85 kpa
esp = 3"

- Concrete 2:1 mix } → { Esp. = 3" ⇒ K = 1.9
- Fire brick } → { Esp. = 4" ⇒ K = 1.8

FORMULA:

$$T_B = \frac{T_T - 100}{\cosh\left(\frac{0.2 KH_s}{\sqrt{t_{sk}}}\right)} + 100$$

IN WHICH H_s = HEIGHT OF SKIRT, FEET
t_{sk} = THICKNESS OF SKIRT, INCHES

BASIS:

AIR TEMPERATURE OUTSIDE = 100 F
AIR TEMPERATURE INSIDE = SKIRT TEMPERATURE + 50 F
WIND VELOCITY = 0
NO HEAT CONDUCTED OUT THROUGH BASE TO SUPPORTING MATERIAL

EXAMPLE 1:

T_T = 750 F
H_s = 2'-0"
t_{sk} = 1/2"
1 1/2" KAYLO INSULATION
K H_s / sqrt(t_{sk}) = 2.83
T_B = 440 F

EXAMPLE 2:

INCREASE H_s IN EXAMPLE 1 SO THAT T_B IS 350 F OR BELOW, AND VENTILATED BASE IS NOT REQUIRED.
REQUIRED K H_s / sqrt(t_{sk}) = 3.6
H_s = 2.55 FEET

FIGURE 222.2 - TYPICAL SKIRT BASE DETAILS