



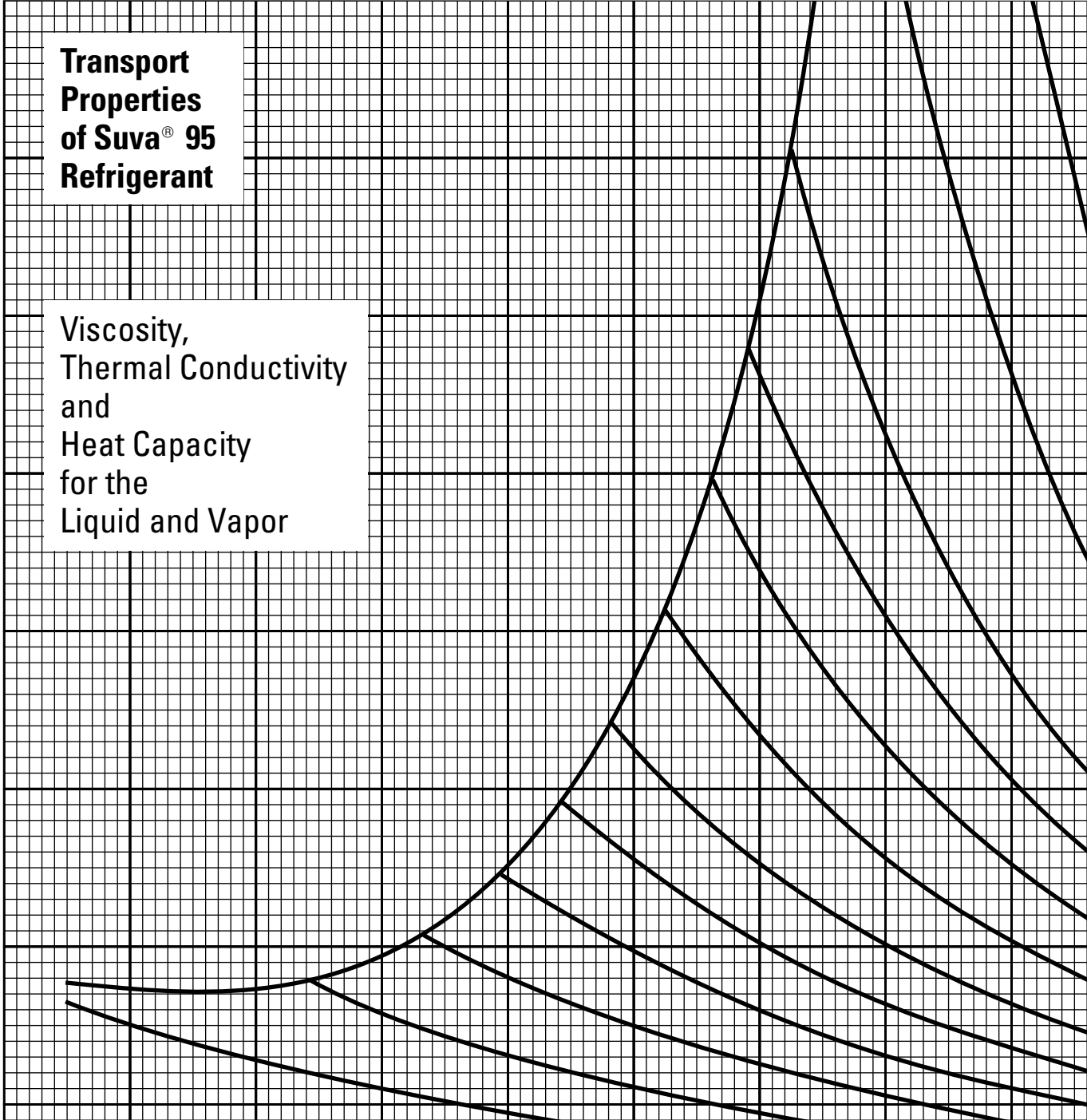
# Suva<sup>®</sup>

refrigerants

ART - 32

**Transport  
Properties  
of Suva<sup>®</sup> 95  
Refrigerant**

Viscosity,  
Thermal Conductivity  
and  
Heat Capacity  
for the  
Liquid and Vapor





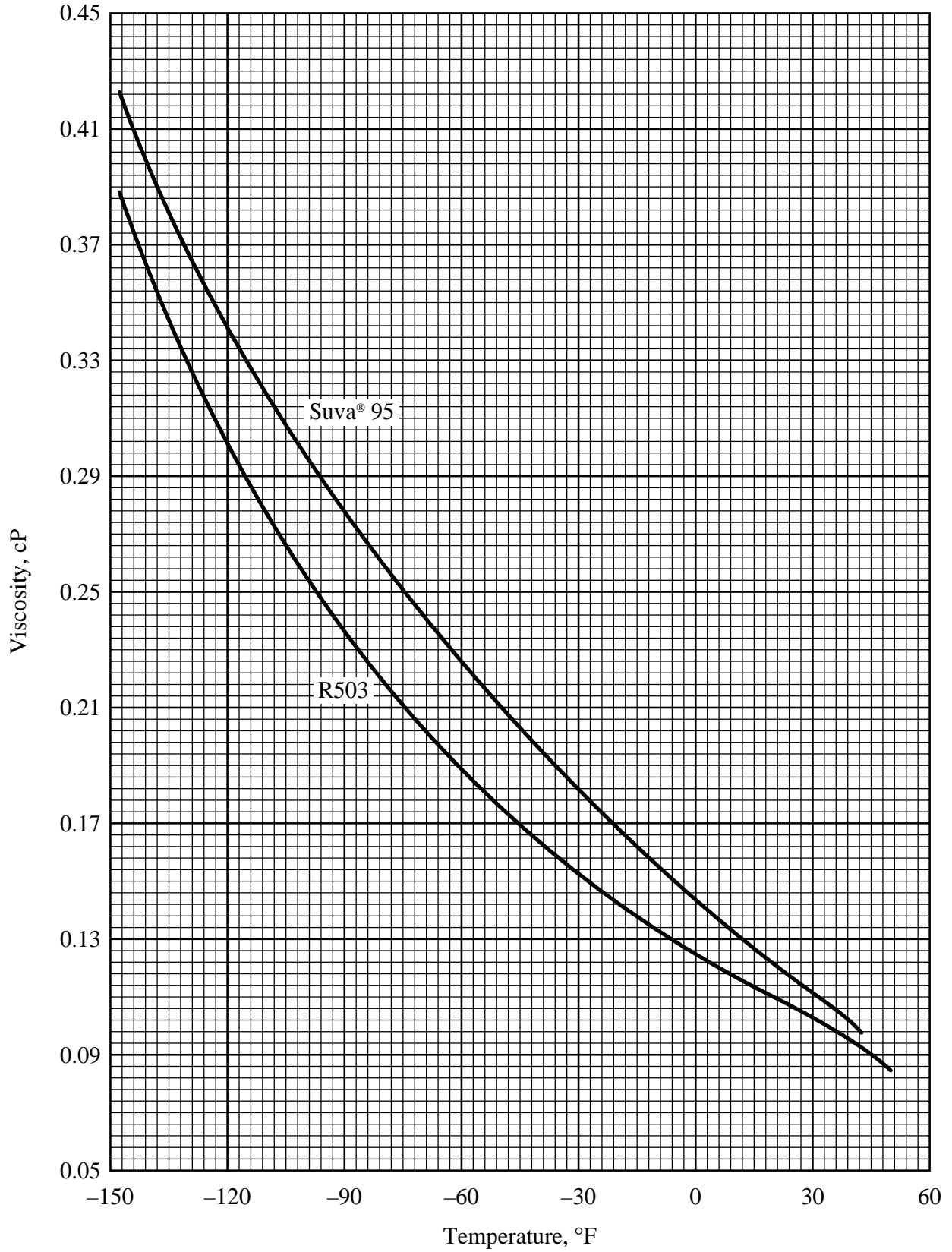
# Transport Properties of Suva<sup>®</sup> 95 Refrigerant

## TABLE OF CONTENTS

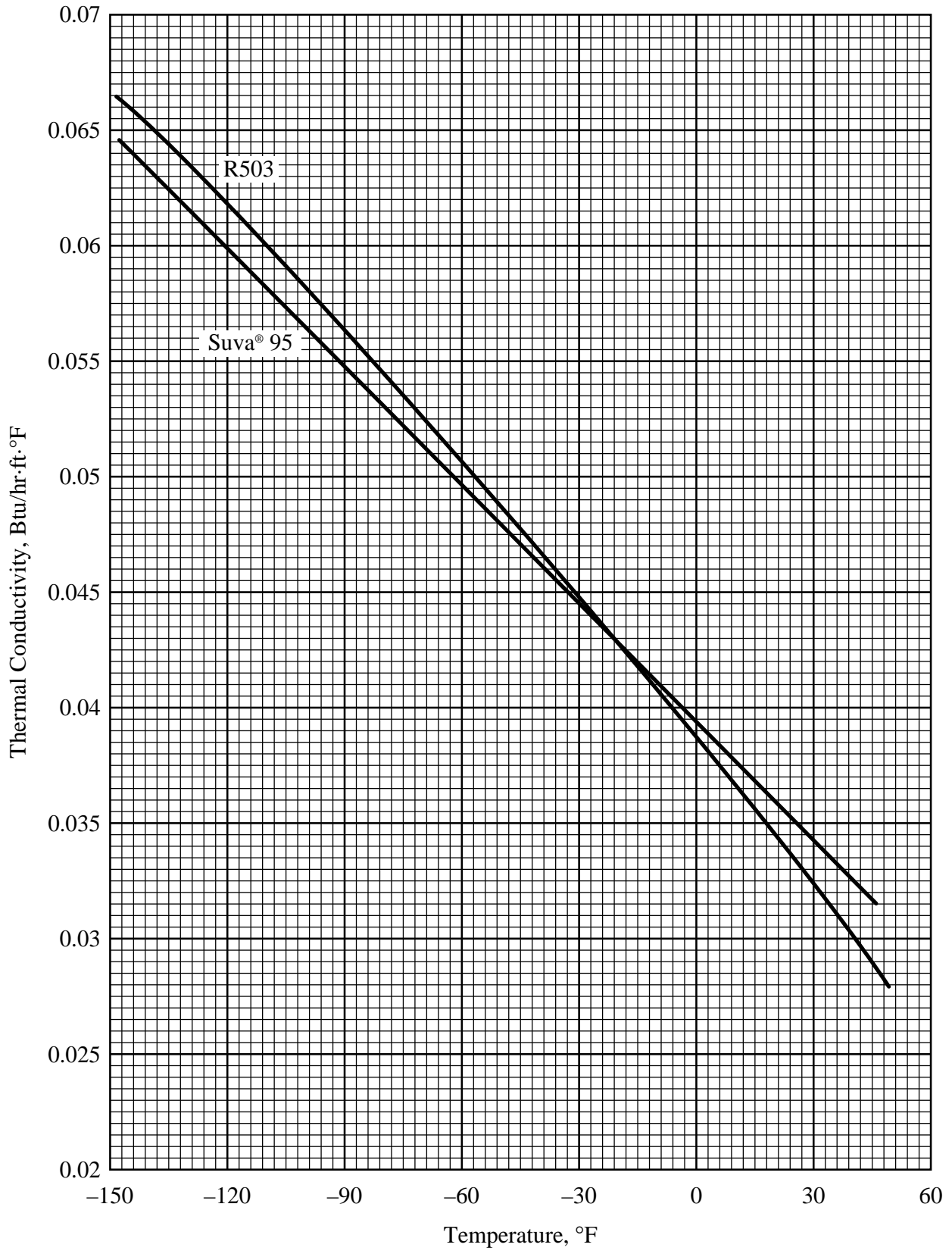
<b>English Units</b>	<b>Page</b>
Saturated Liquid Viscosity .....	1
Saturated Liquid Thermal Conductivity .....	2
Saturated Liquid Heat Capacity .....	3
Saturated Vapor Viscosity .....	4
Vapor Viscosity at One Atmosphere .....	5
Vapor Viscosity at High Pressure .....	6
Saturated Vapor Thermal Conductivity .....	7
Vapor Thermal Conductivity at One Atmosphere .....	8
Vapor Thermal Conductivity at High Pressure .....	9
Vapor Heat Capacity .....	10
Vapor Heat Capacity Ratio .....	11
Equations for Property Estimation .....	12
<b>Metric Units</b>	
Saturated Liquid Viscosity .....	13
Saturated Liquid Thermal Conductivity .....	14
Saturated Liquid Heat Capacity .....	15
Saturated Vapor Viscosity .....	16
Vapor Viscosity at One Atmosphere .....	17
Vapor Viscosity at High Pressure .....	18
Saturated Vapor Thermal Conductivity .....	19
Vapor Thermal Conductivity at One Atmosphere .....	20
Vapor Thermal Conductivity at High Pressure .....	21
Vapor Heat Capacity .....	22
Vapor Heat Capacity Ratio .....	23
Equations for Property Estimation .....	24



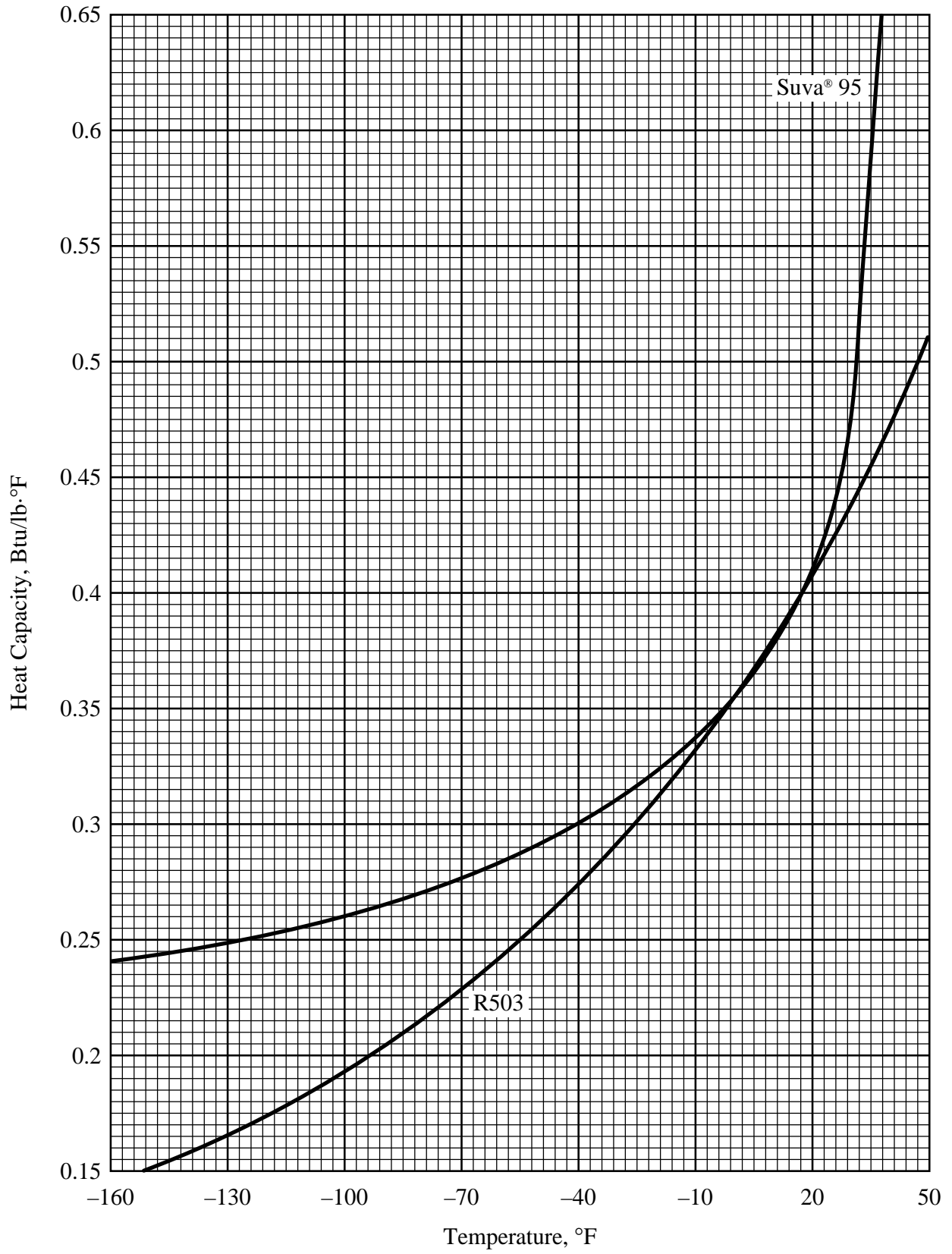
# Saturated Liquid Viscosity



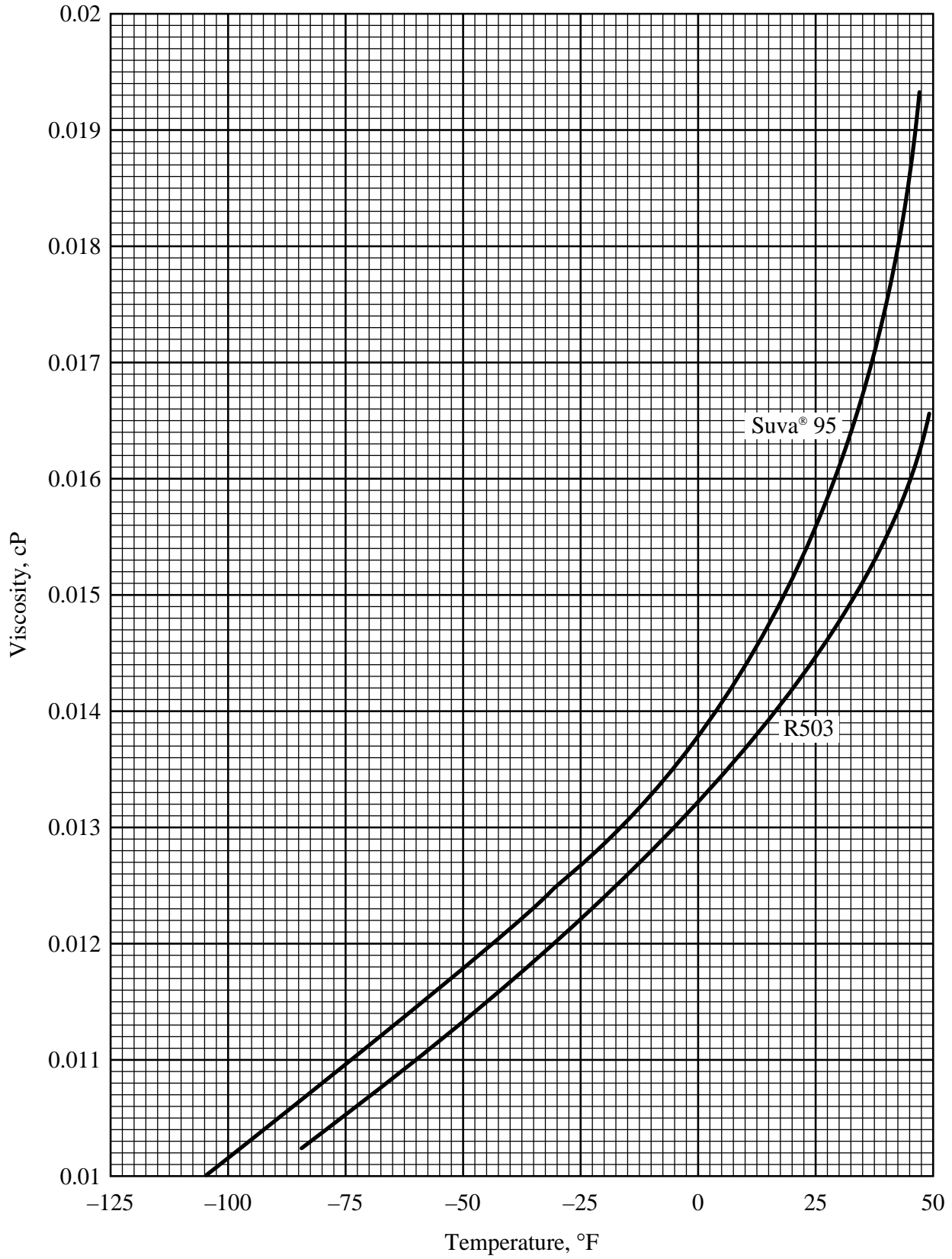
### Saturated Liquid Thermal Conductivity



# Saturated Liquid Heat Capacity

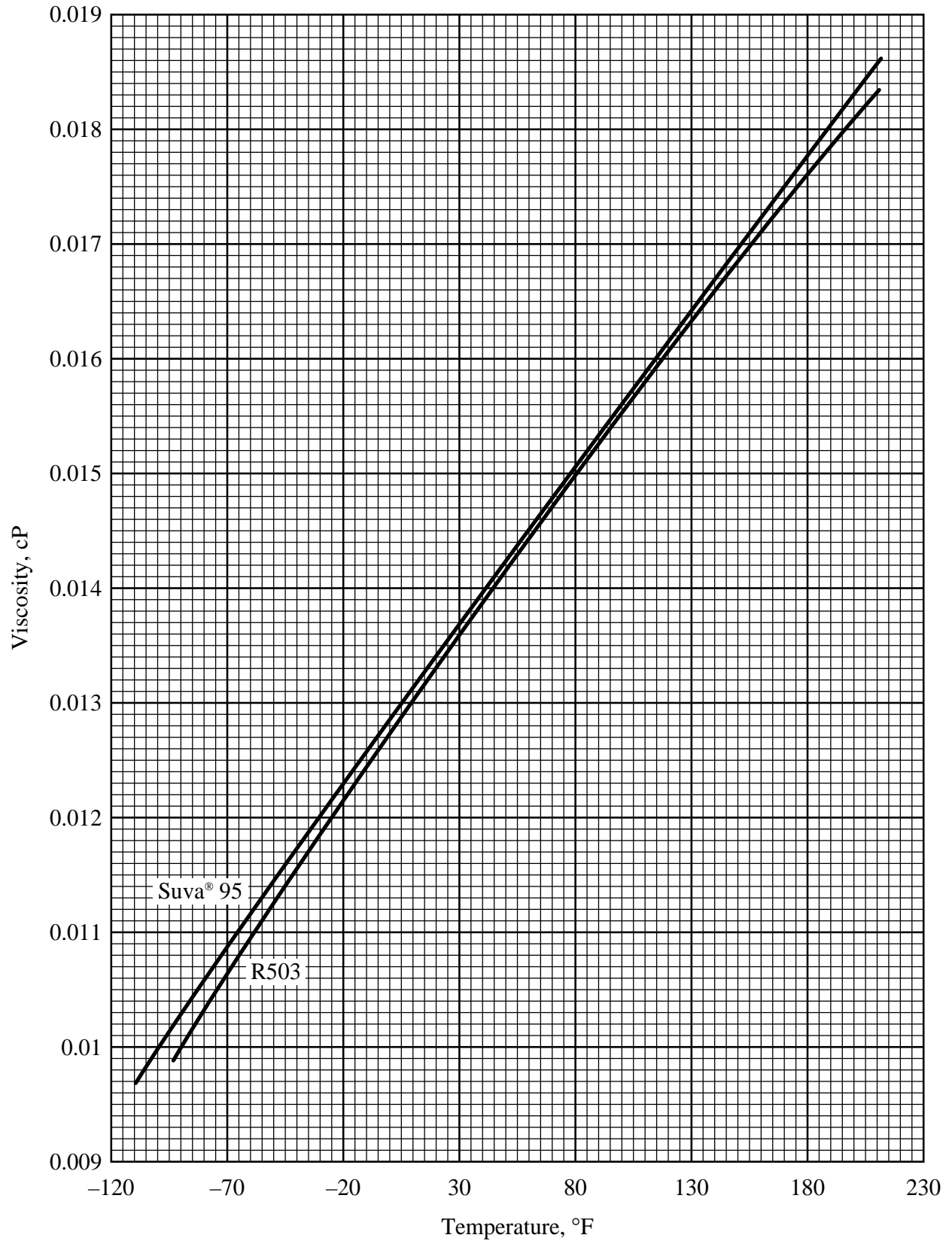


### Saturated Vapor Viscosity

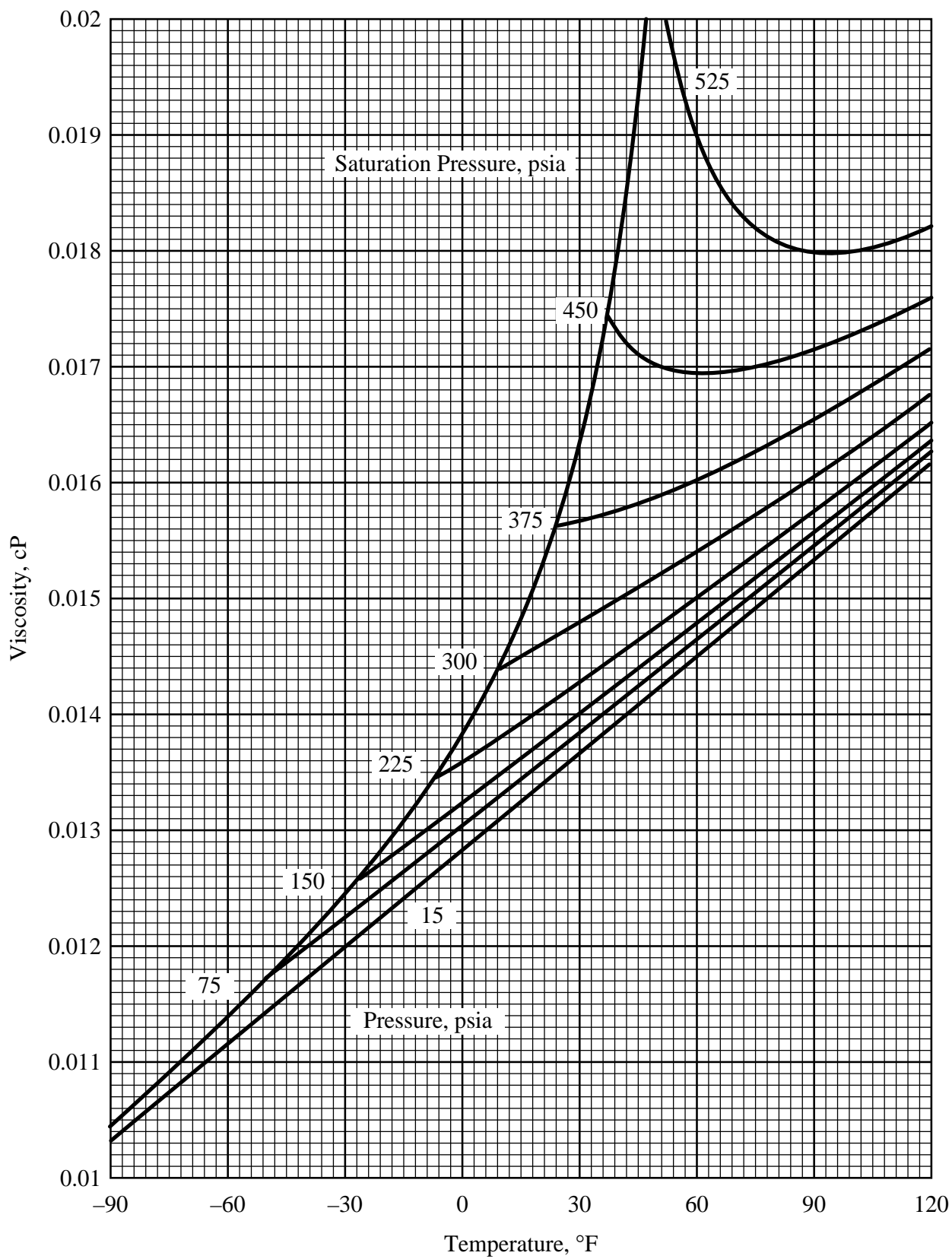




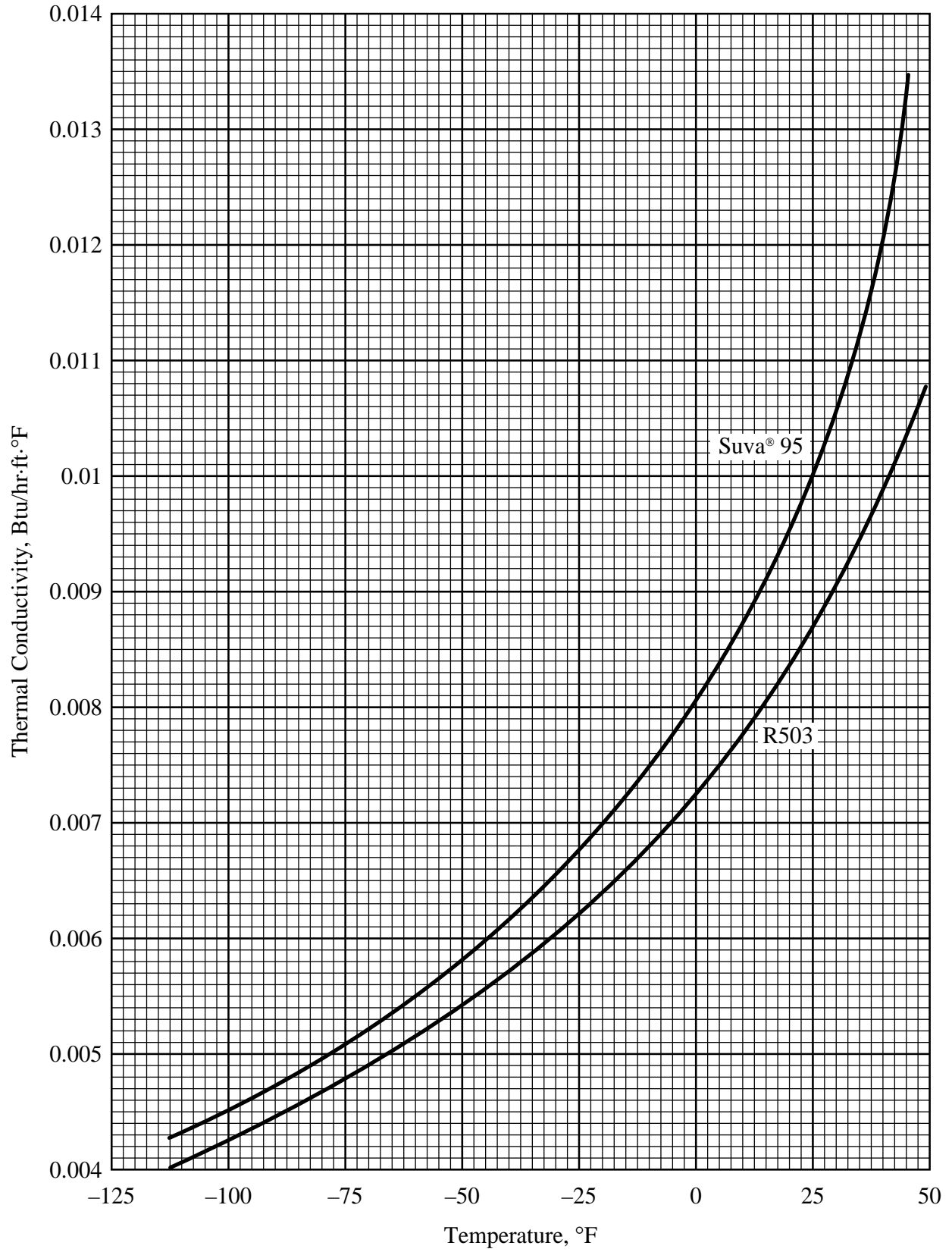
### Vapor Viscosity at Atmospheric Pressure



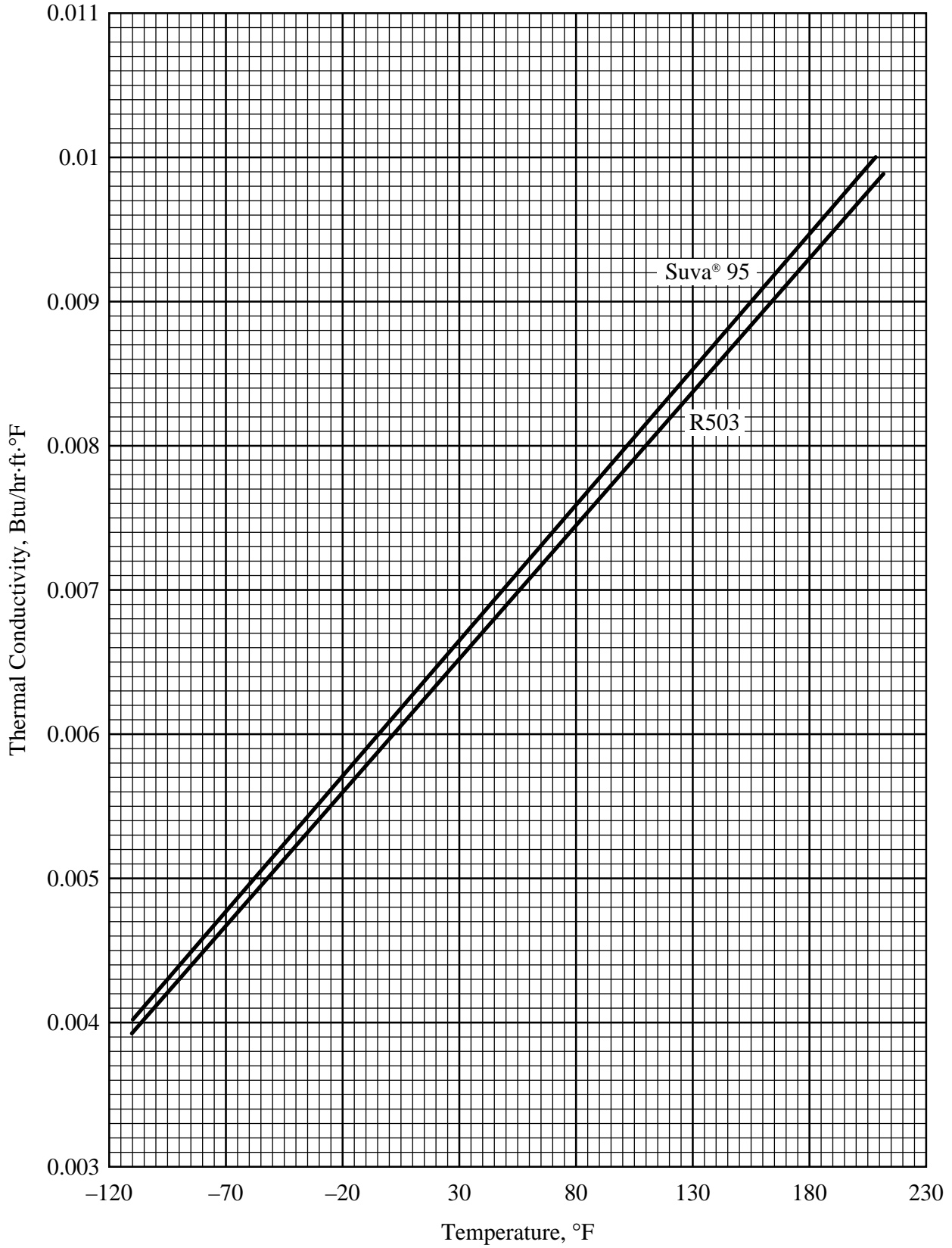
# Vapor Viscosity



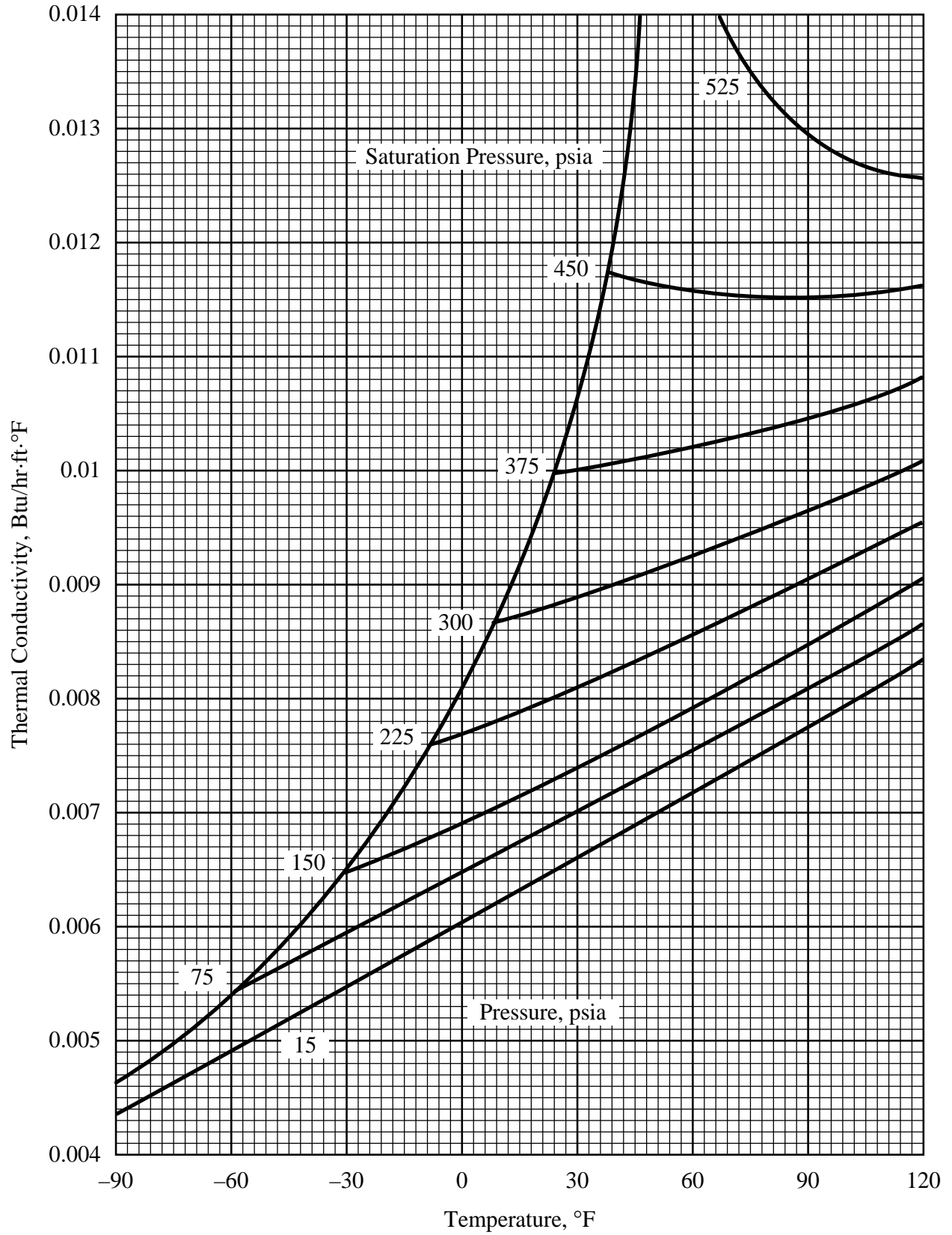
### Saturated Vapor Thermal Conductivity



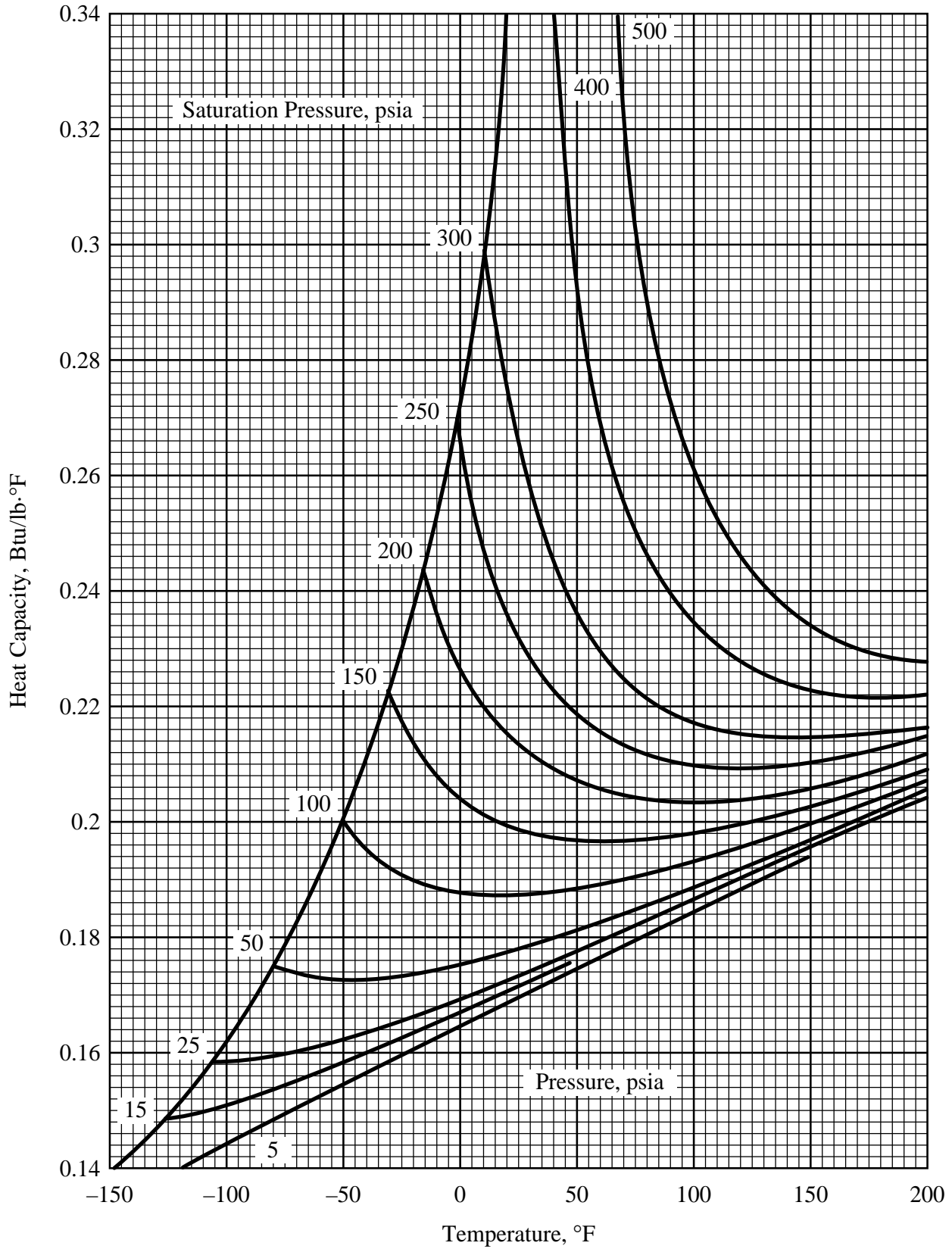
### Vapor Thermal Conductivity at Atmospheric Pressure



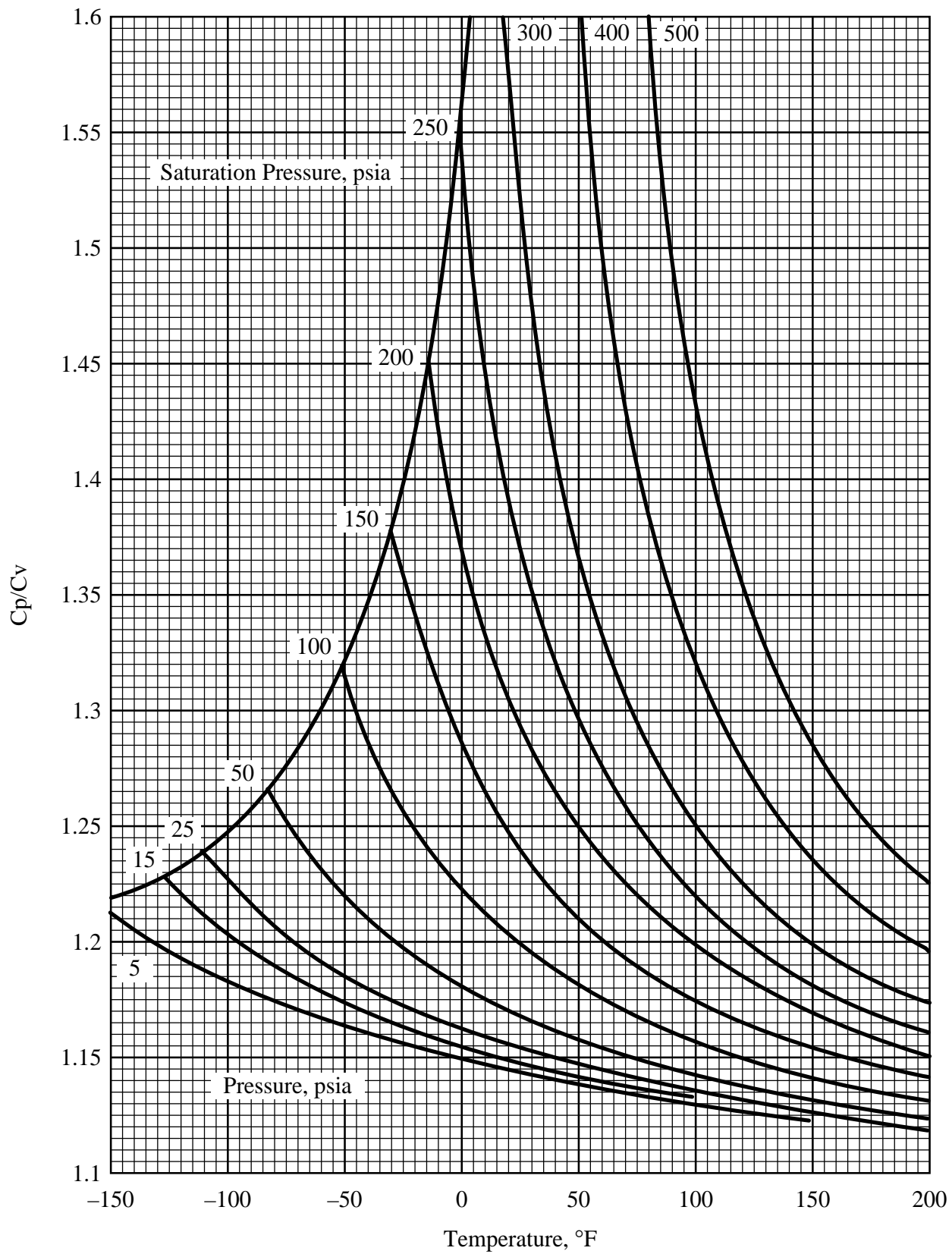
# Vapor Thermal Conductivity



# Vapor Heat Capacity



# Vapor Heat Capacity Ratio



## EQUATIONS FOR PROPERTY ESTIMATION

### English Units

Curves have been fitted to the measured data to obtain the following equations for estimation of Suva® 95 properties within the ranges specified.

#### Saturated Liquid Viscosity in cP (–160 to 50°F)

$$\mu = 0.146 - 1.16E-3 T + 1.02E-6 T^2 - 2.59E-8 T^3$$

#### Saturated Liquid Thermal Conductivity in Btu/hr·ft·°F (–160 to 50°F)

$$k = 3.93E-2 - 1.72E-4 T - 9.36E-9 T^2$$

#### Saturated Liquid Heat Capacity in Btu/lb·°F (–160 to 30°F)

$$C_p = 0.353 + 1.94E-3 T + 2.02E-5 T^2 + 1.29E-7 T^3 + 3.23E-10 T^4$$

#### Saturated Vapor Viscosity in cP (–120 to 40°F)

$$\mu = 1.38E-2 + 5.31E-5 T + 5.08E-7 T^2 + 5.87E-9 T^3 + 2.46E-11 T^4$$

#### Saturated Vapor Thermal Conductivity in Btu/hr·ft·°F (–120 to 40°F)

$$k = 8.02E-3 + 6.41E-5 T + 6.14E-7 T^2 + 4.82E-9 T^3 + 1.60E-11 T^4$$

#### Vapor Viscosity at One Atmosphere in cP (–120 to 220°F)

$$\mu = 1.28E-2 + 2.78E-5 T - 2.93E-9 T^2$$

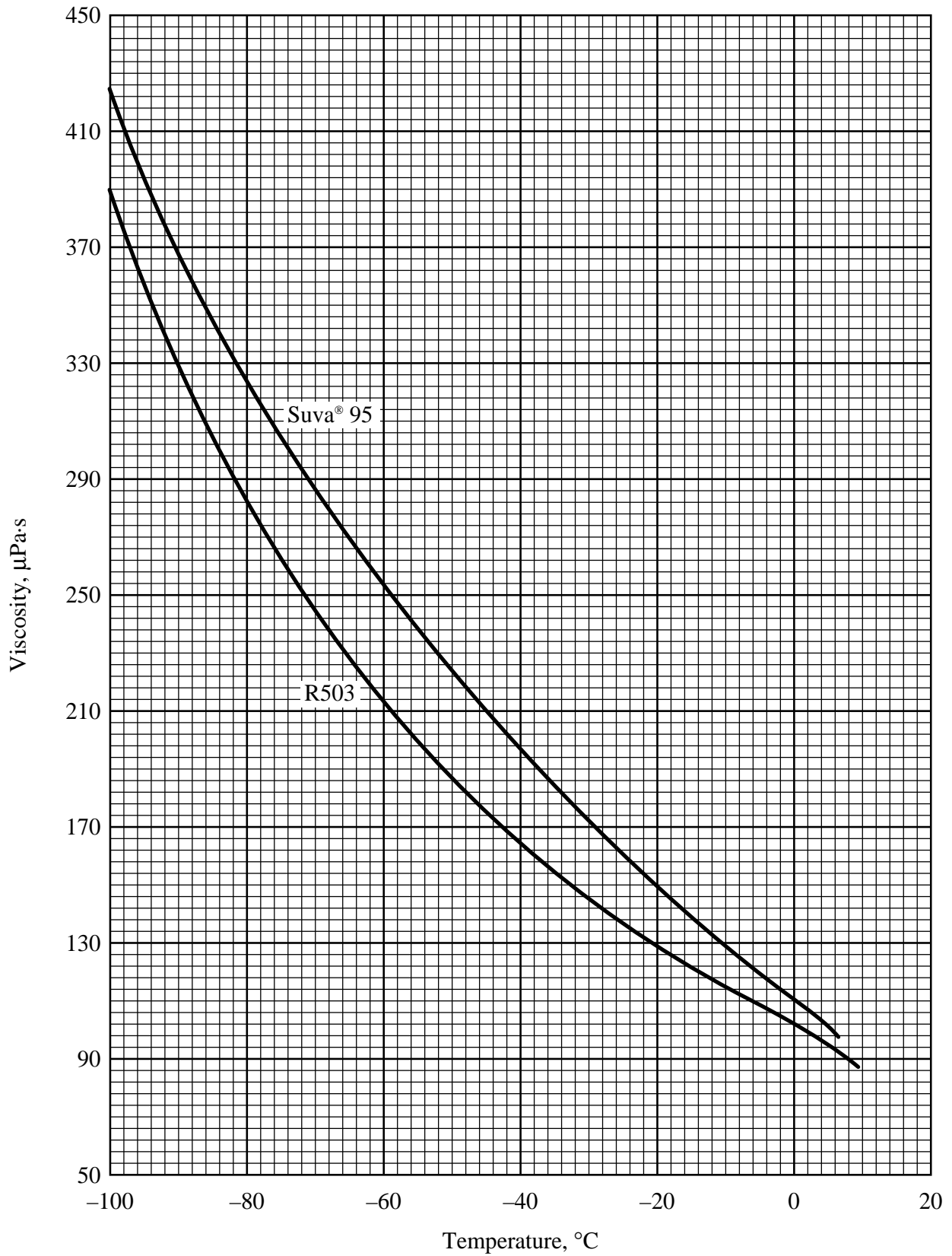
#### Vapor Thermal Conductivity at One Atmosphere in Btu/hr·ft·°F (–120 to 220°F)

$$k = 6.07E-3 + 1.88E-5 T - 3.92E-12 T^2$$

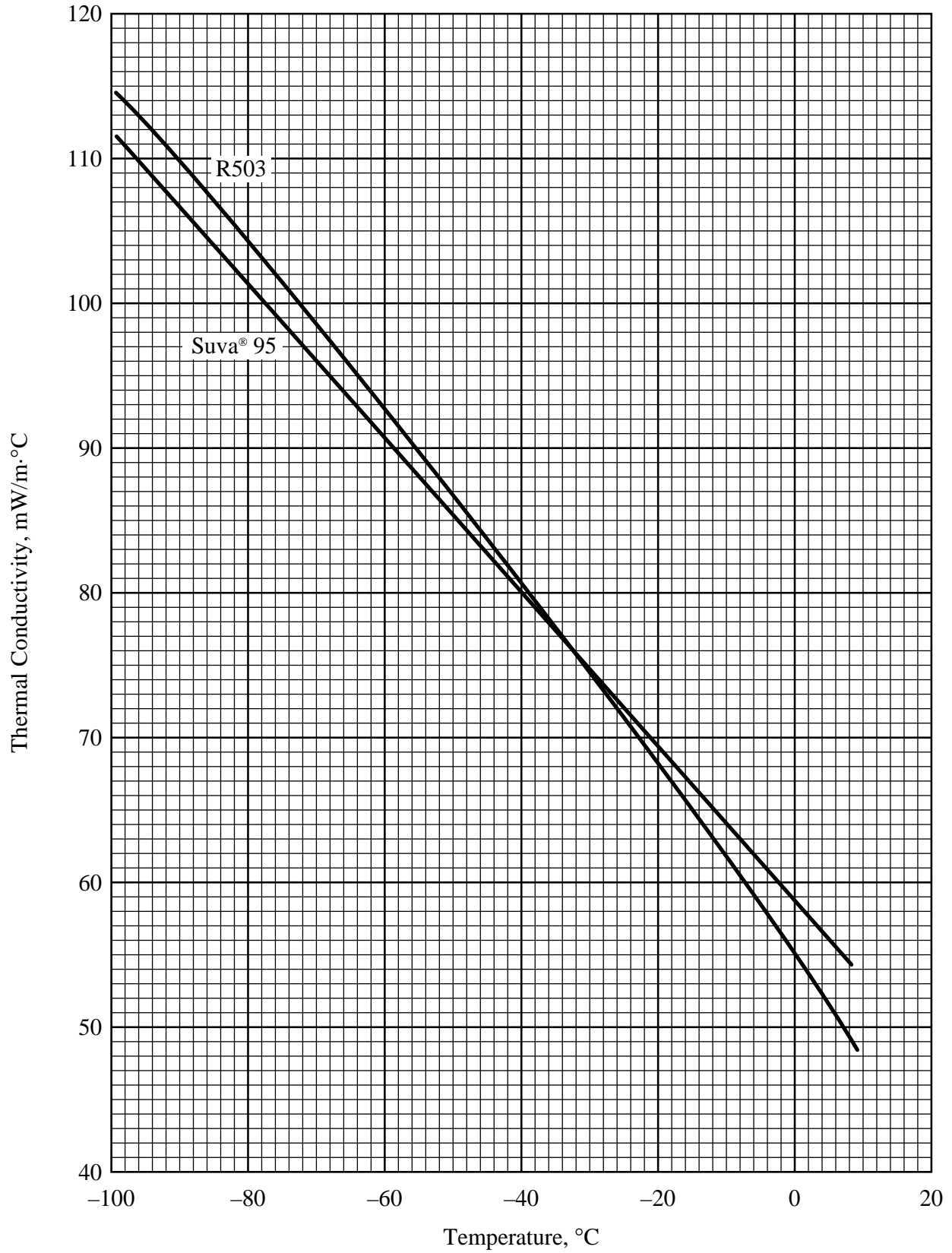
Where T = Temperature, °F



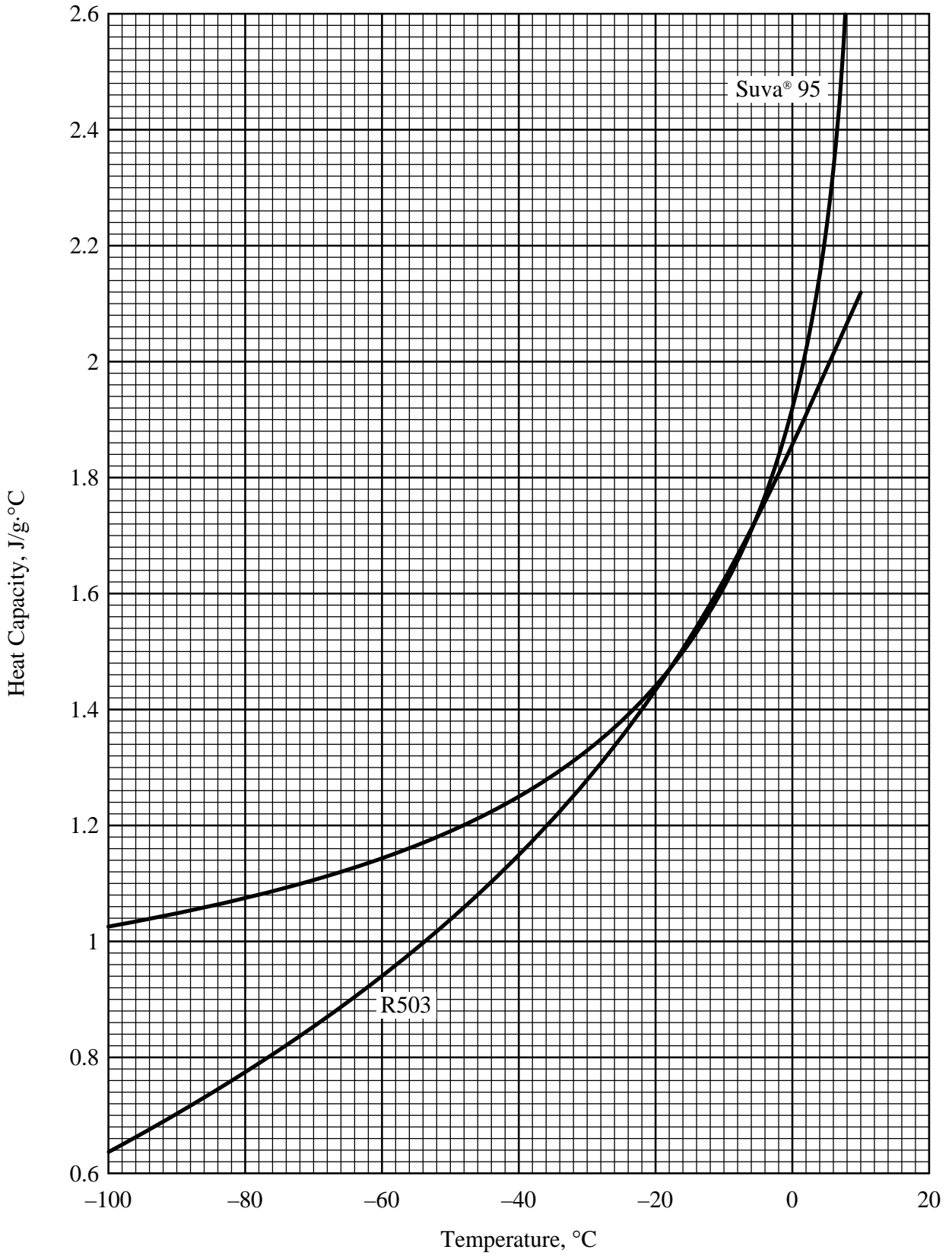
### Saturated Liquid Viscosity



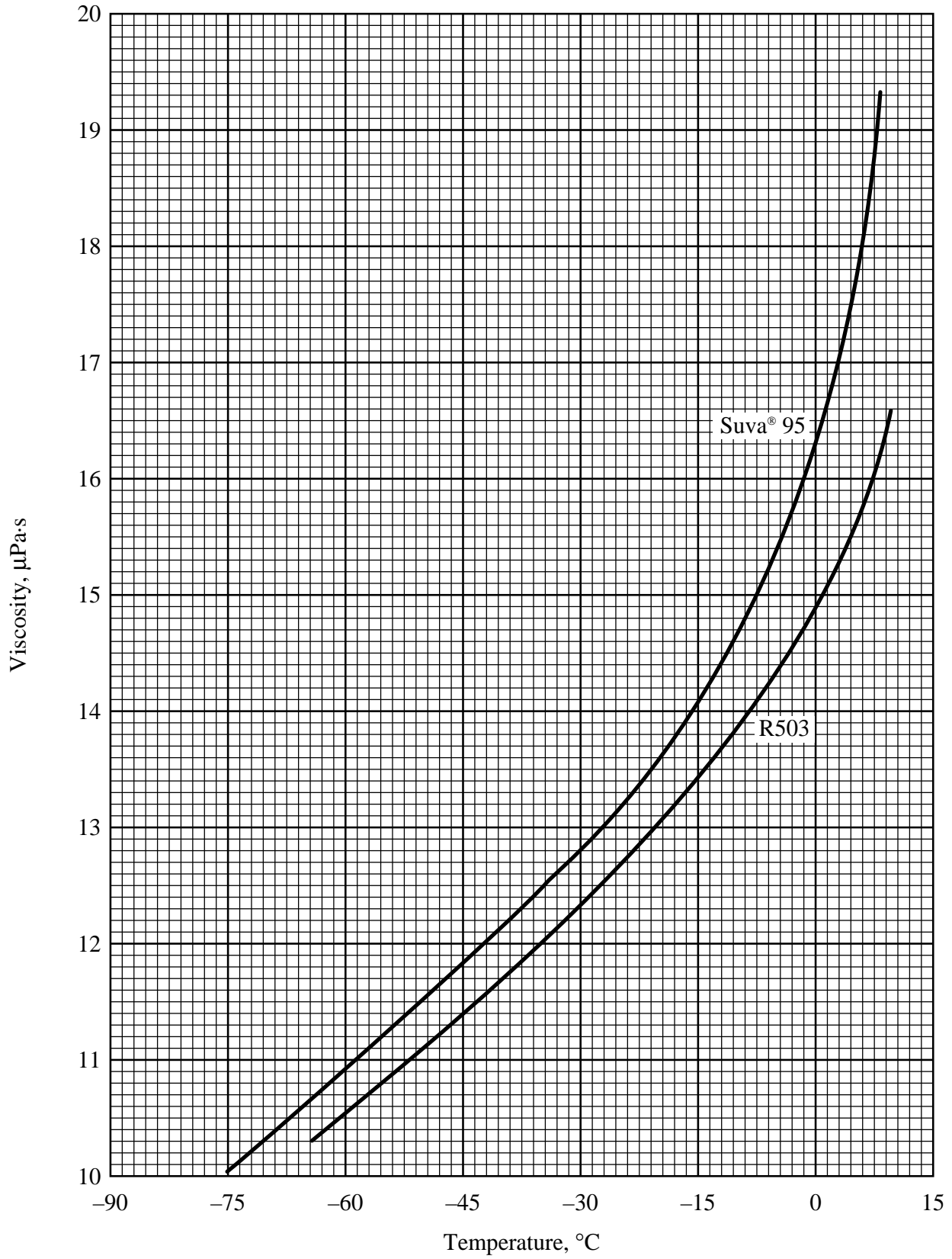
### Saturated Liquid Thermal Conductivity



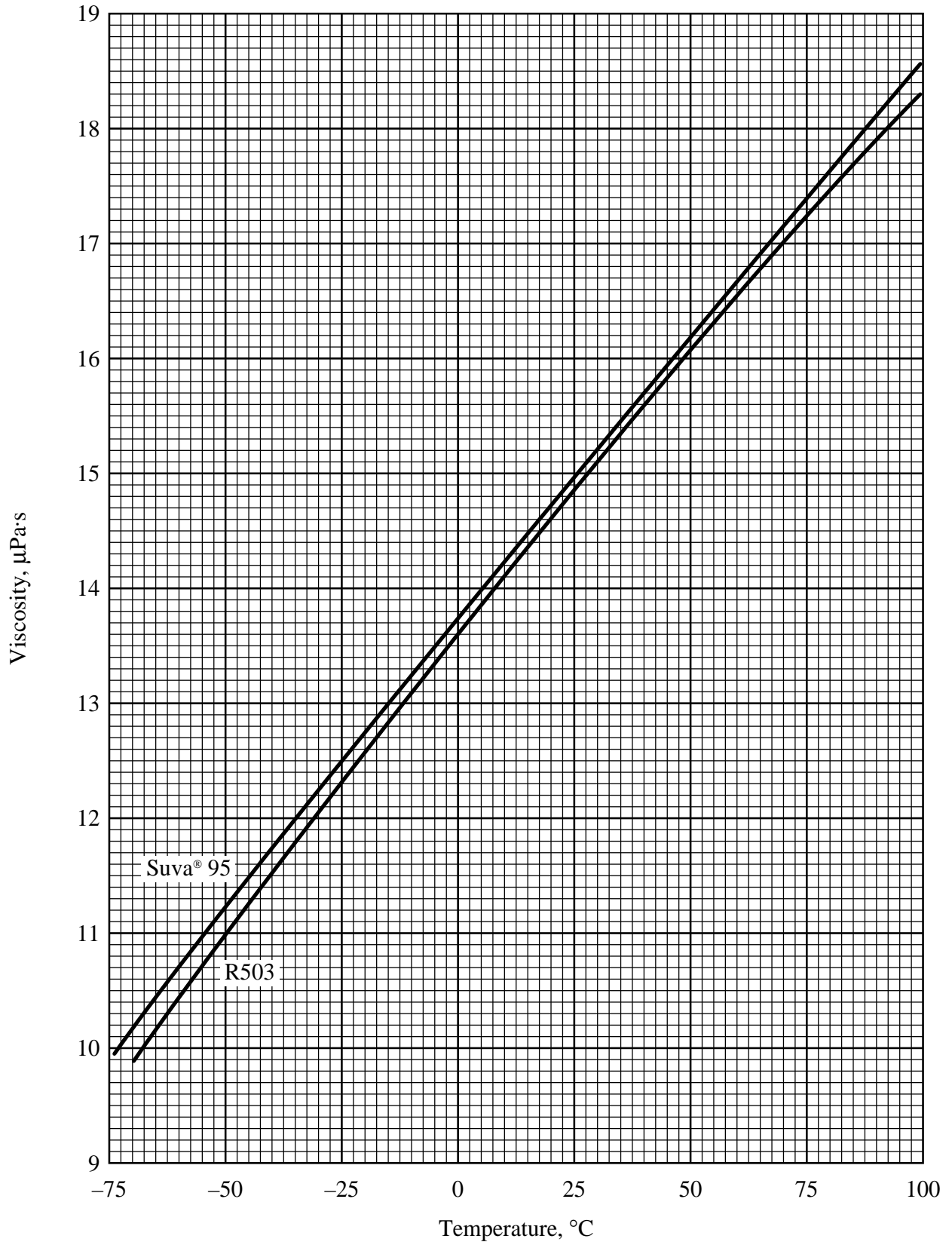
### Saturated Liquid Heat Capacity



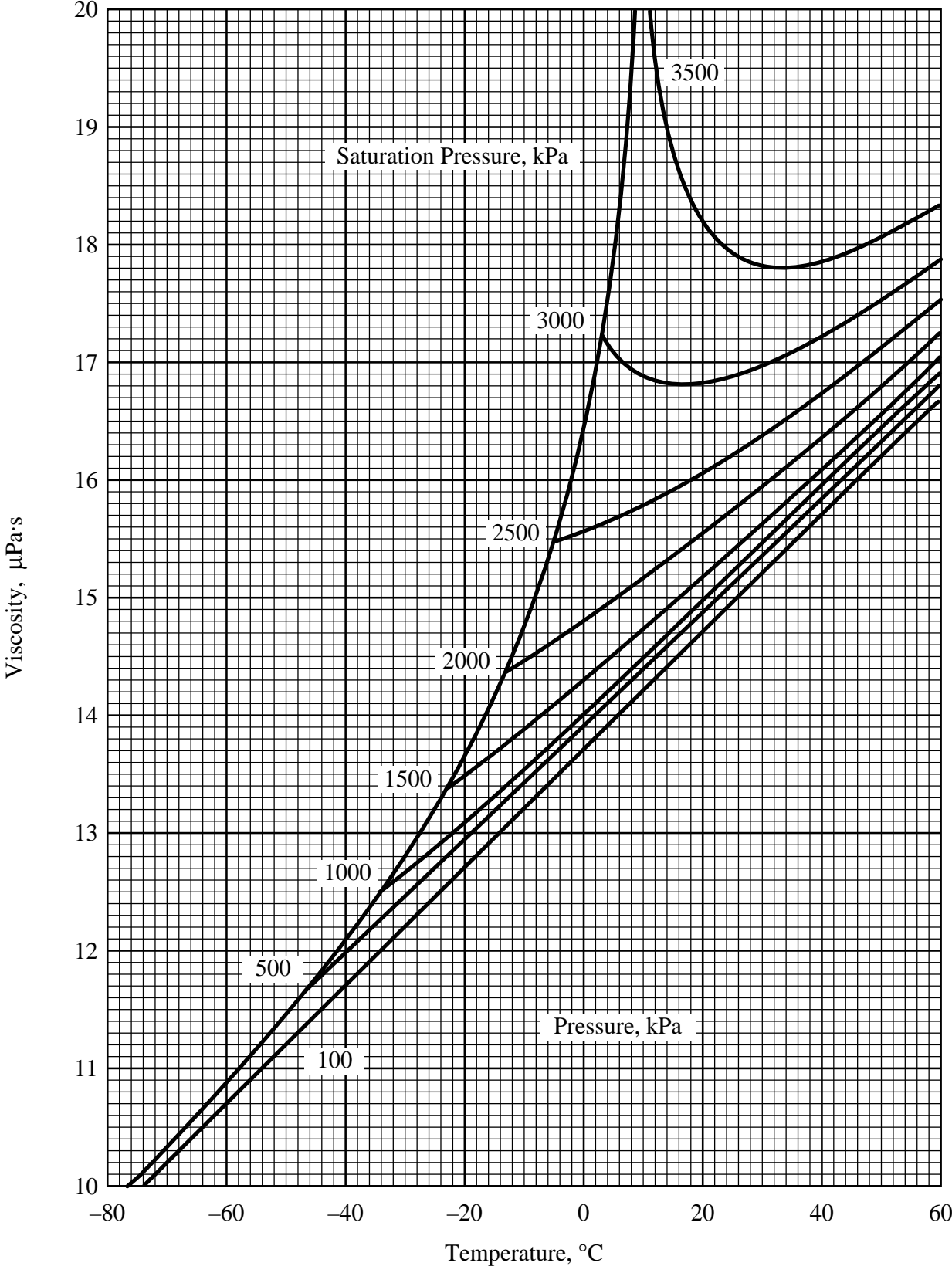
### Saturated Vapor Viscosity



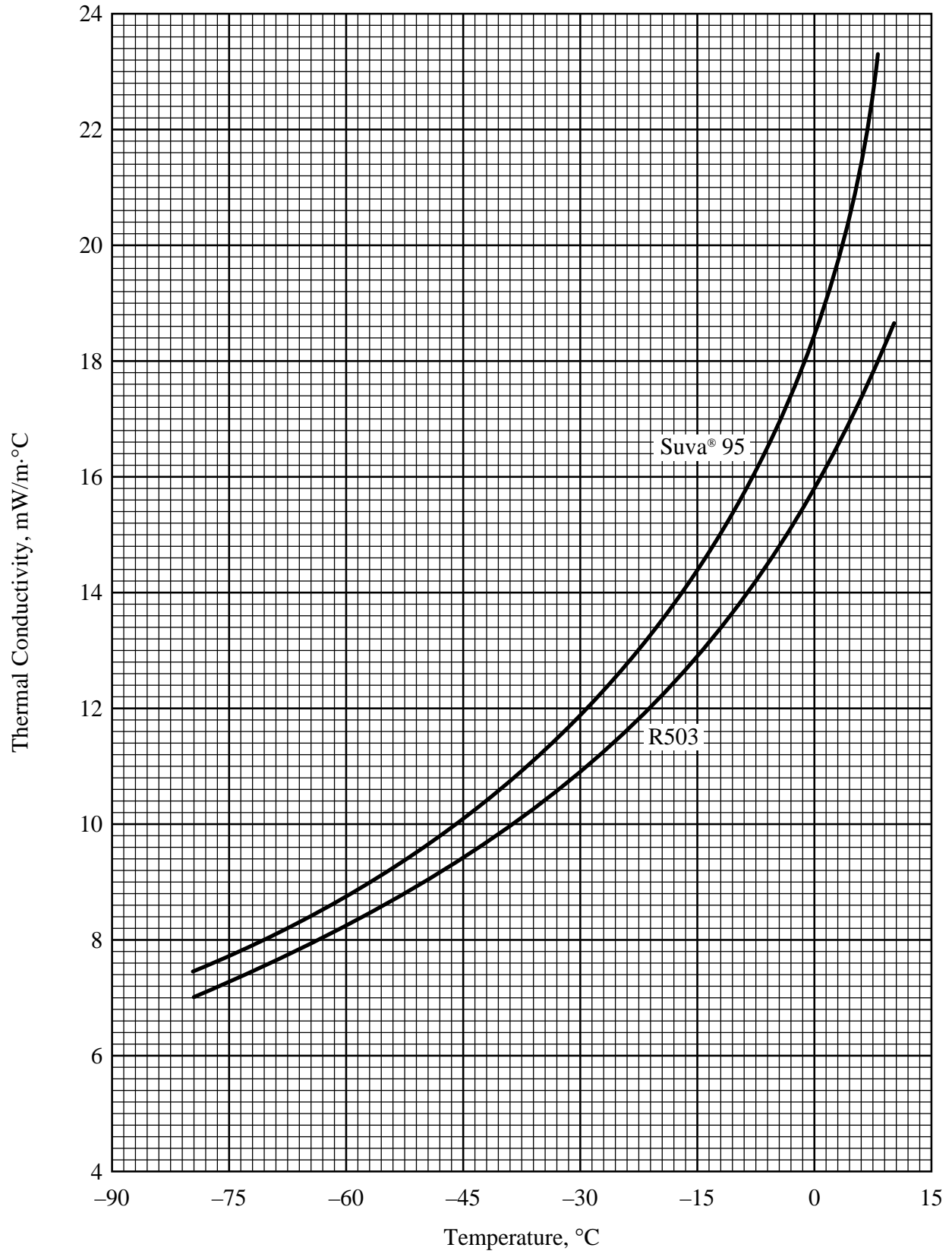
### Vapor Viscosity at Atmospheric Pressure



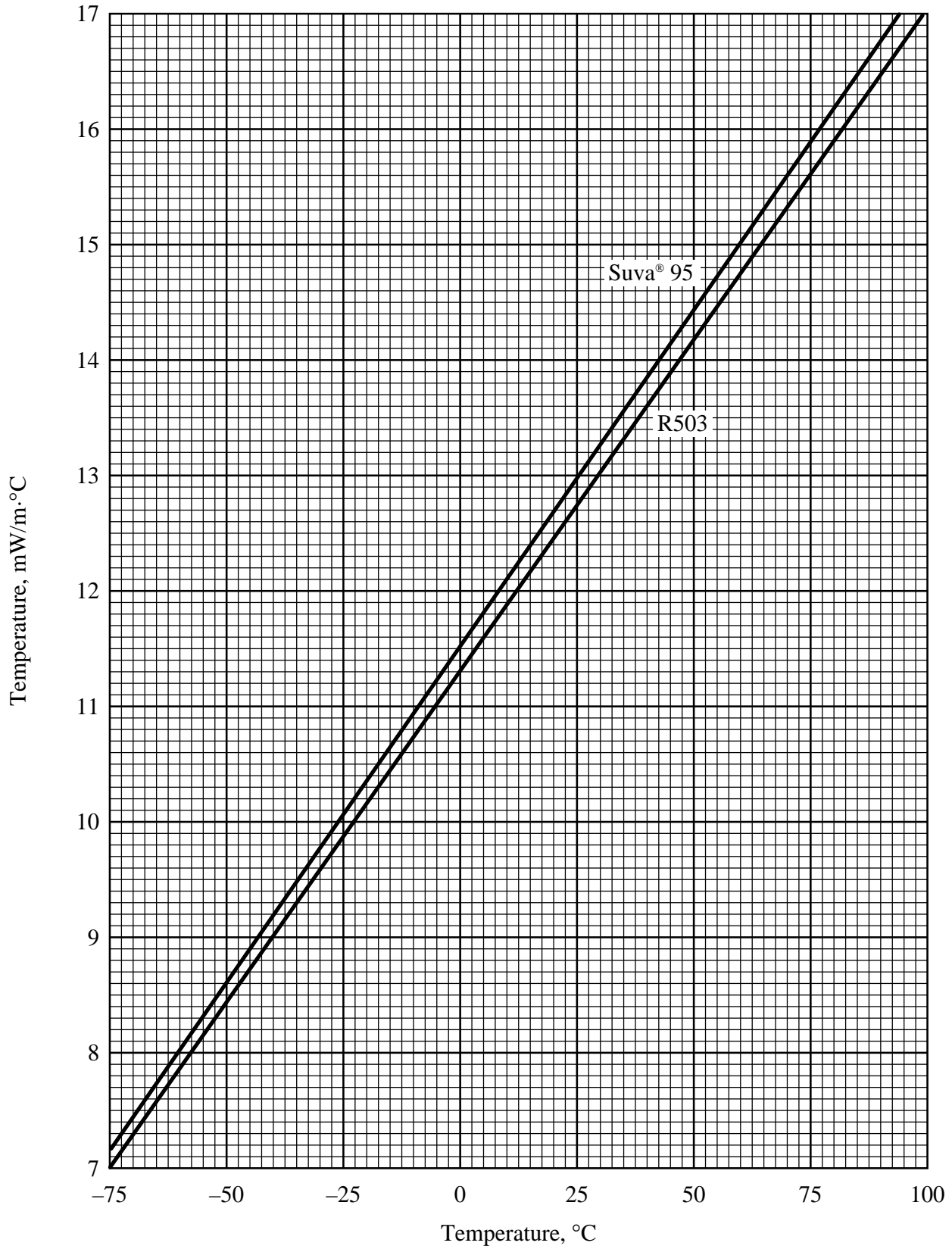
# Vapor Viscosity



### Saturated Vapor Thermal Conductivity

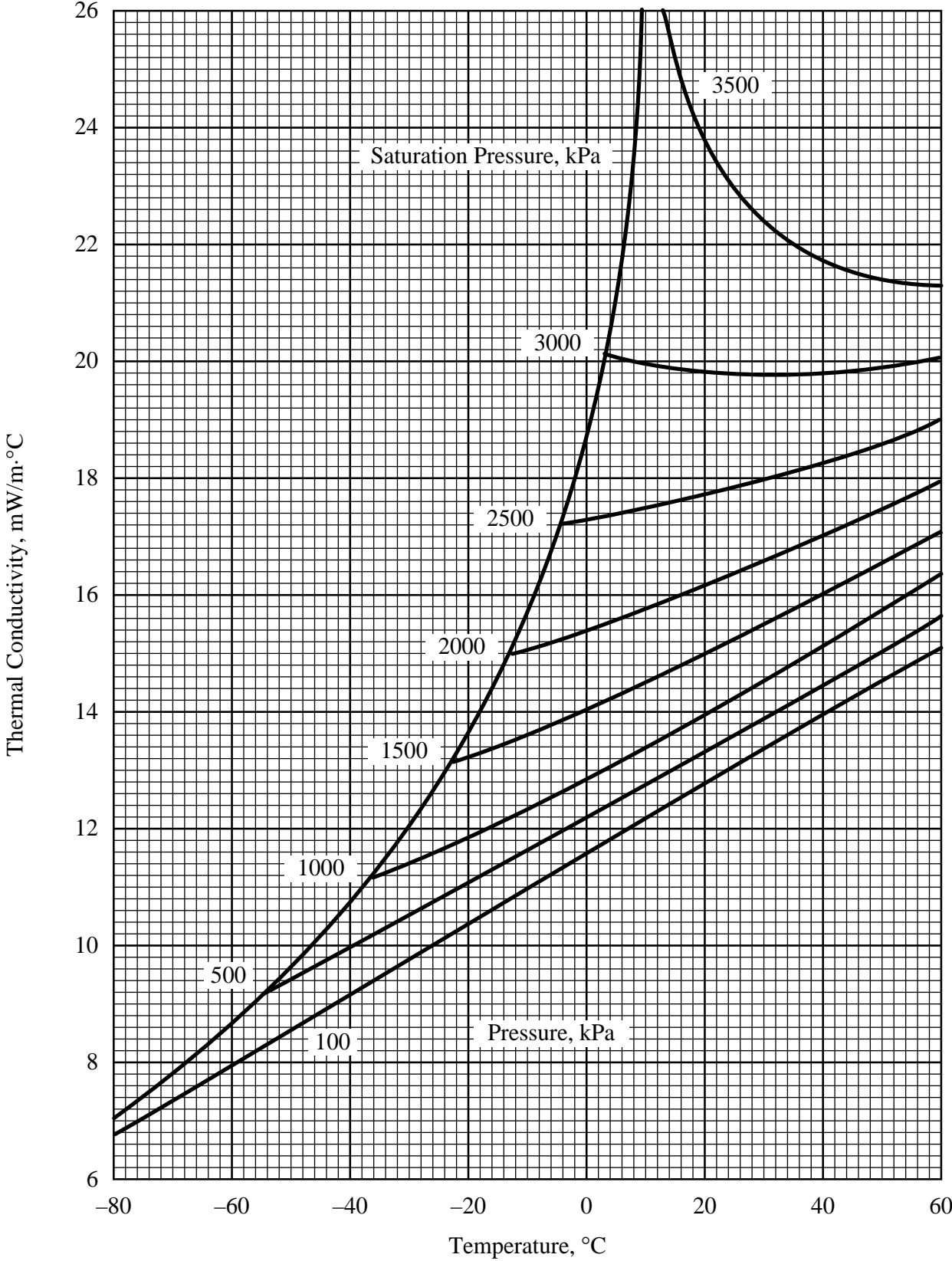


### Vapor Thermal Conductivity at Atmospheric Pressure

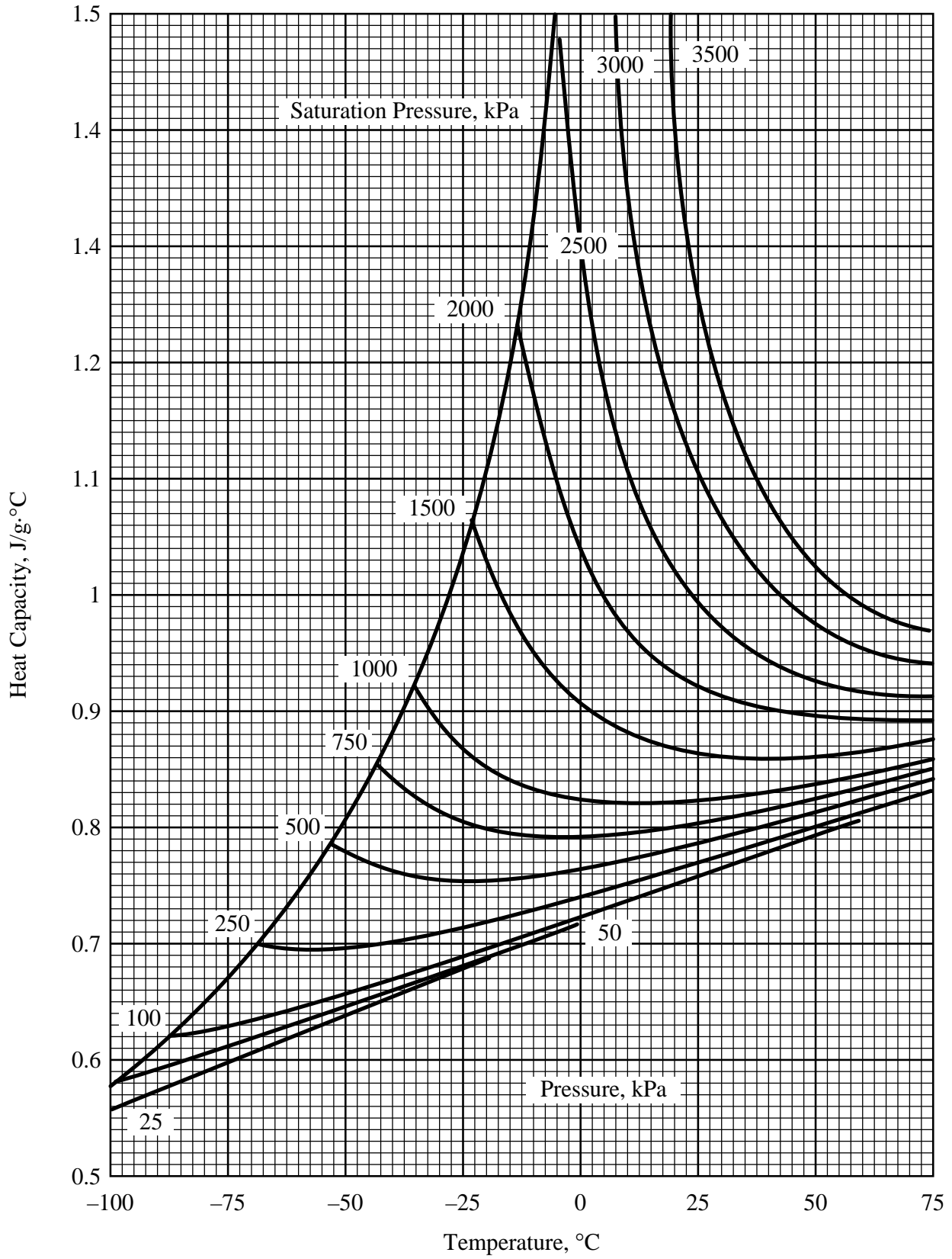




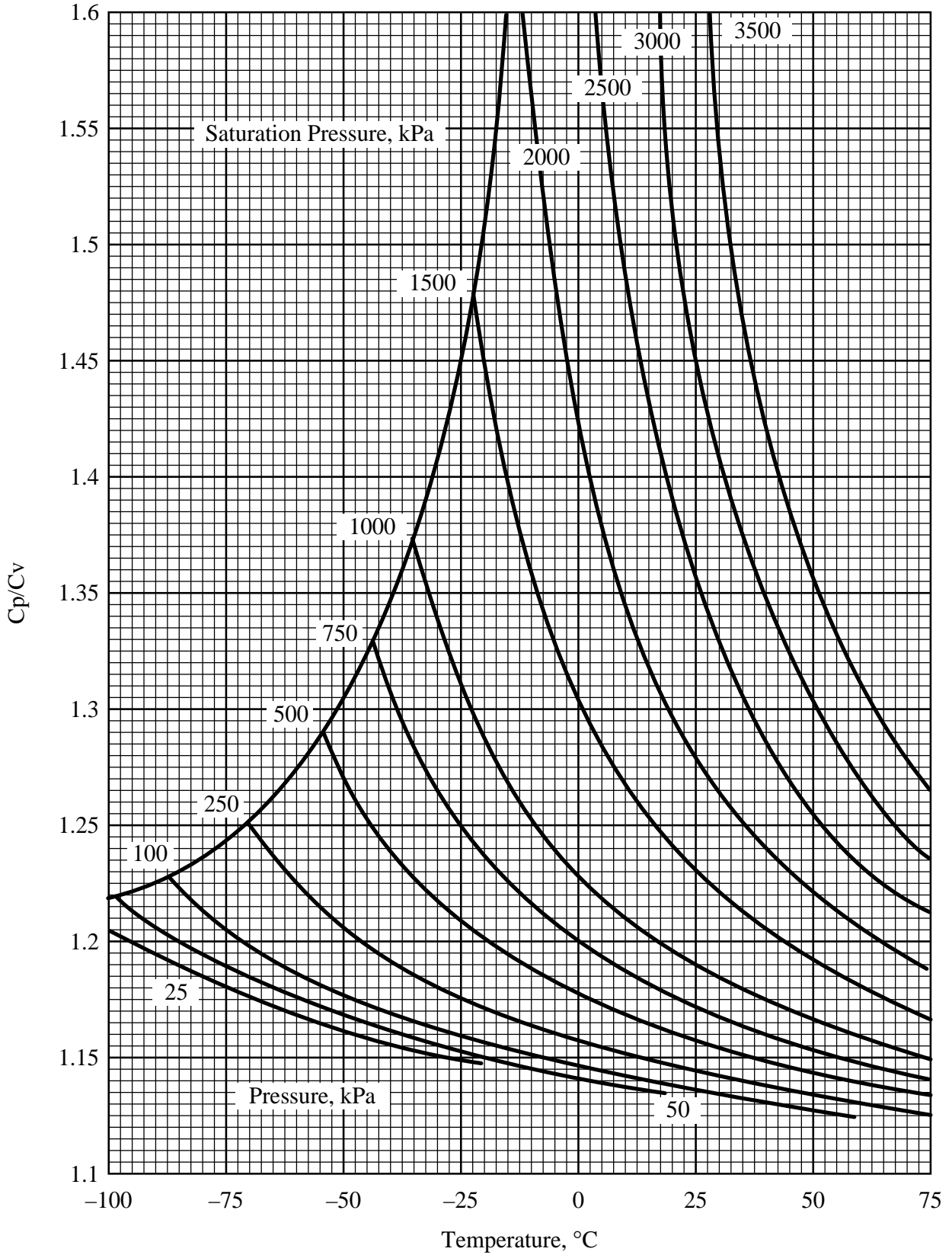
# Vapor Thermal Conductivity



# Vapor Heat Capacity



# Vapor Heat Capacity Ratio



## EQUATIONS FOR PROPERTY ESTIMATION

### Metric Units

Curves have been fitted to the measured data to obtain the following equations for estimation of Suva® 95 properties within the ranges specified.

#### Saturated Liquid Viscosity in $\mu\text{Pa}\cdot\text{s}$ (–100 to 10°C)

$$\mu = 110 - 2.11 T - 4.92\text{E-}3 T^2 - 1.52\text{E-}4 T^3$$

#### Saturated Liquid Thermal Conductivity in $\text{mW}/\text{m}\cdot\text{°C}$ (–100 to 10°C)

$$k = 58.4 - 0.546 T - 1.38\text{E-}4 T^2$$

#### Saturated Liquid Heat Capacity in $\text{J}/\text{g}\cdot\text{°C}$ (–100 to 0°C)

$$C_p = 1.91 + 3.675\text{E-}2 T + 7.94\text{E-}4 T^2 + 8.53\text{E-}6 T^3 + 3.37\text{E-}8 T^4$$

#### Saturated Vapor Viscosity in $\mu\text{Pa}\cdot\text{s}$ (–80 to 0°C)

$$\mu = 16.2 + 1.92\text{E-}1 T + 3.96\text{E-}3 T^2 + 5.26\text{E-}5 T^3 + 2.58\text{E-}7 T^4$$

#### Saturated Vapor Thermal Conductivity in $\text{mW}/\text{m}\cdot\text{°C}$ (–80 to 0°C)

$$k = 18.9 + 3.65\text{E-}1 T + 6.06\text{E-}3 T^2 + 6.06\text{E-}5 T^3 + 2.45\text{E-}7 T^4$$

#### Vapor Viscosity at One Atmosphere in $\mu\text{Pa}\cdot\text{s}$ (–80 to 100°C)

$$\mu = 13.7 + 4.96\text{E-}2 T - 9.48\text{E-}6 T^2$$

#### Vapor Thermal Conductivity at One Atmosphere in $\text{mW}/\text{m}\cdot\text{°C}$ (–80 to 100°C)

$$k = 11.5 + 5.84\text{E-}2 T + 1.15\text{E-}7 T^2$$

Where T = Temperature, °C



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