DUPONT®

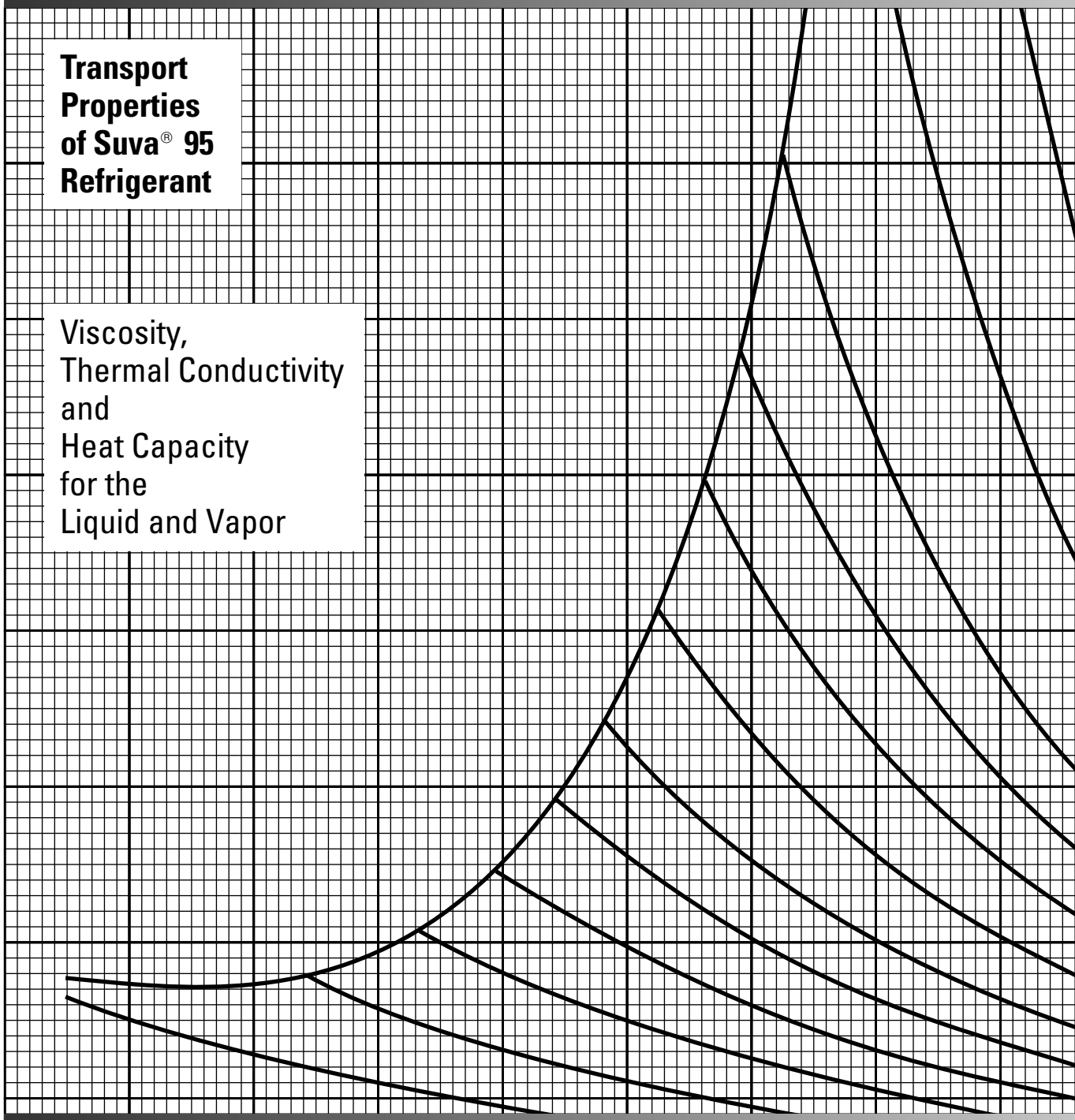
Suva®

refrigerants

ART - 32

Transport Properties of Suva® 95 Refrigerant

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



Transport Properties of Suva® 95 Refrigerant

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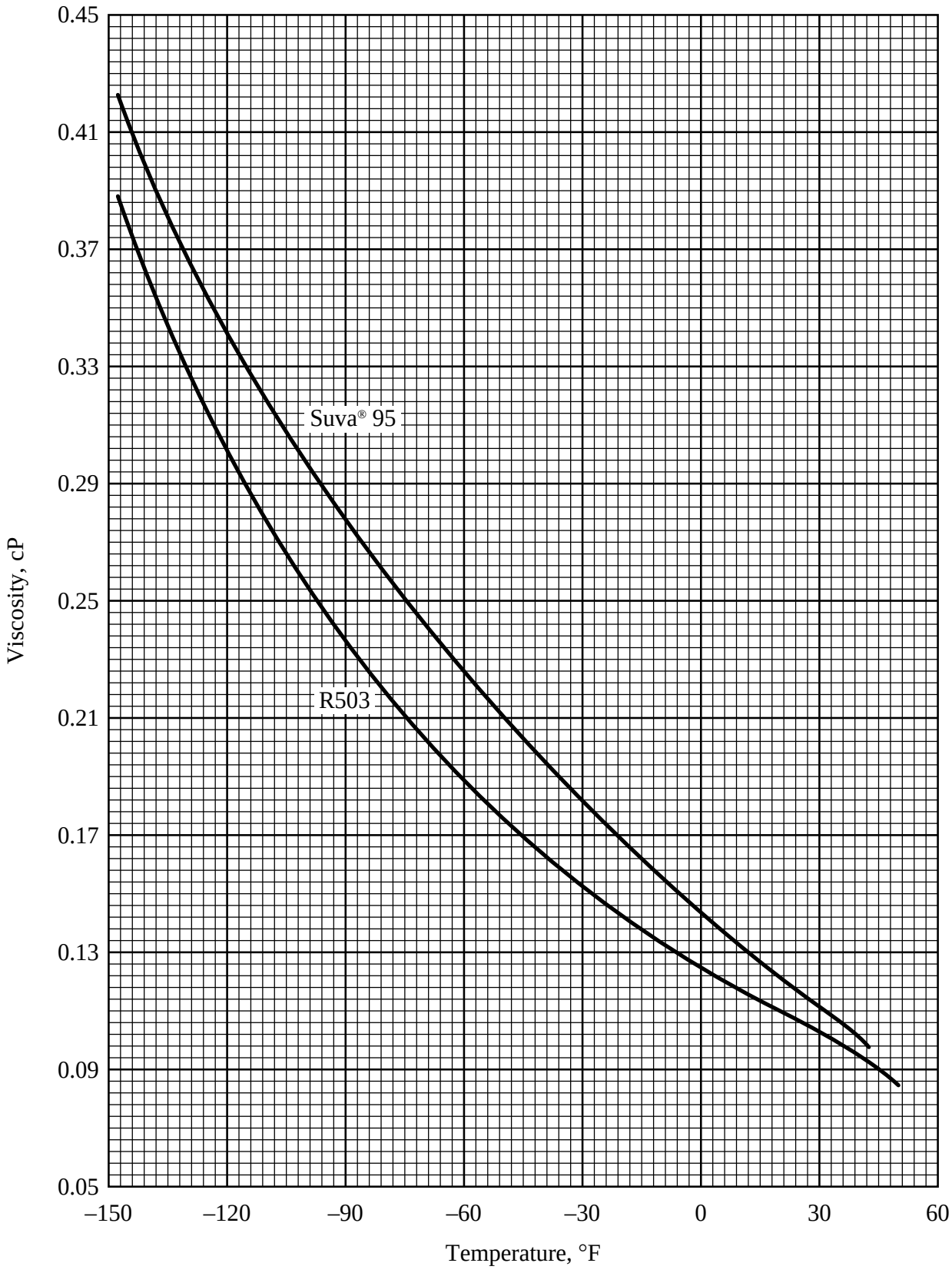
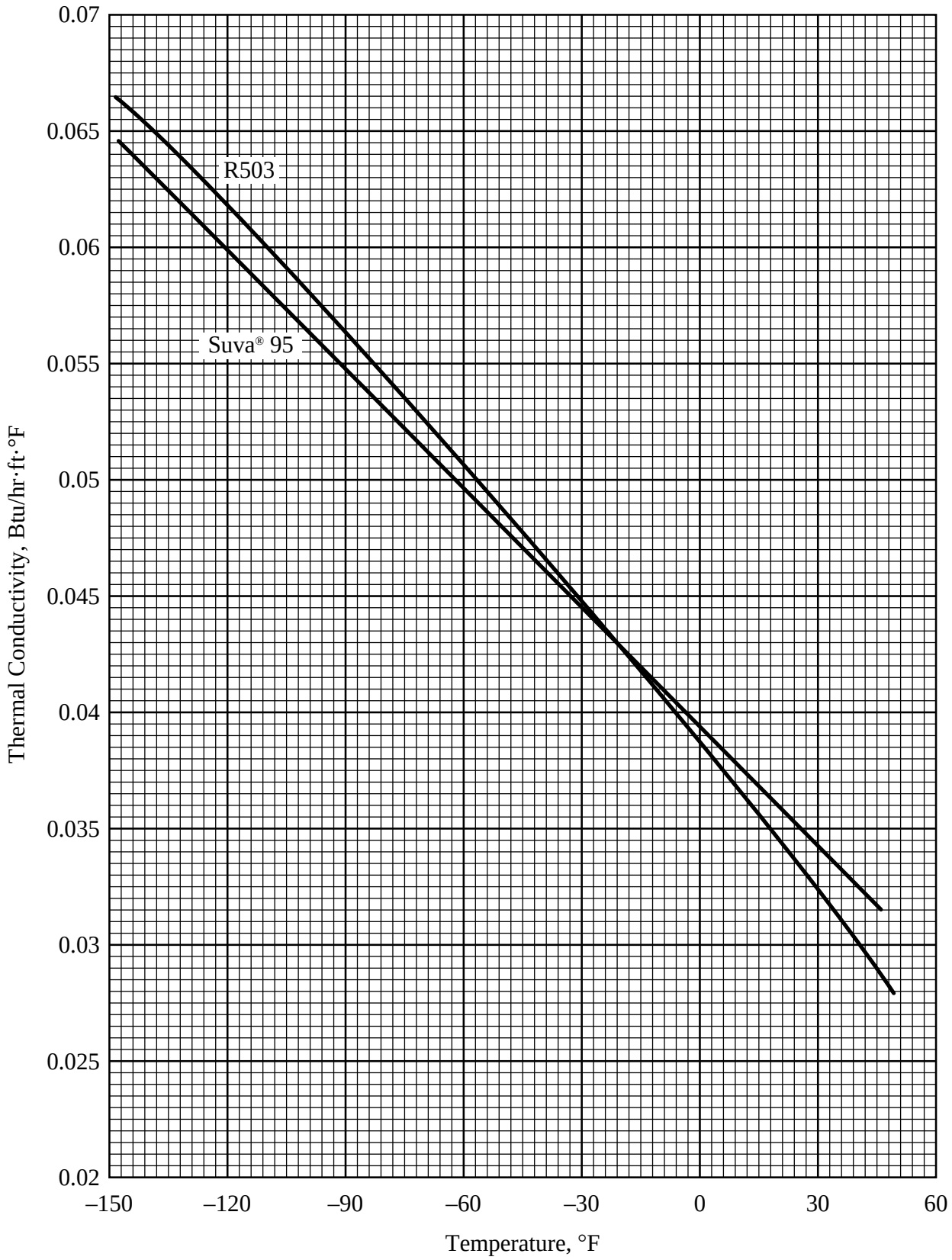


Saturated Liquid Thermal Conductivity



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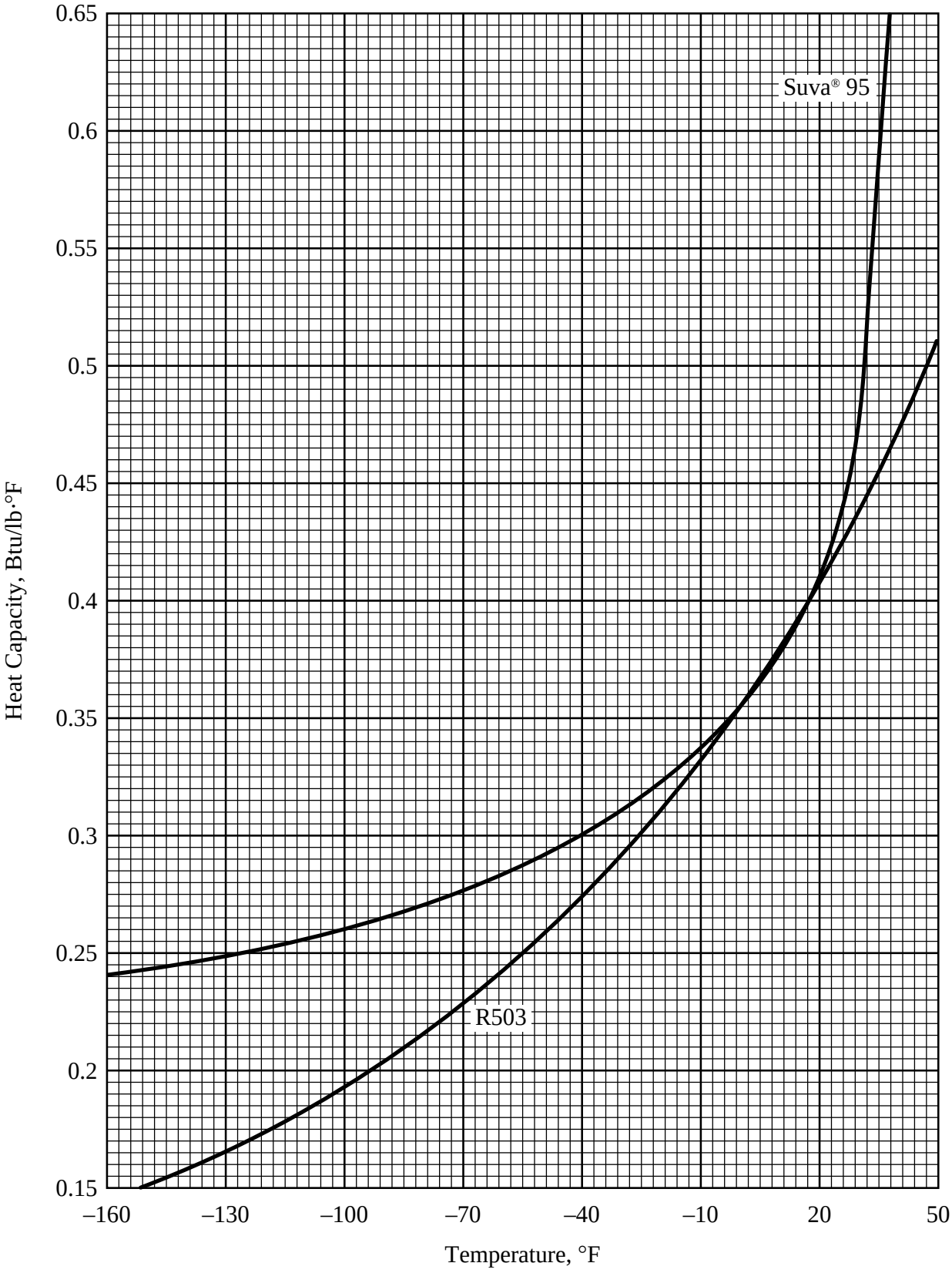

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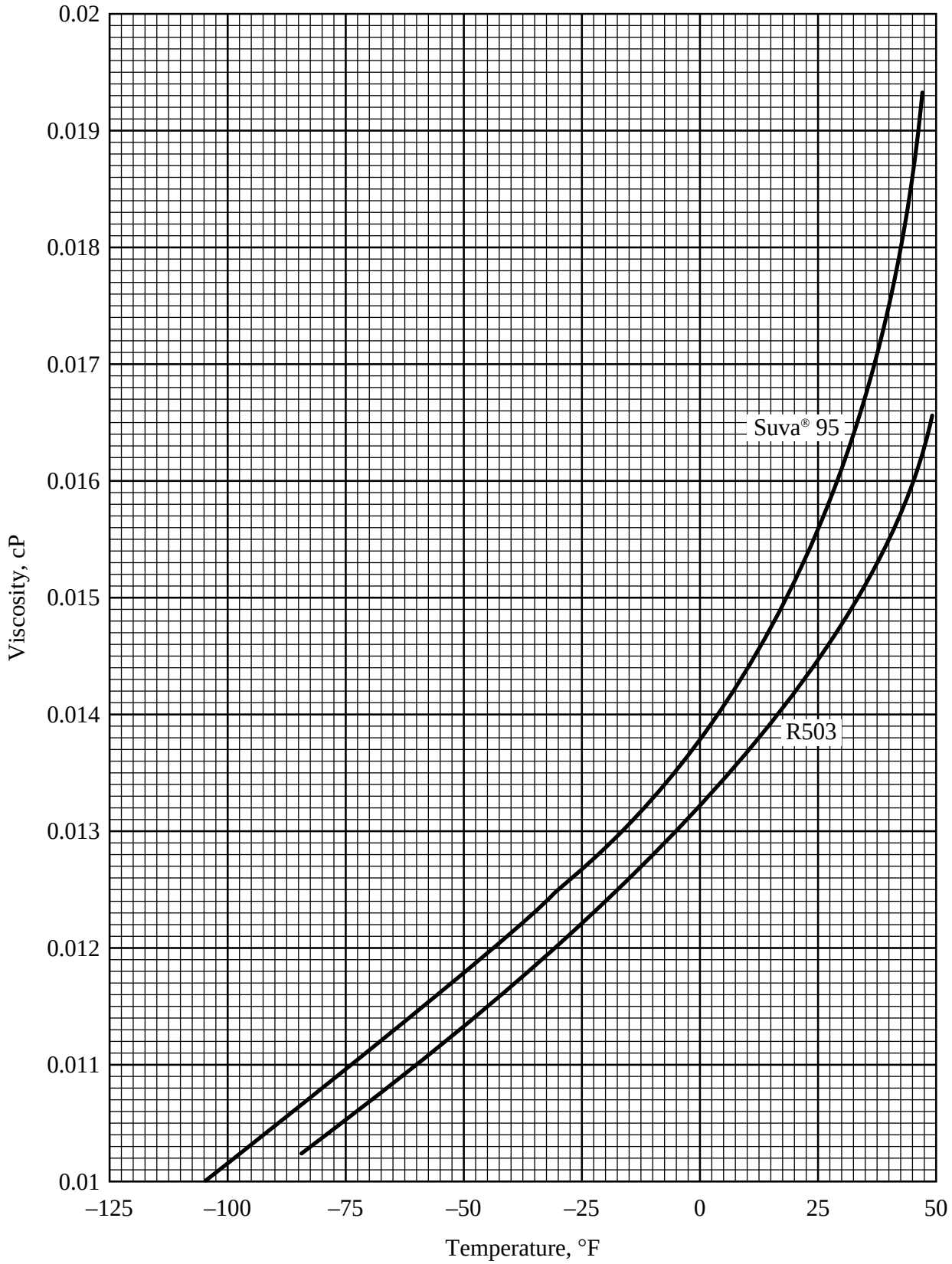
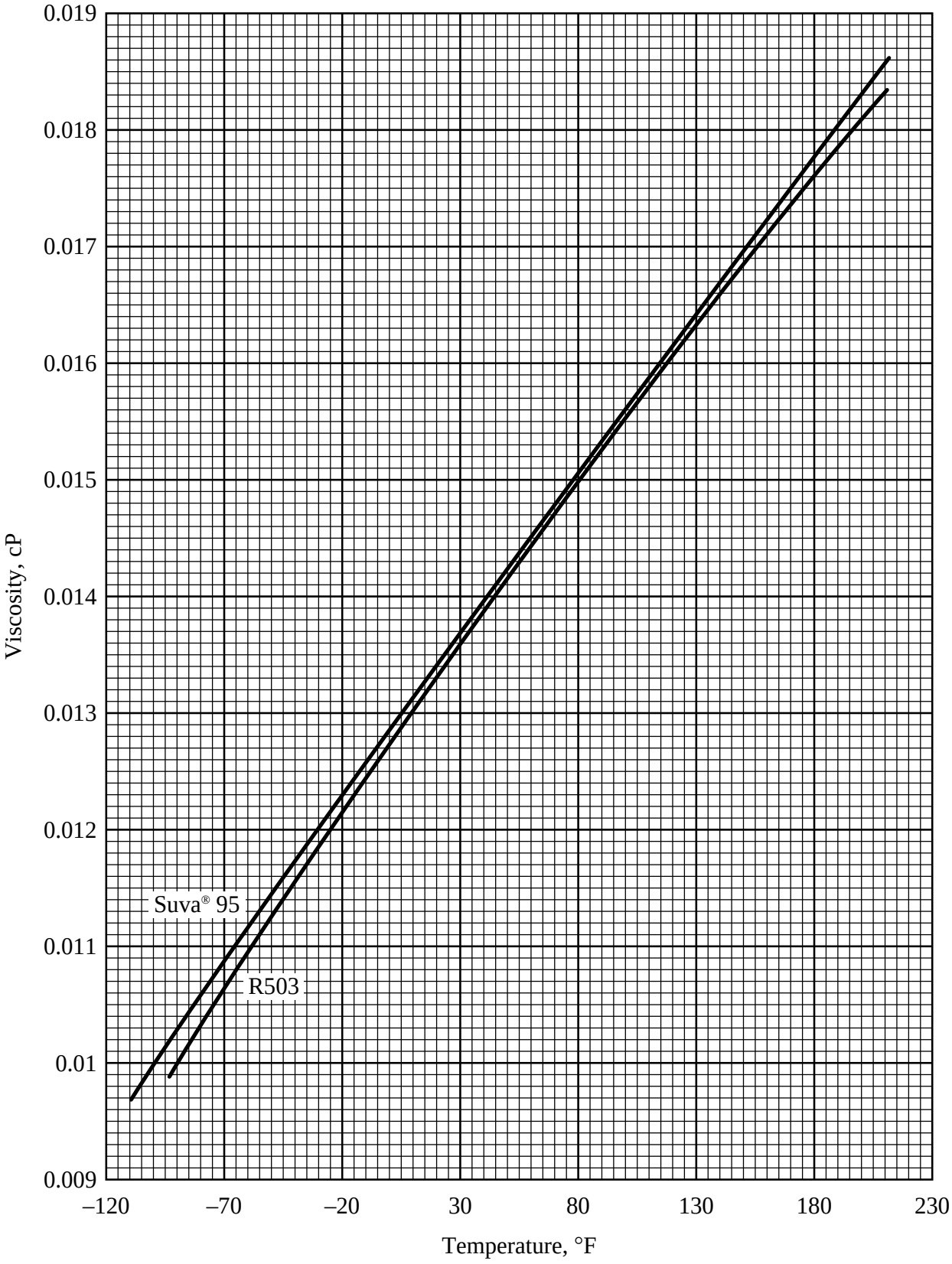


Vapor Viscosity at Atmospheric Pressure



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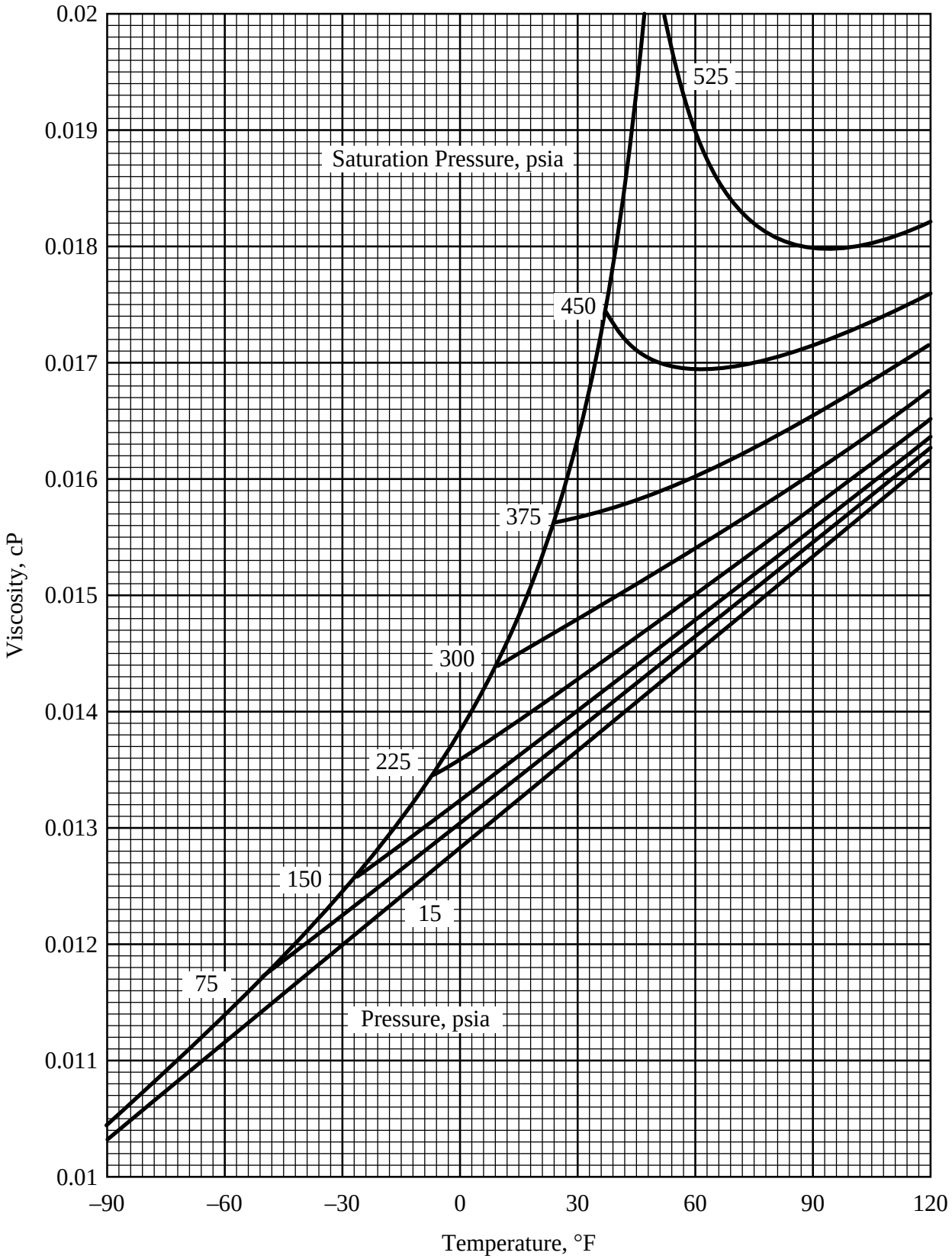

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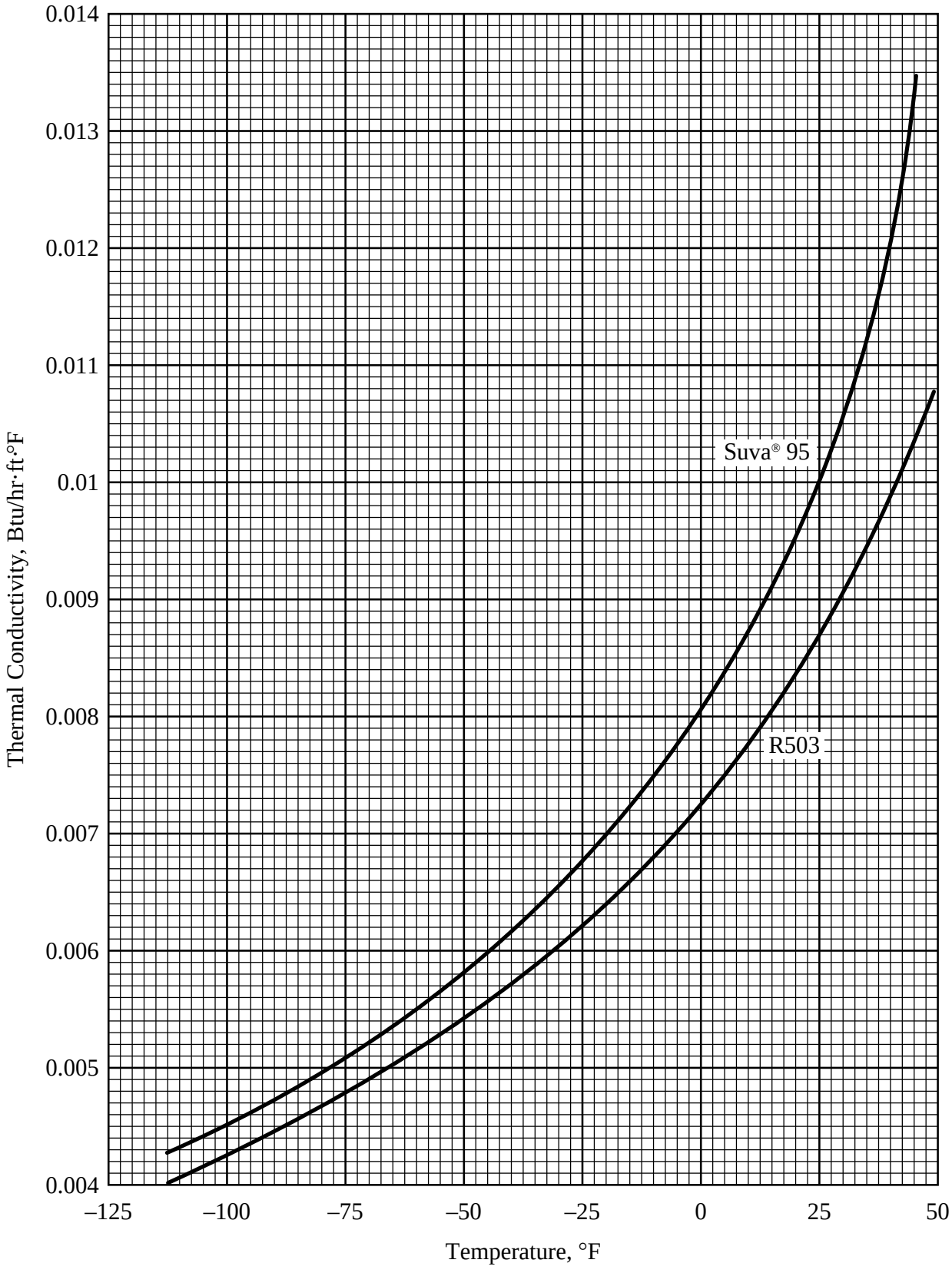

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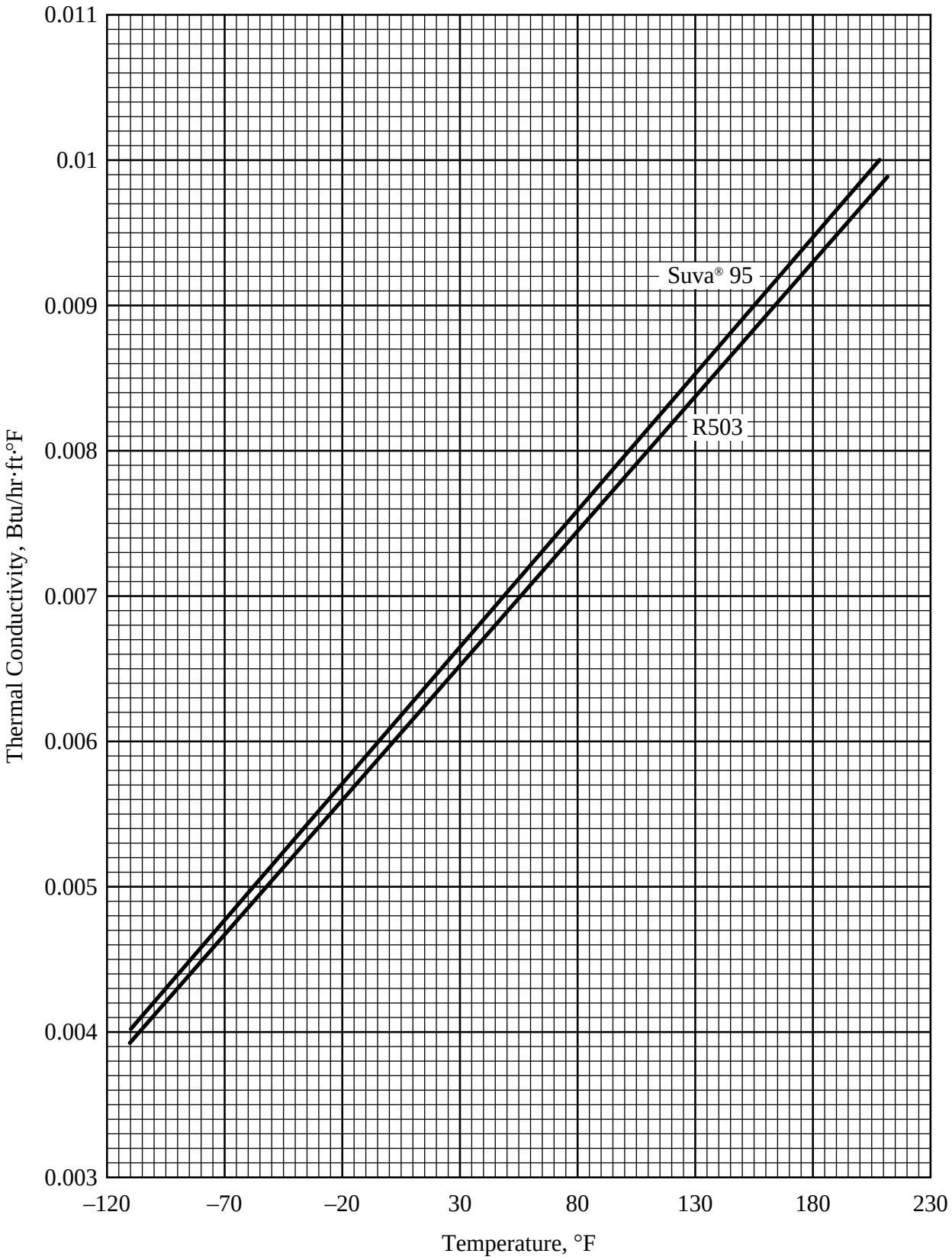

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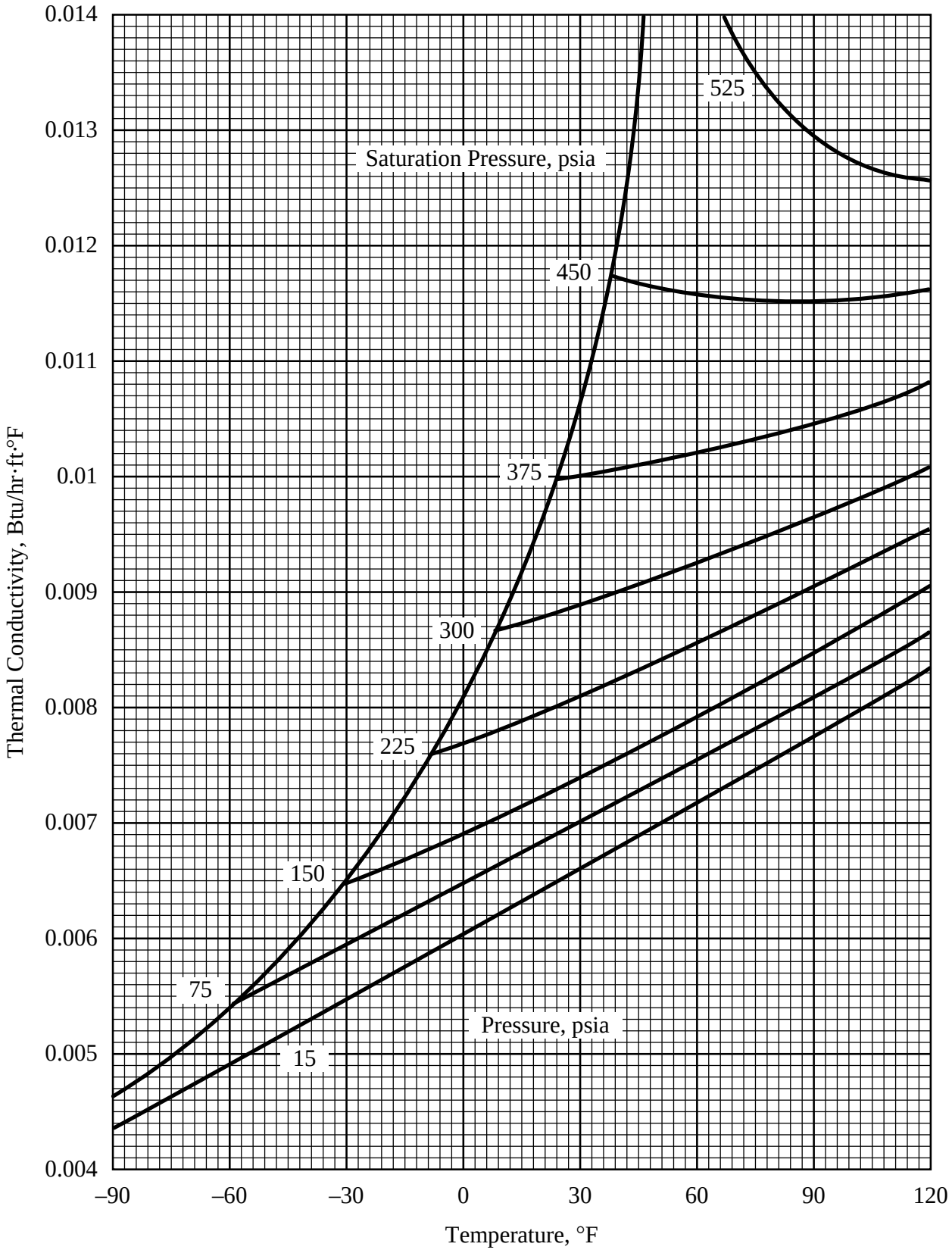

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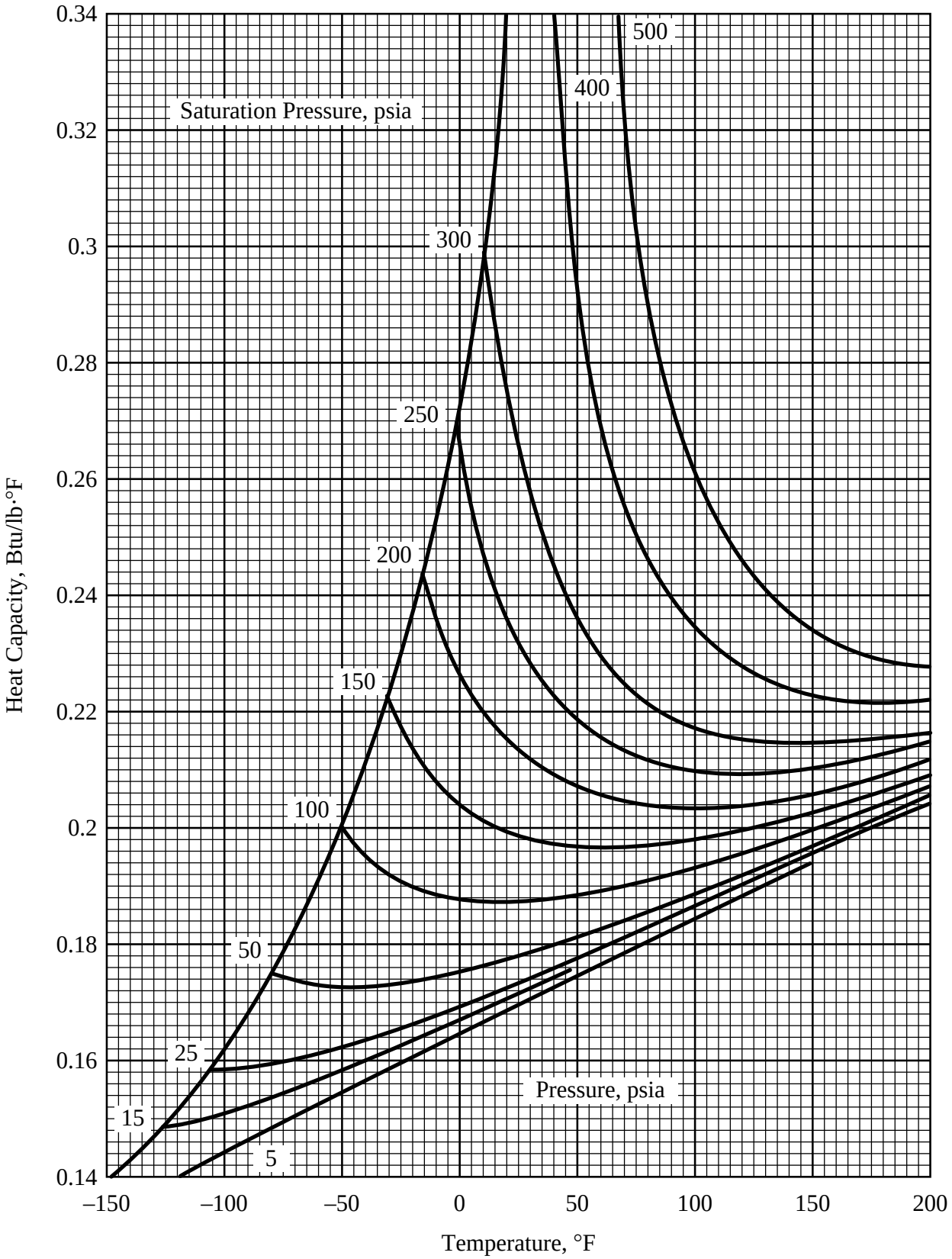

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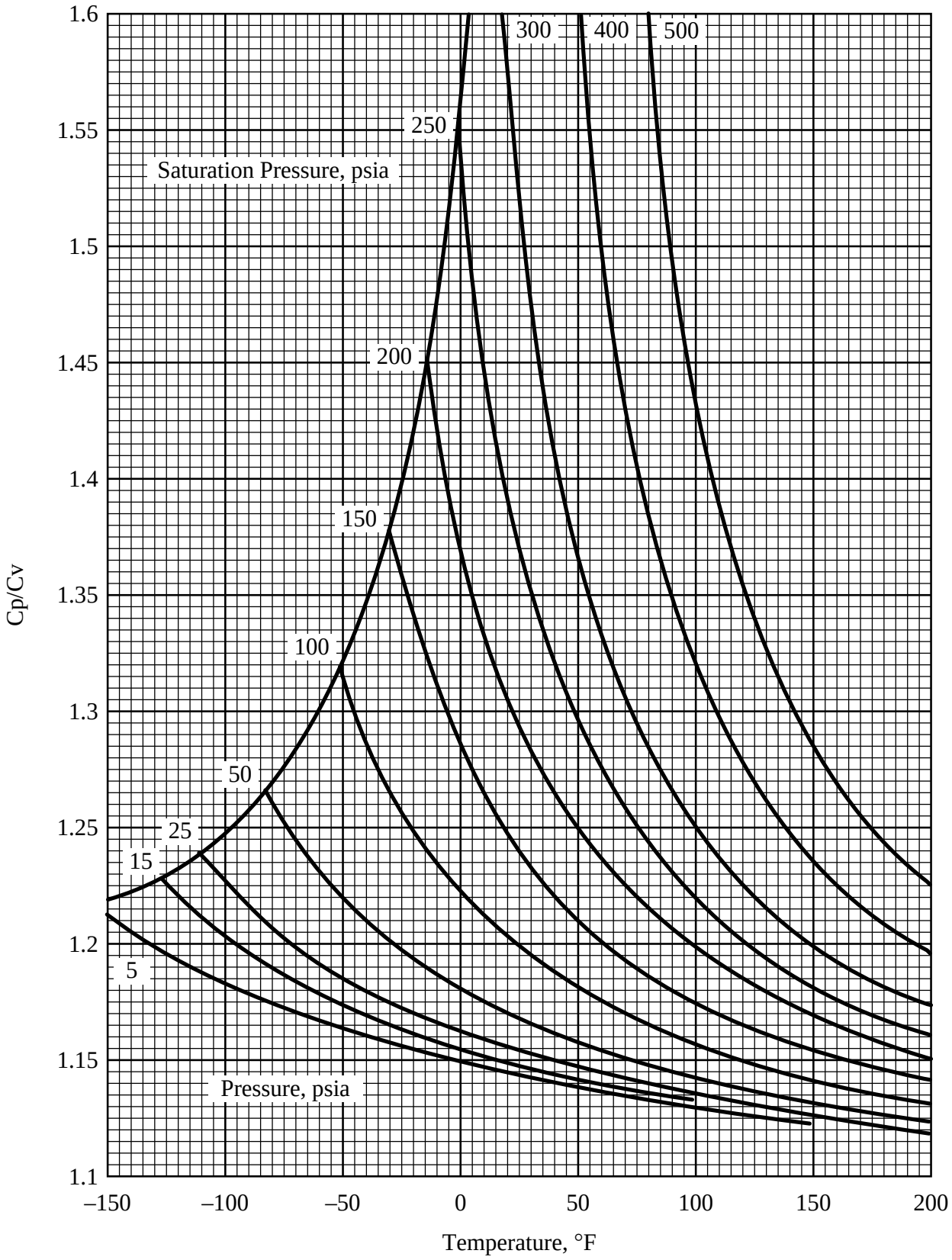


EQUATIONS FOR PROPERTY ESTIMATION

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)

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

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

$k = 3.93E\text{-}2 - 1.72E\text{-}4\ T - 9.36E\text{-}9\ T^2$

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

$Cp = 0.353 + 1.94E\text{-}3\ T + 2.02E\text{-}5\ T^2 + 1.29E\text{-}7\ T^3 + 3.23E\text{-}10\ T^4$

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

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

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

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

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

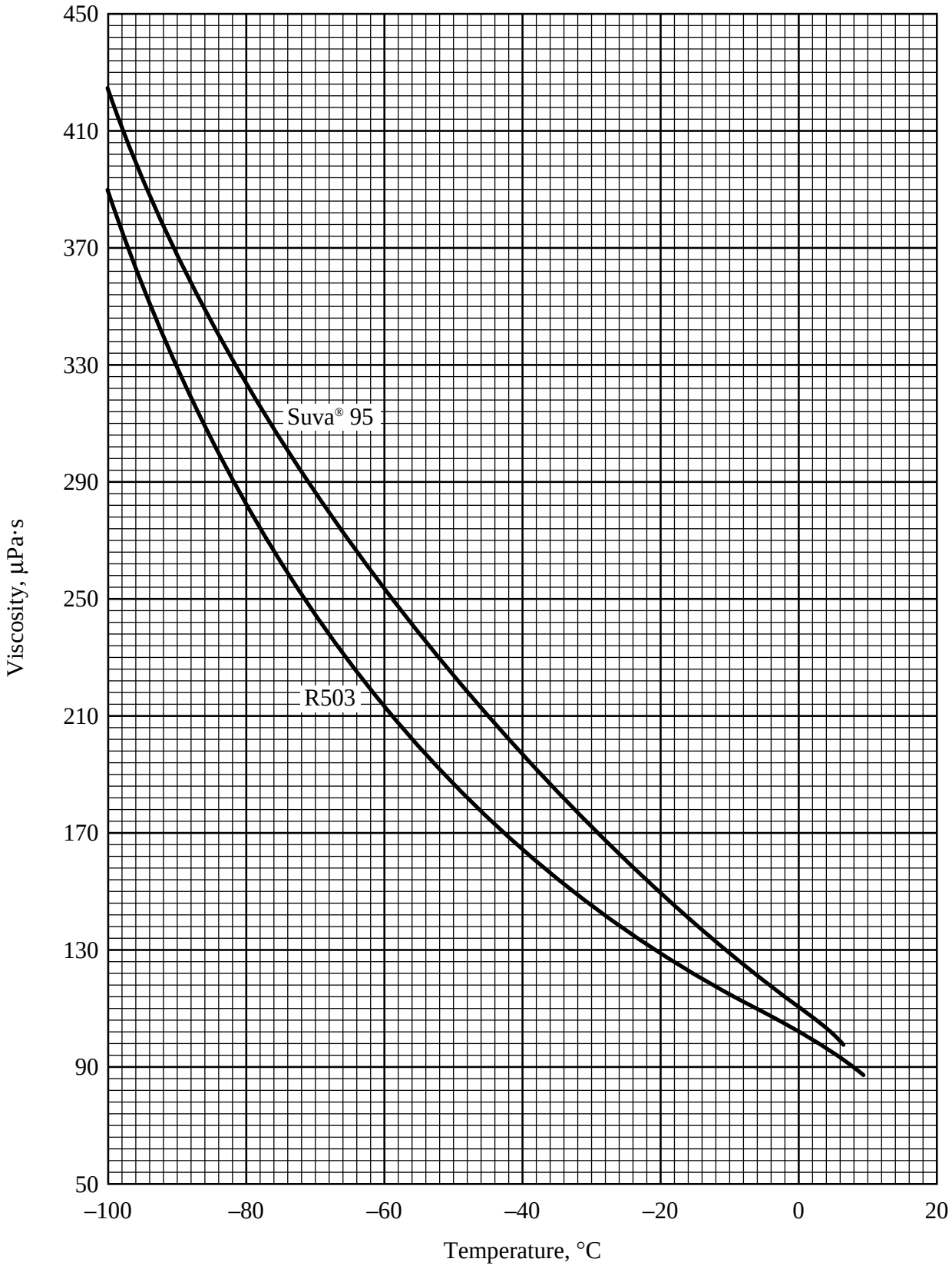
$\mu = 1.28E\text{-}2 + 2.78E\text{-}5\ T - 2.93E\text{-}9\ T^2$

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

$k = 6.07E\text{-}3 + 1.88E\text{-}5\ T - 3.92E\text{-}12\ T^2$

Where T = Temperature, °F

Saturated Liquid Viscosity



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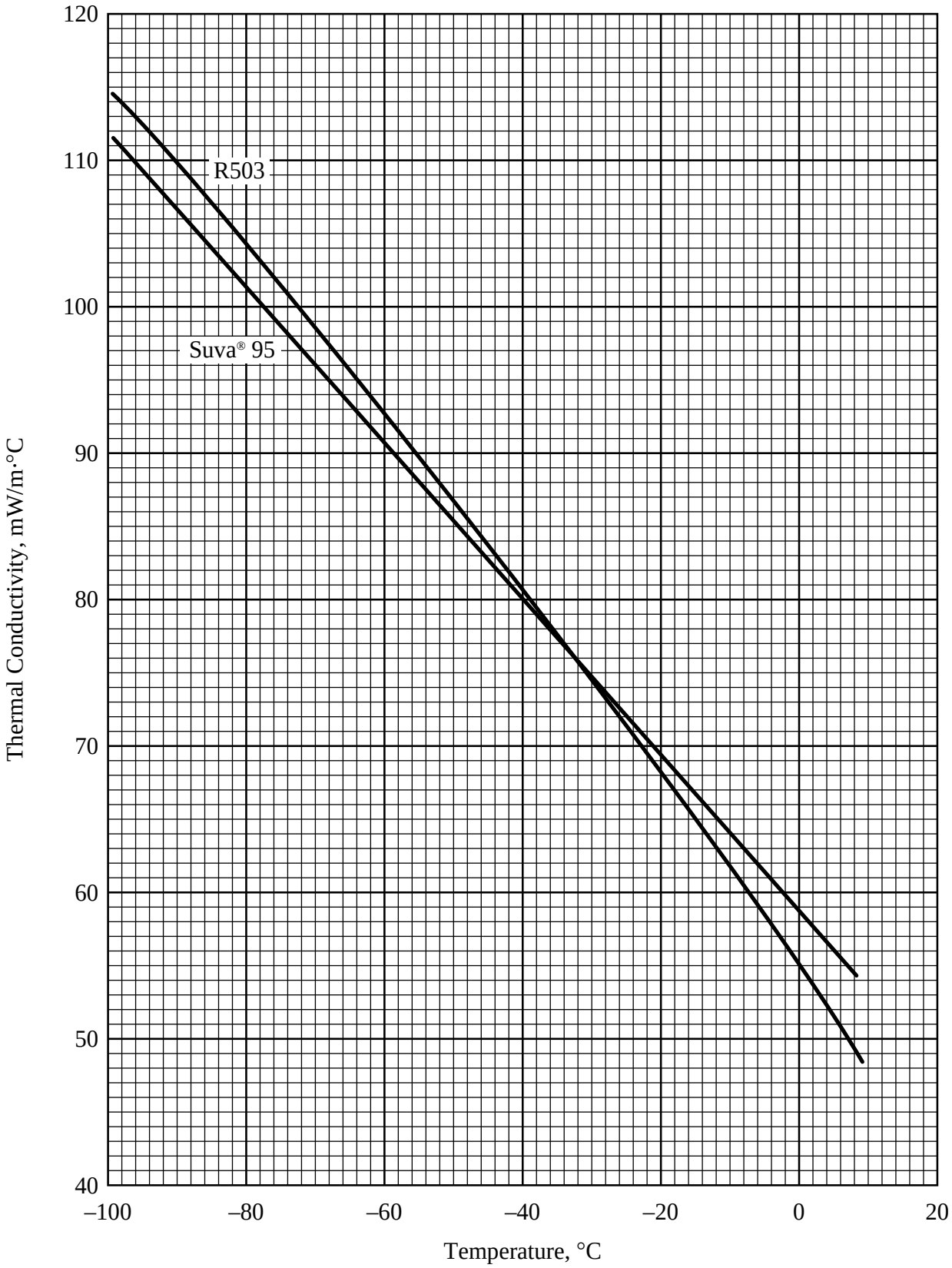
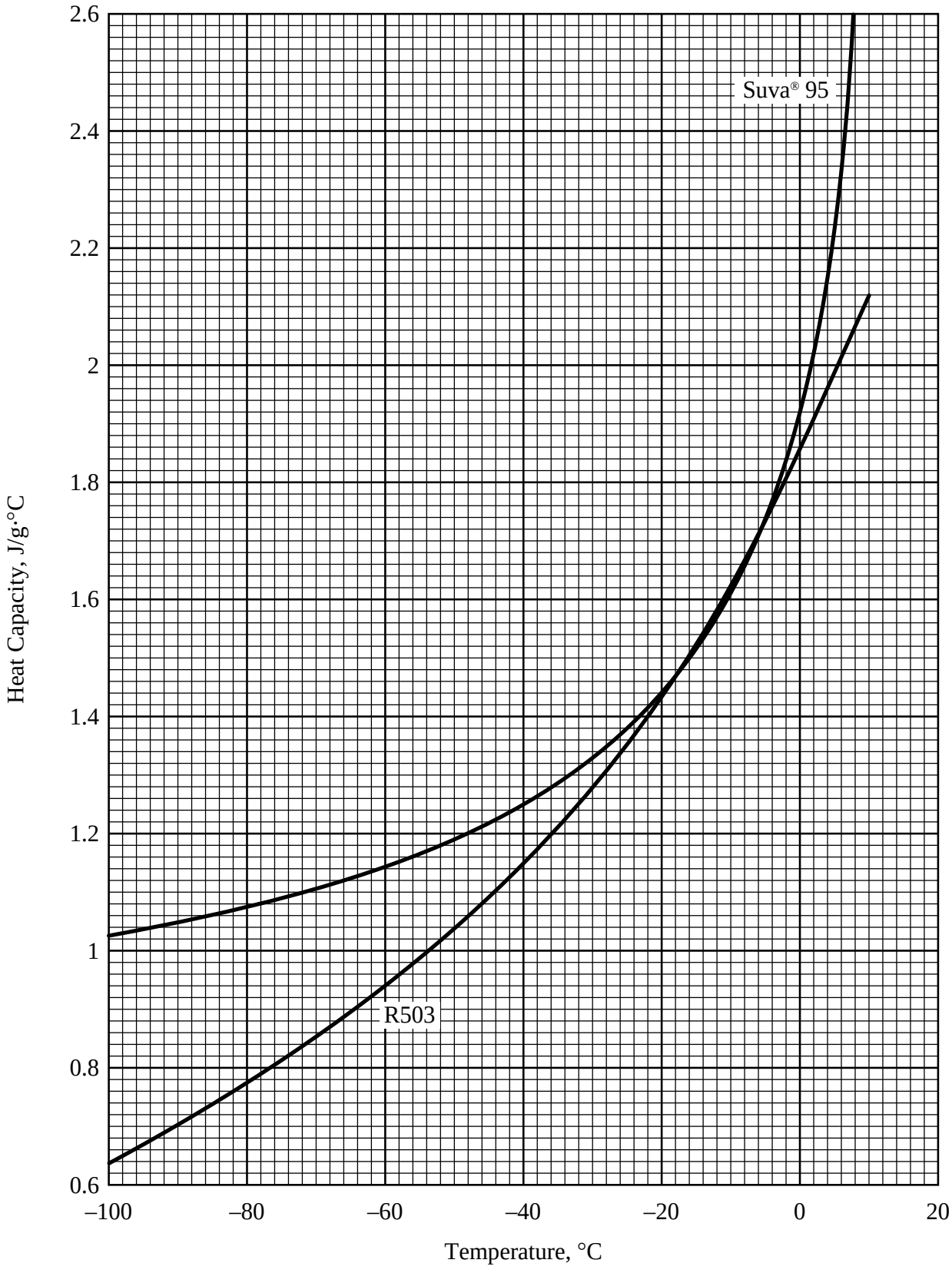


Saturated Liquid Heat Capacity



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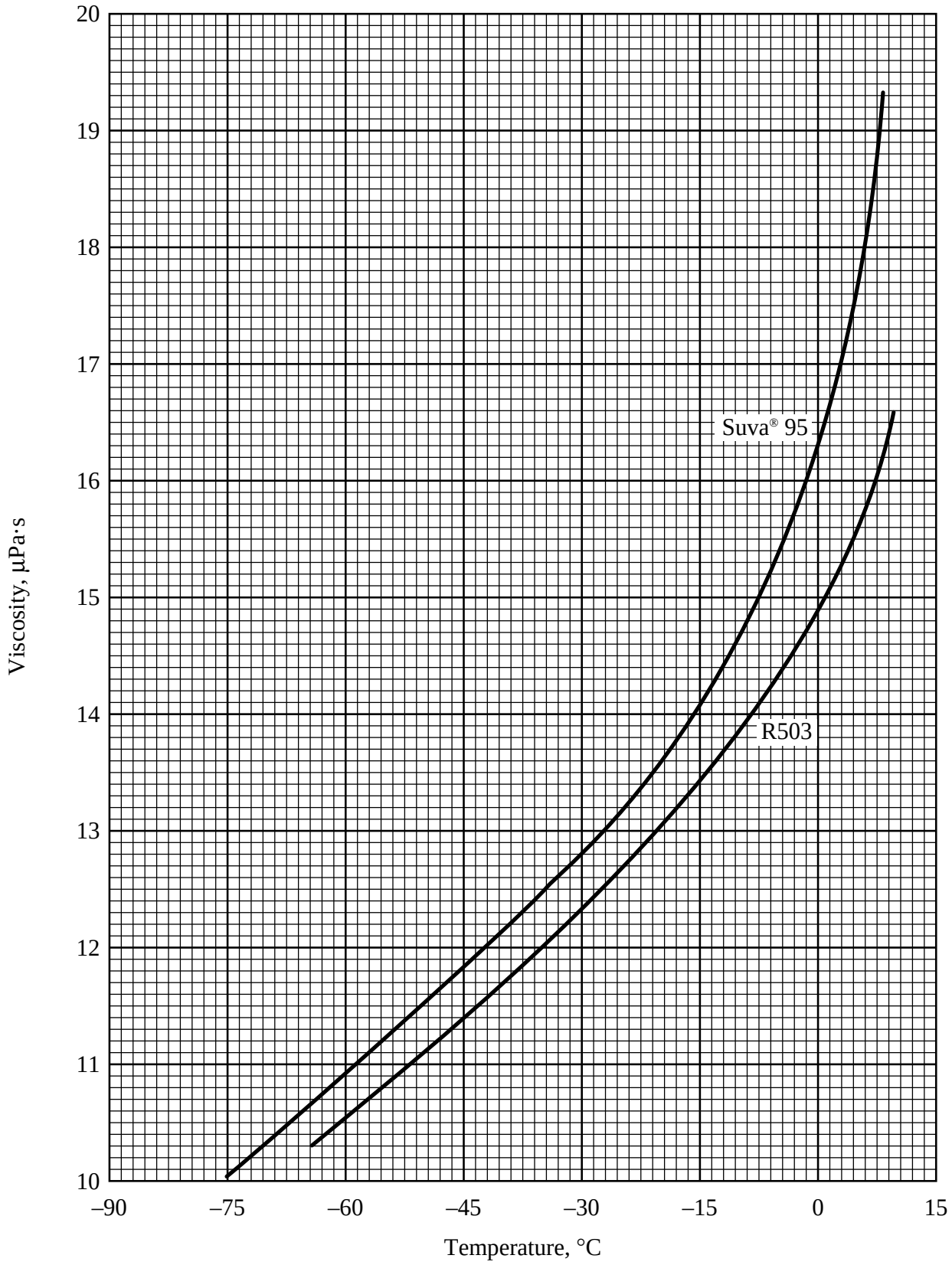

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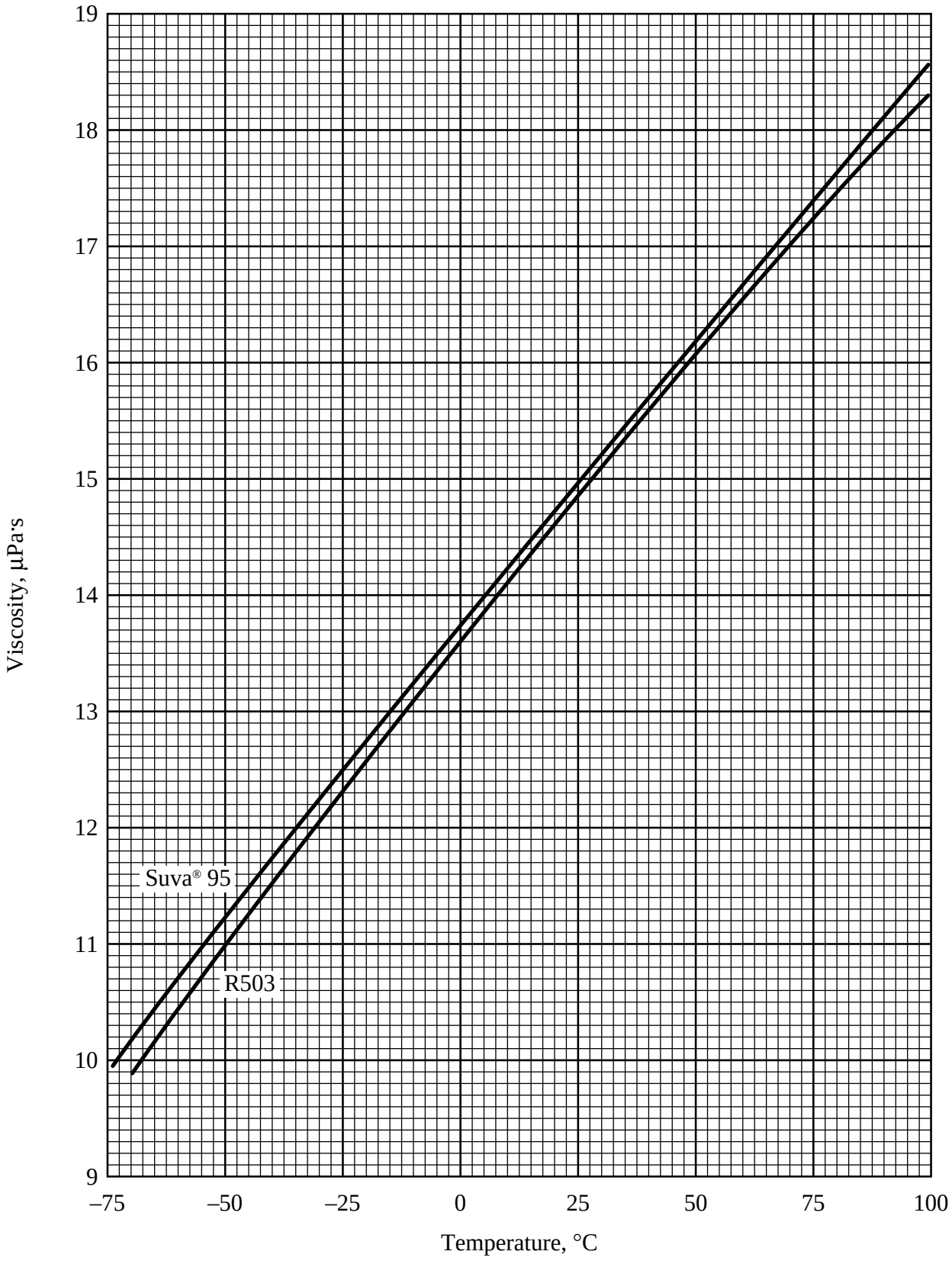

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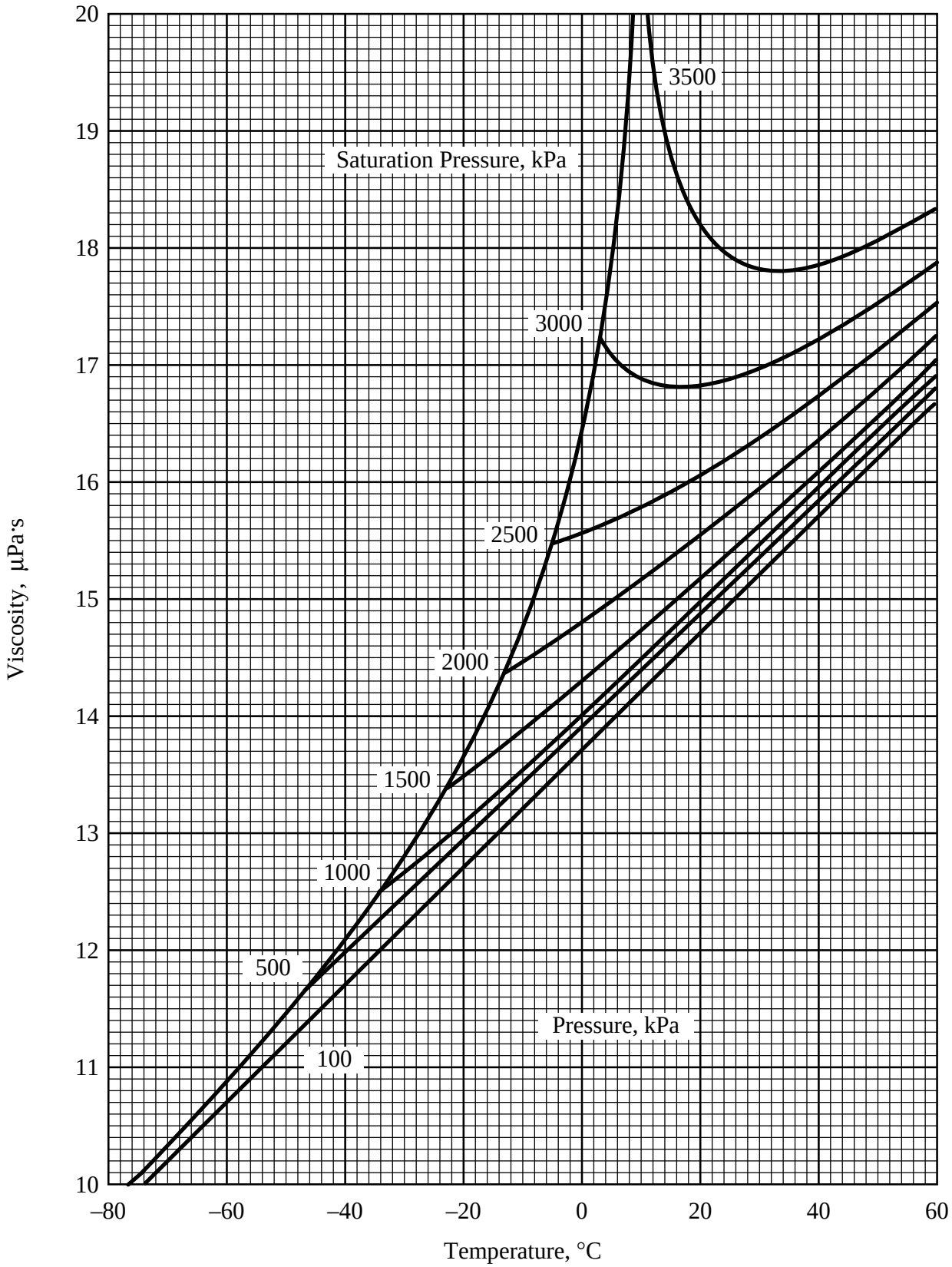
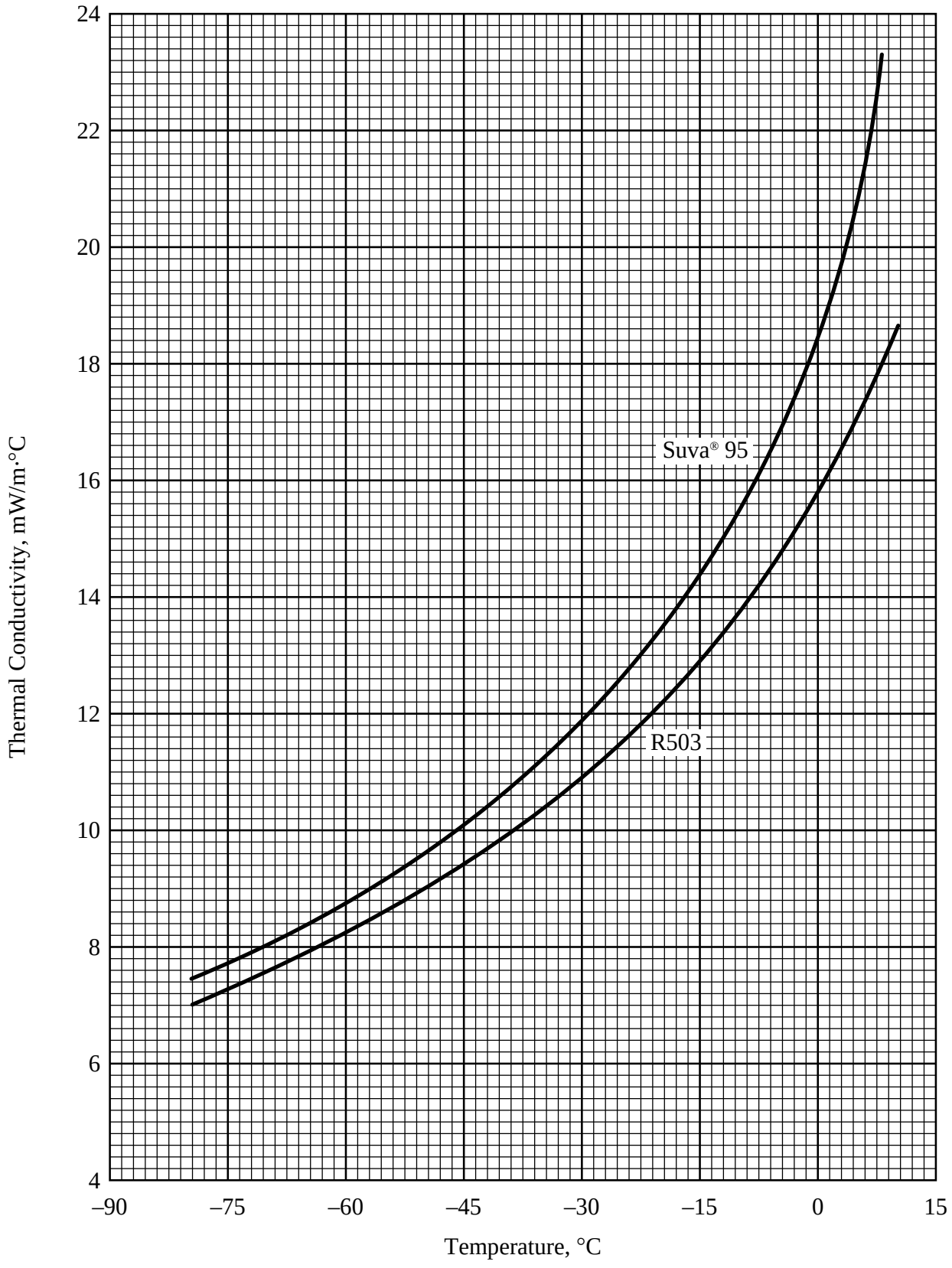


Saturated Vapor Thermal Conductivity



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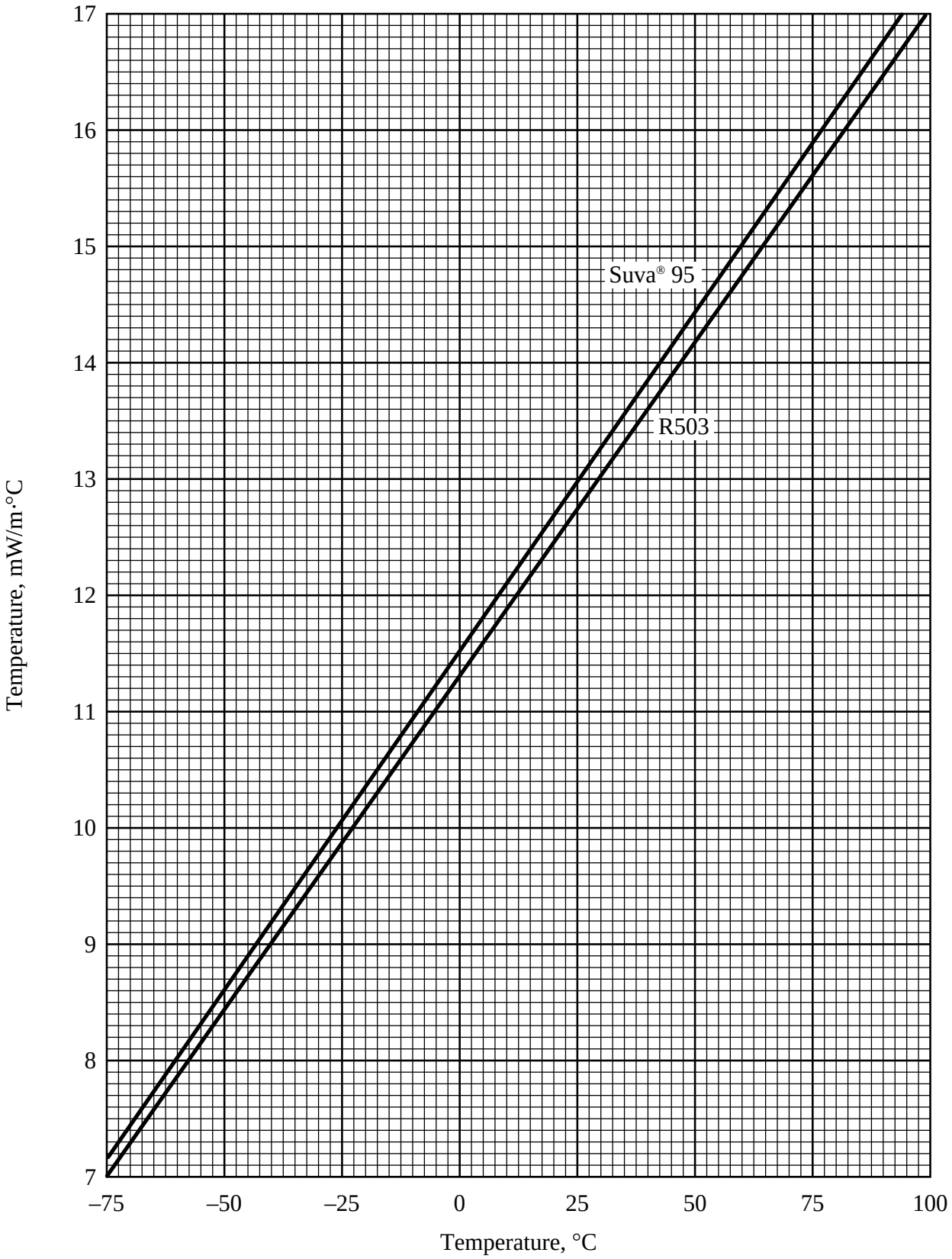

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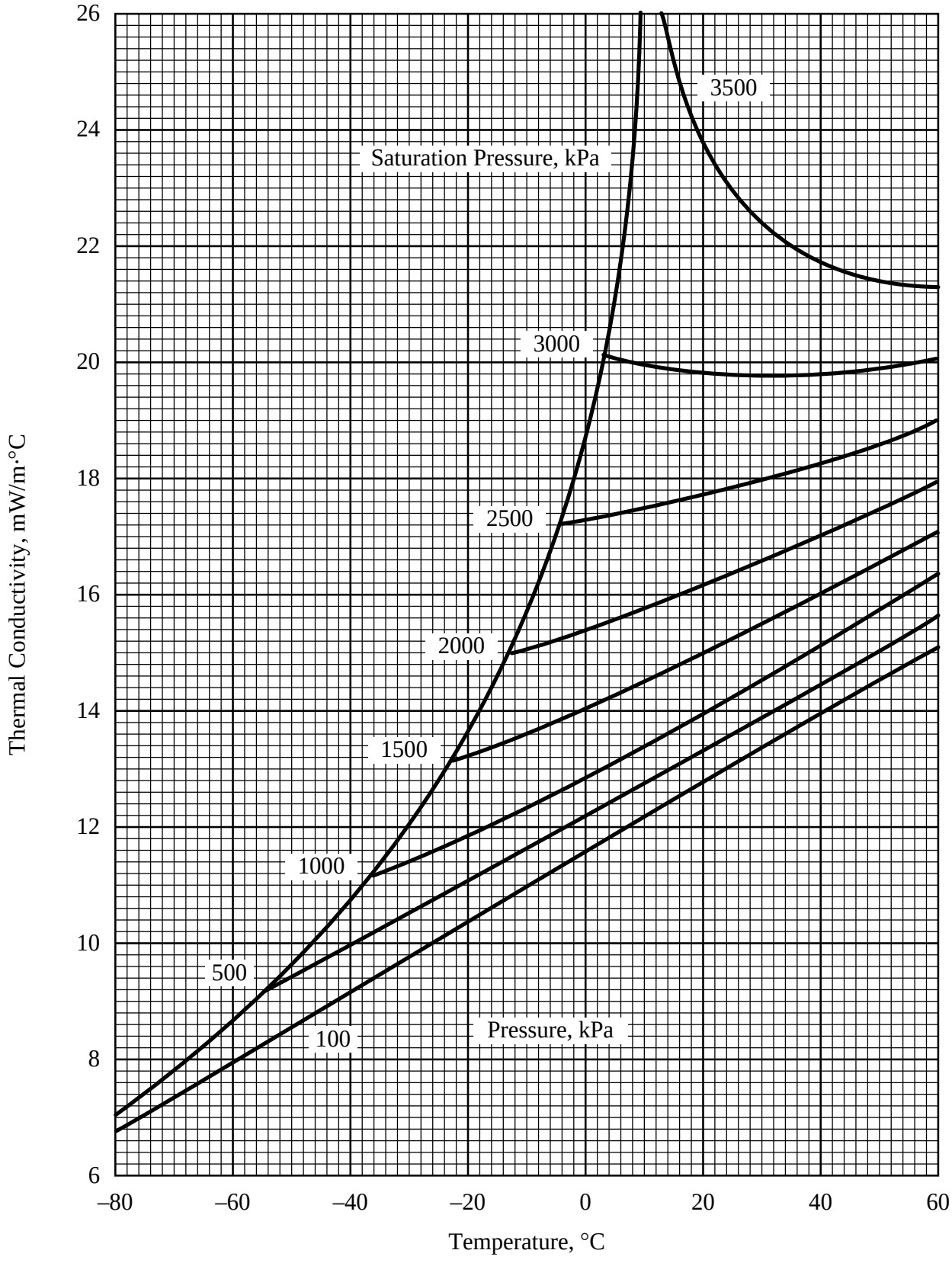

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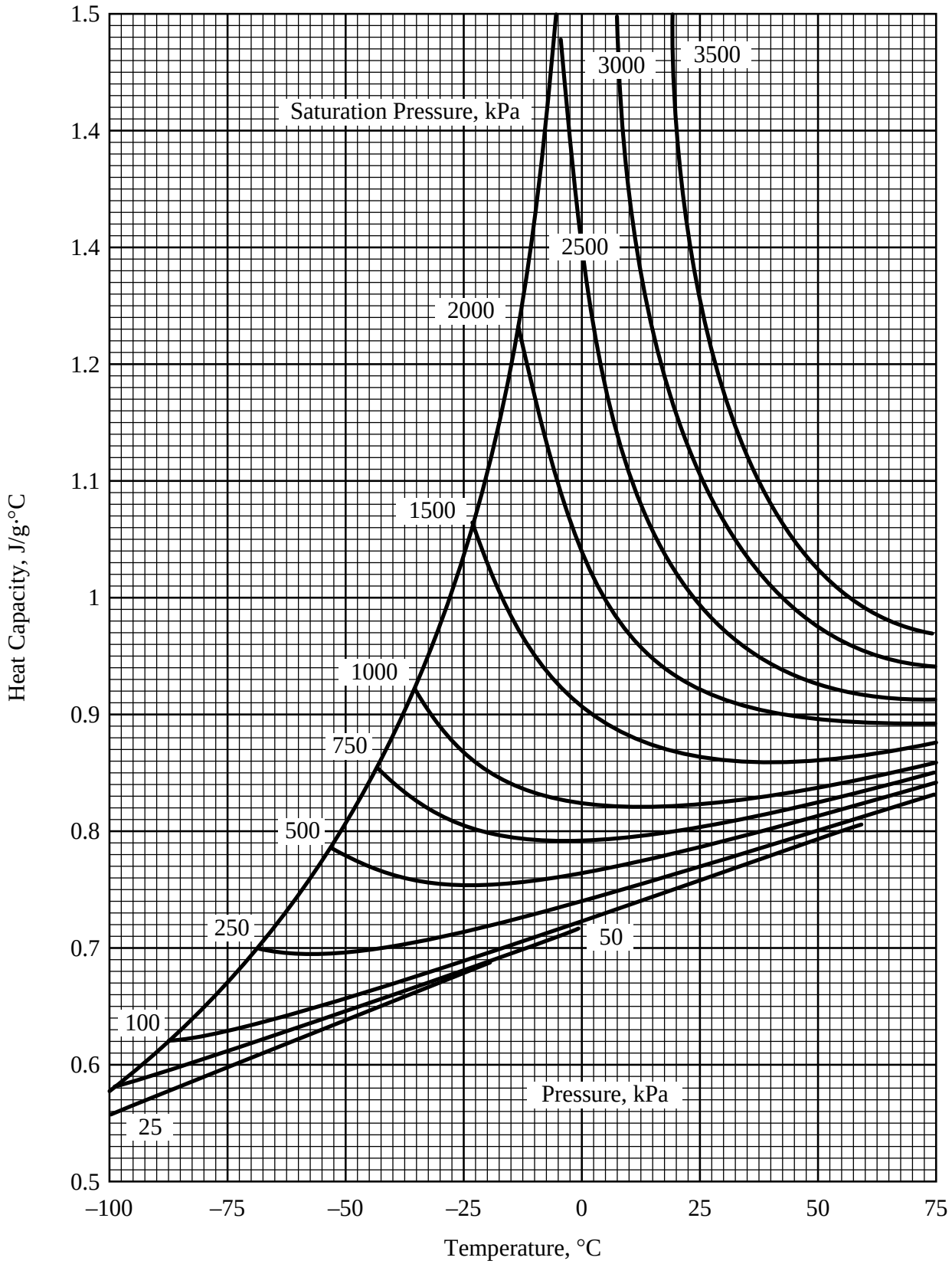
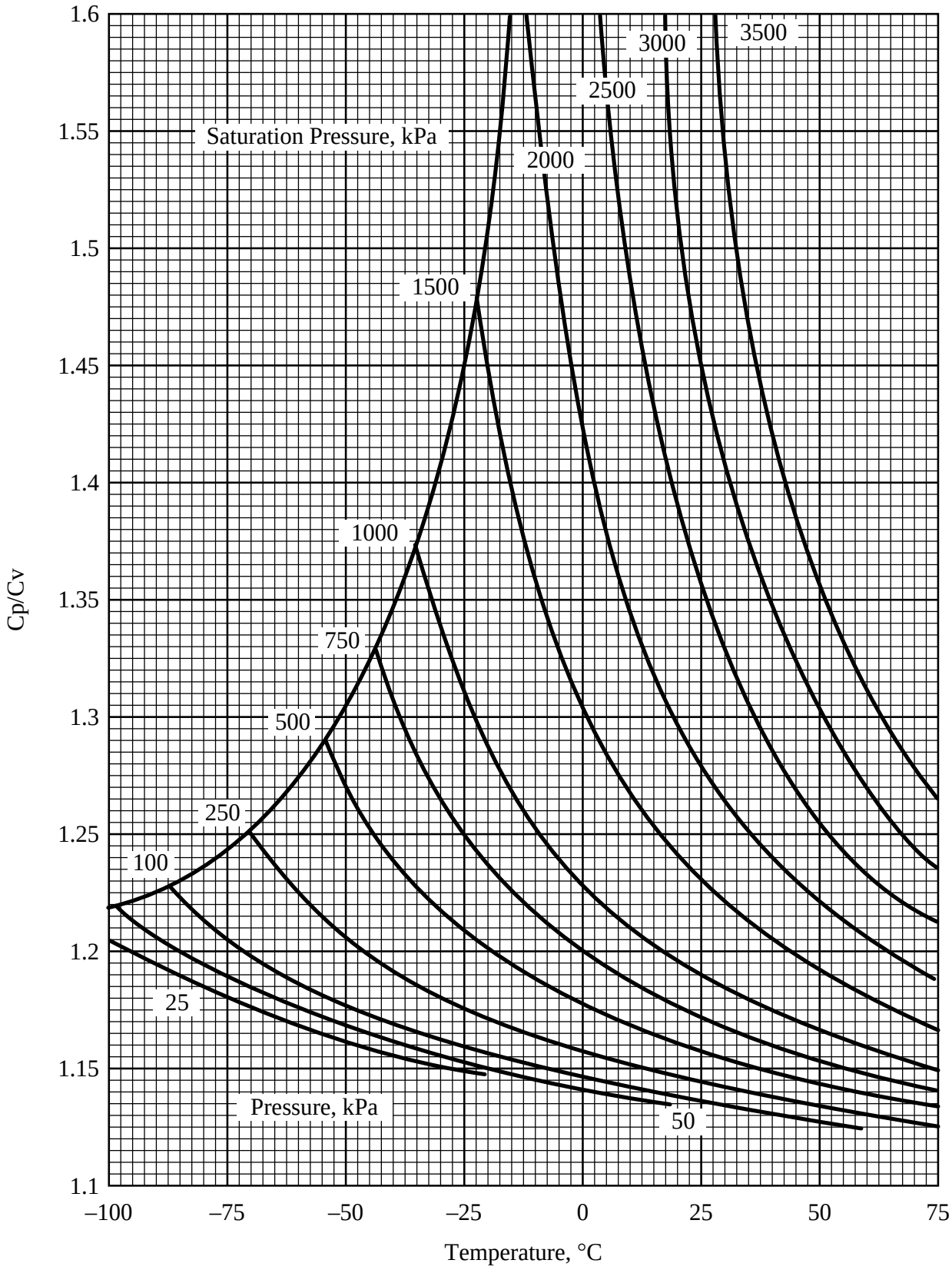


Vapor Heat Capacity Ratio



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 μPa·s (–100 to 10°C)

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

Saturated Liquid Thermal Conductivity in mW/m·°C (–100 to 10°C)

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

Saturated Liquid Heat Capacity in J/g·°C (–100 to 0°C)

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

Saturated Vapor Viscosity in μPa·s (–80 to 0°C)

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

Saturated Vapor Thermal Conductivity in mW/m·°C (–80 to 0°C)

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

Vapor Viscosity at One Atmosphere in μPa·s (–80 to 100°C)

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

Vapor Thermal Conductivity at One Atmosphere in mW/m·°C (–80 to 100°C)

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

Where T = Temperature, °C

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