

Properties of Pure Substances

FIGURE 2-11
***T-v* diagram for the**
heating process of
water at constant
pressure.

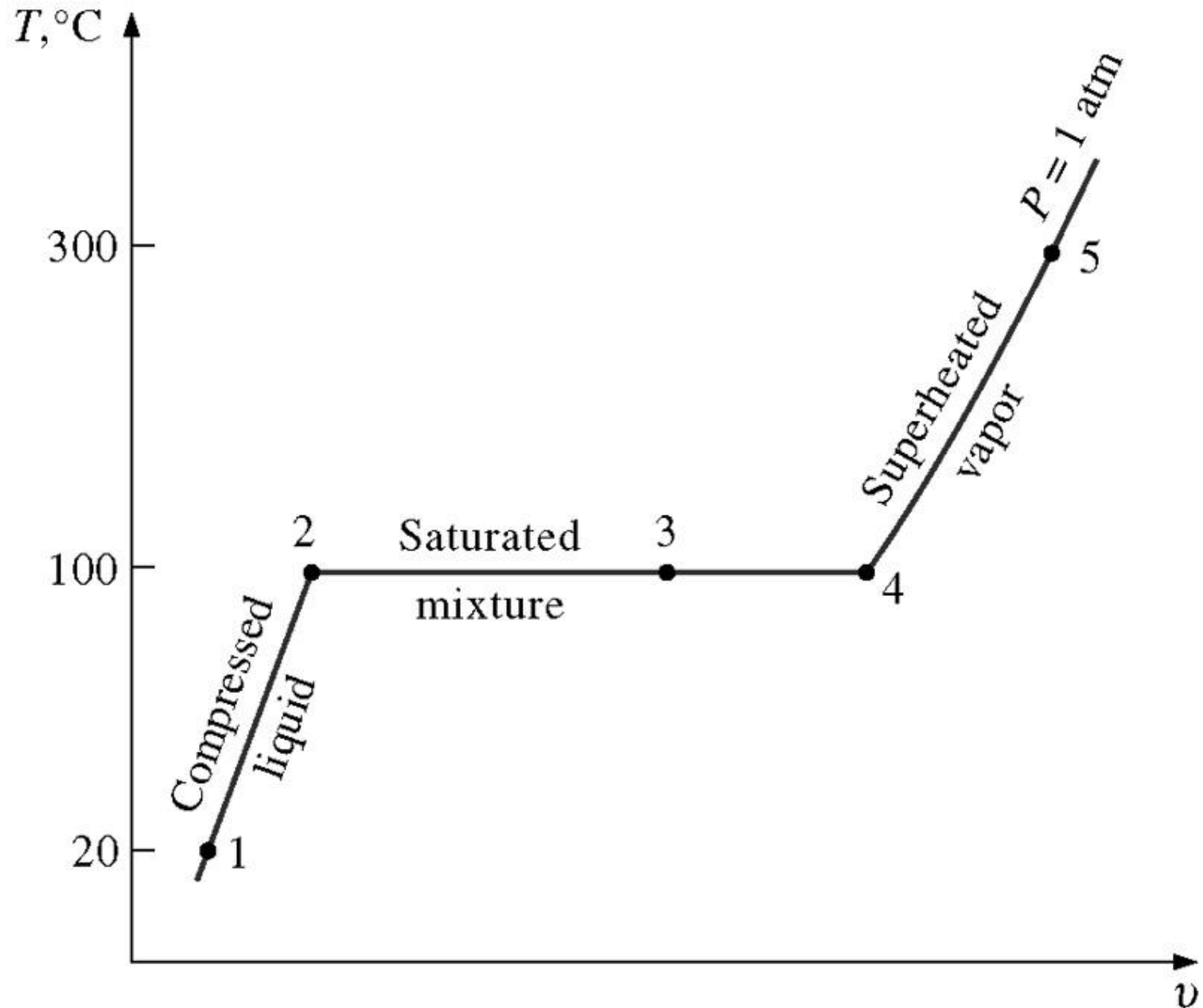


FIGURE 2-16
***T-v* diagram of**
constant-pressure
phase-change
processes of a pure
substance at
various pressures
(numerical values
are for water).

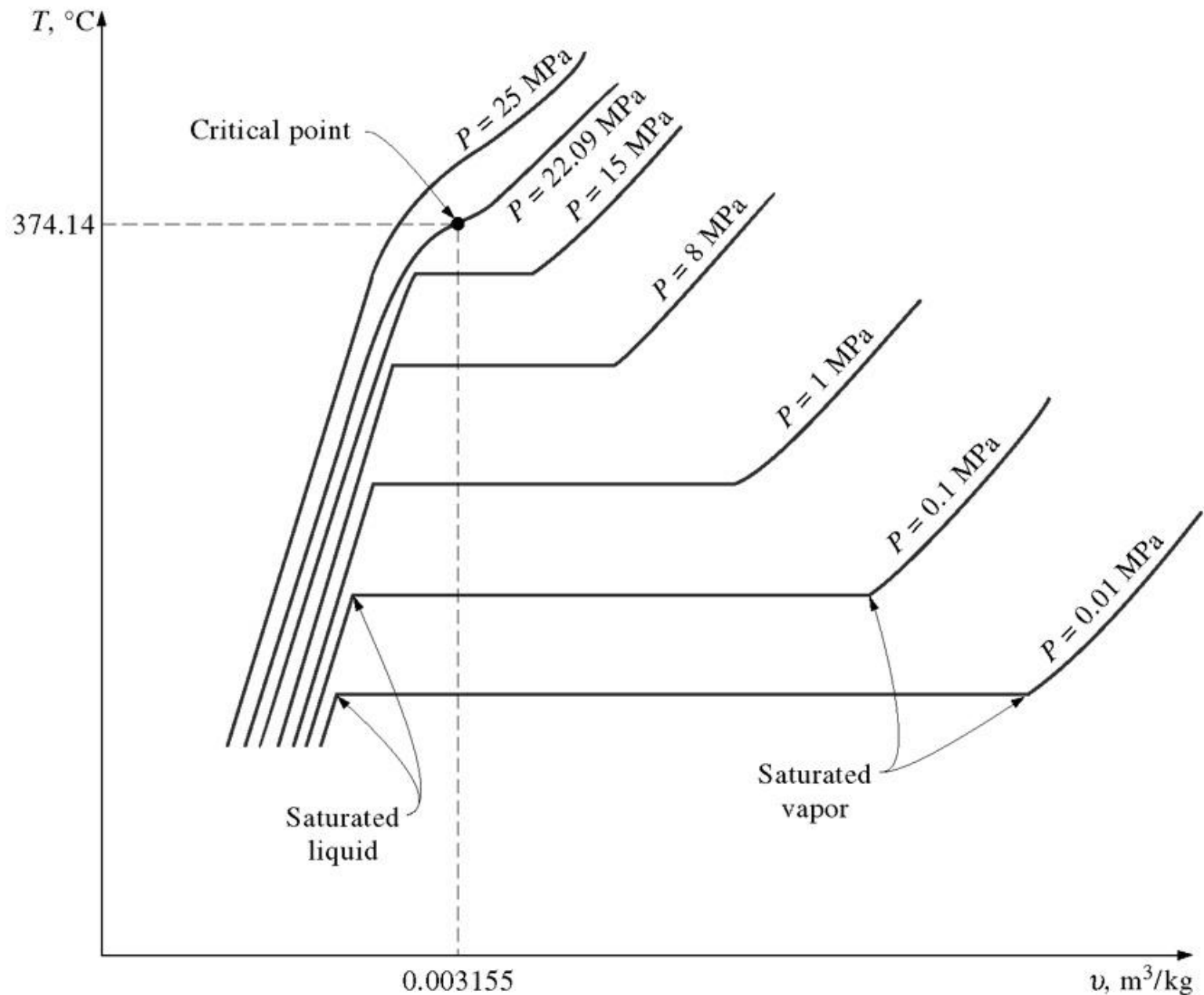


FIGURE 2-18
 T - v diagram of a
pure substance.

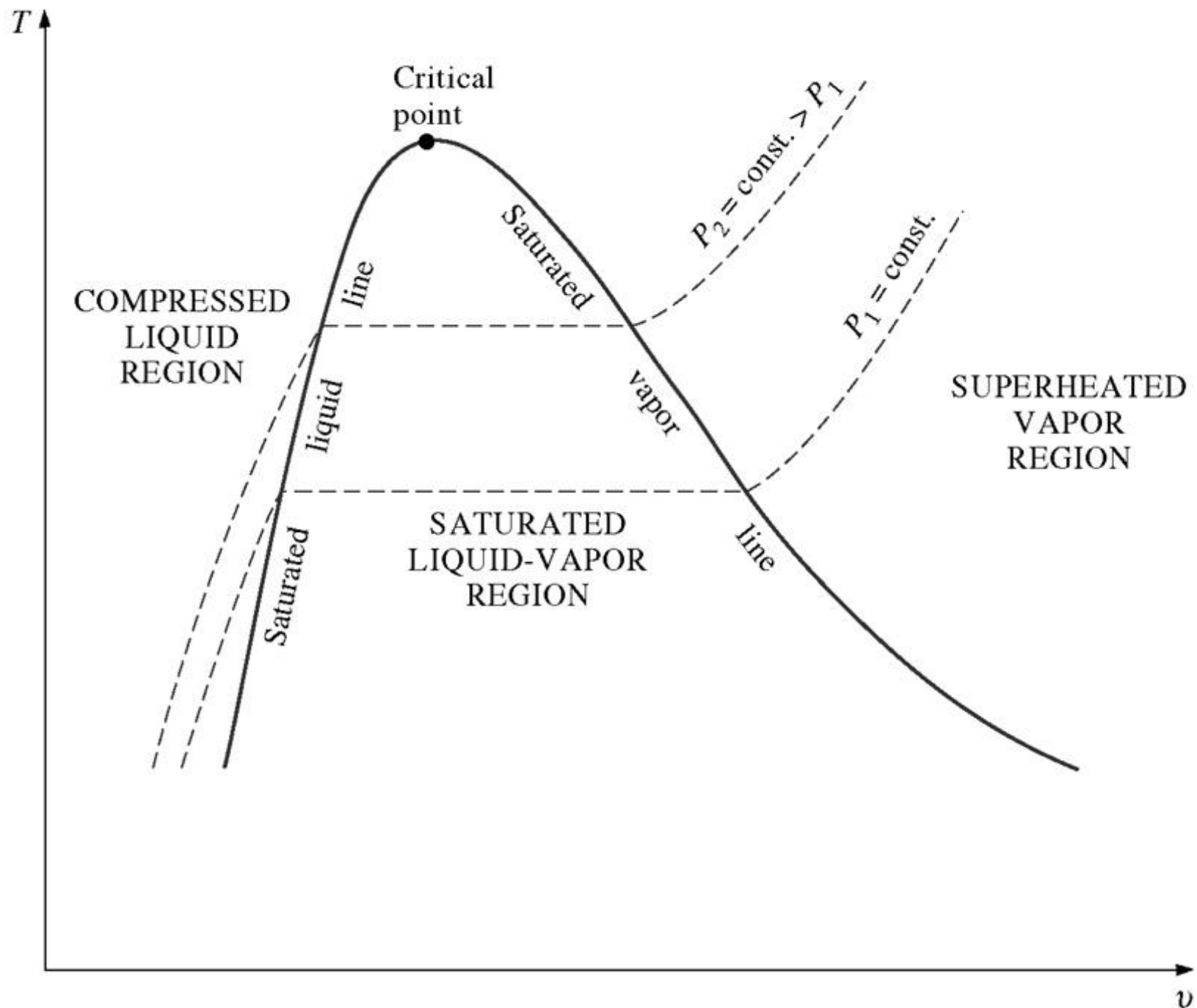


FIGURE 2-19
***P-v* diagram of**
a pure
substance.

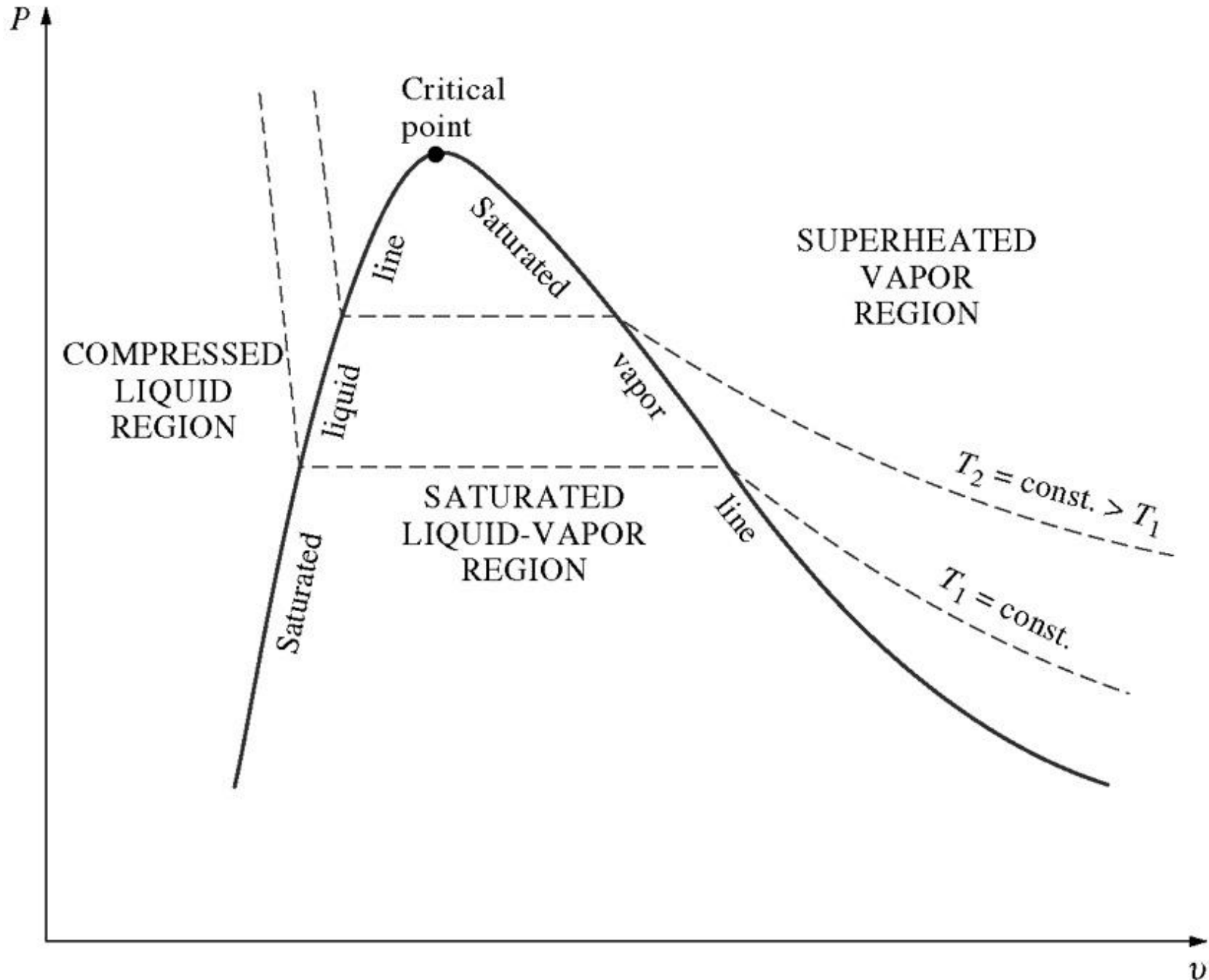


FIGURE 2-21
***P-v* diagram of a**
substance that
contracts on
freezing.

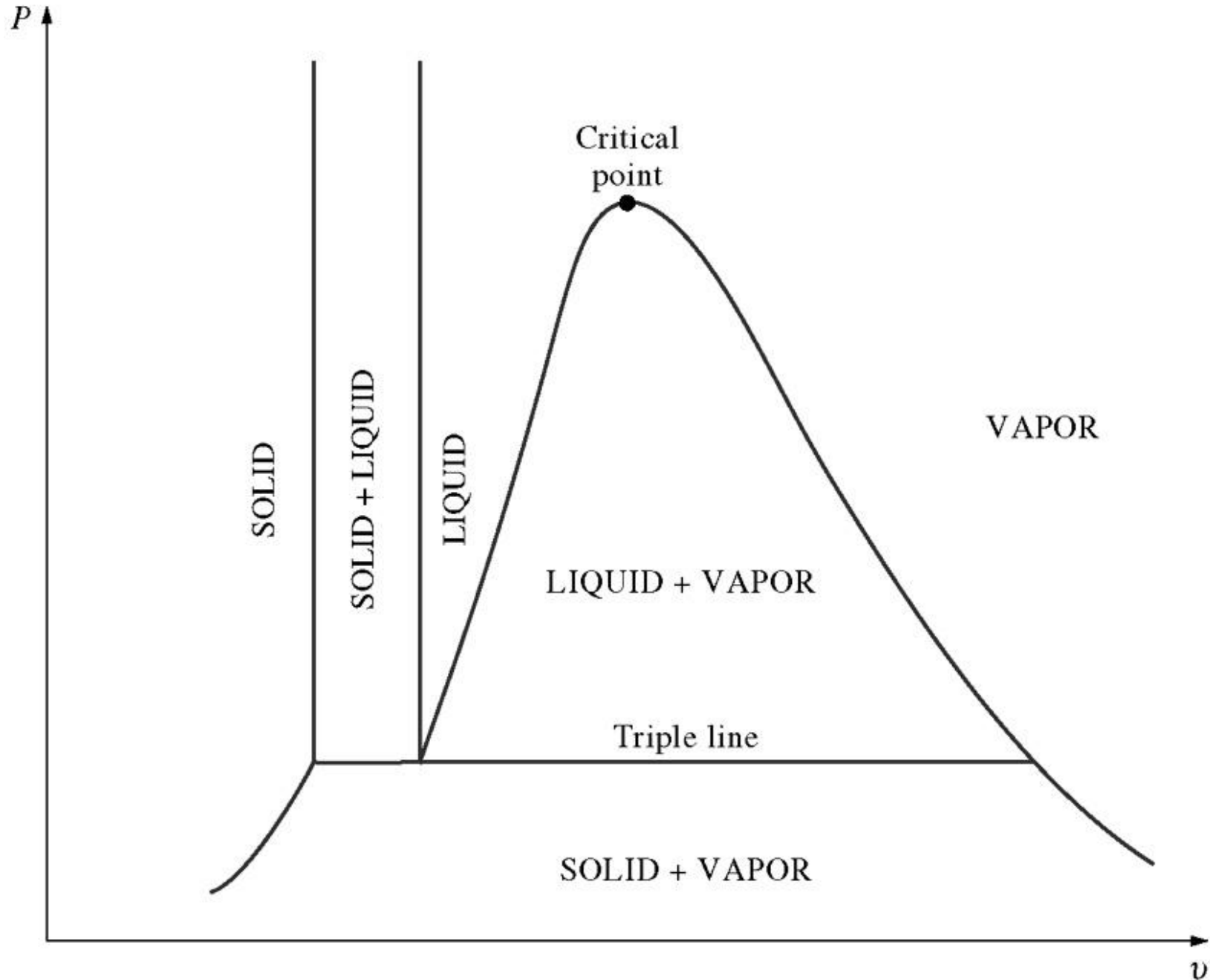


FIGURE 2-22
 P - v diagram
of a substance
that expands
on freezing
(such as
water).

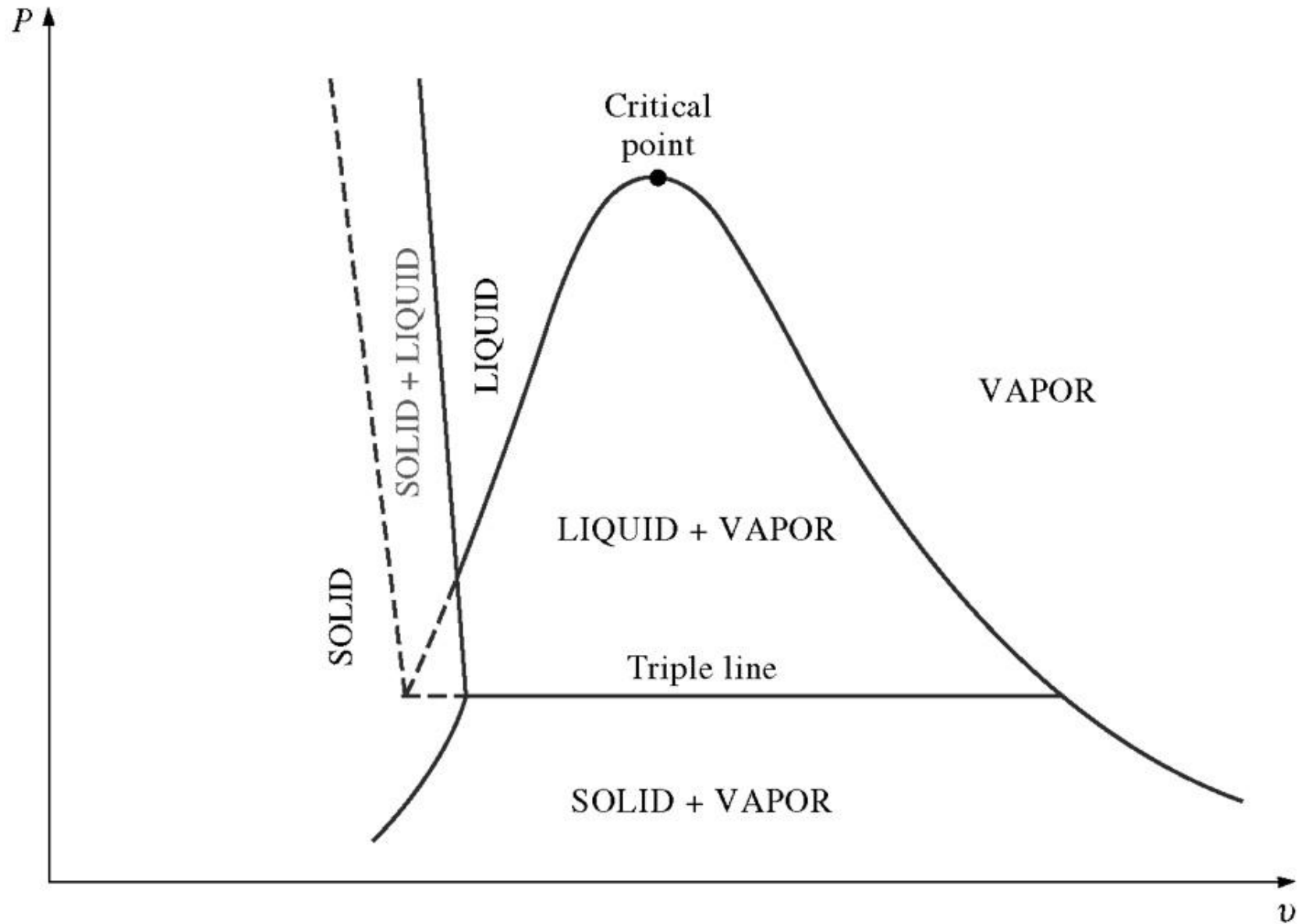


FIGURE 2-25
***P-T* diagram of**
pure
substances.

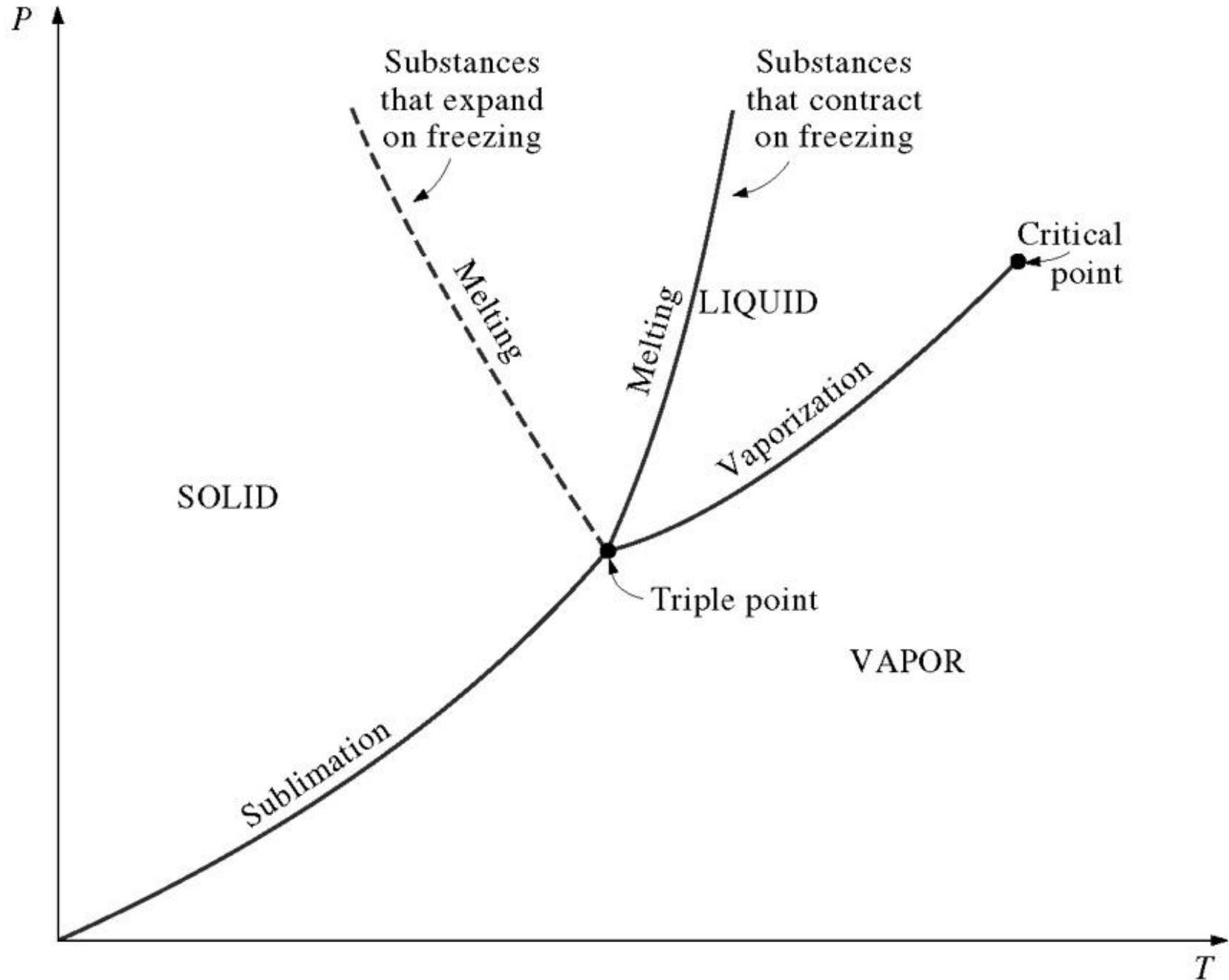


FIGURE 2-26
 P - v - T surface of a
substance that *contracts*
on freezing.

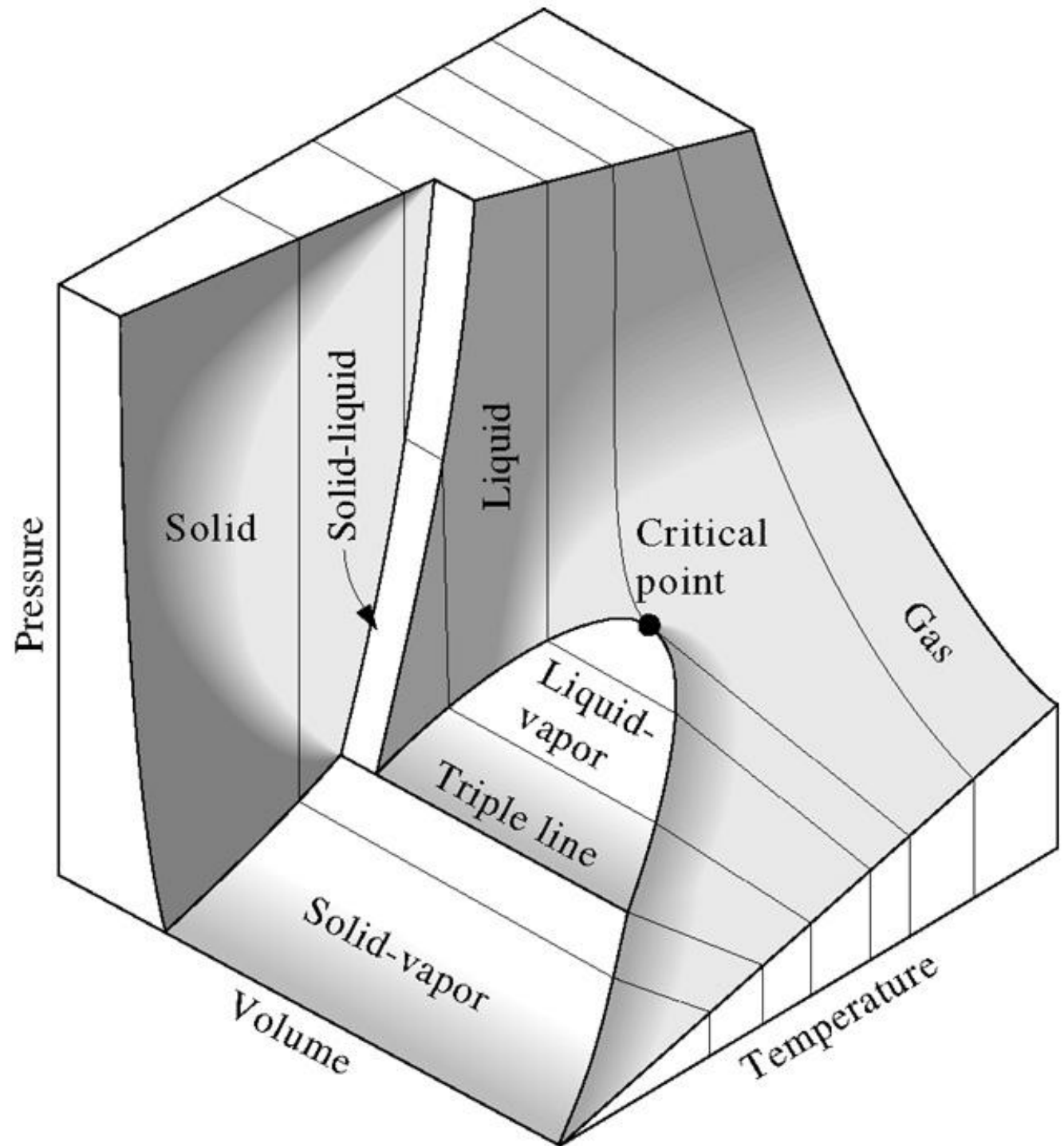


FIGURE 2-27
***P-v-T* surface of a**
substance that *expands*
on freezing (like water).

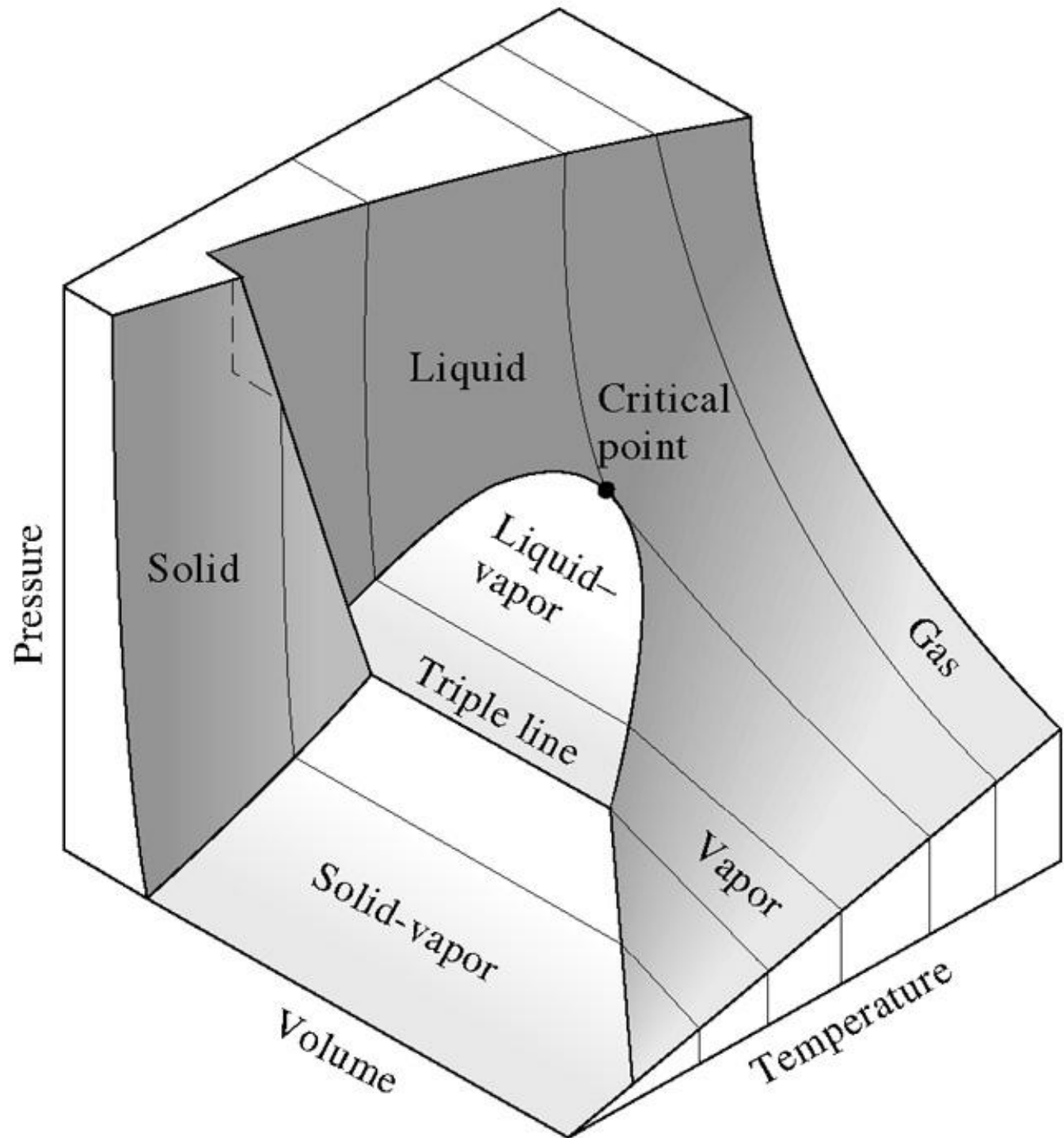


FIGURE 2-30
A partial list of
Table A-4.

Temp. °C T	Sat. press kPa P_{sat}	Specific volume m^3/kg	
		Sat. liquid v_f	Sat. vapor v_g
85	57.83	0.001 033	2.828
90	70.14	0.001 036	2.361
95	84.55	0.001 040	1.982

Specific temperature

Specific volume of saturated liquid

Specific volume of saturated vapor

Corresponding saturation pressure

FIGURE 2-40
A partial listing of
Table A-6.

$T, ^\circ\text{C}$	$v,$ m^3/kg	$u,$ kJ/kg	$h,$ kJ/kg
$P = 0.1 \text{ MPa } (99.63^\circ\text{C})$			
Sat.	1.6940	2506.1	2675.5
100	1.6958	2506.7	2676.2
150	1.9364	2582.8	2776.4
$\vdots$	$\vdots$	$\vdots$	$\vdots$
1300	7.260	4683.5	5409.5
$P = 0.5 \text{ MPa } (151.86^\circ\text{C})$			
Sat.	0.3749	2561.2	2748.7
200	0.4249	2642.9	2855.4
250	0.4744	2723.5	2960.7

FIGURE 2-49
Percentage of error
involved in assuming
steam to be an ideal gas,
and the region where
steam can be
treated as an ideal gas
with less than 1 percent
error.

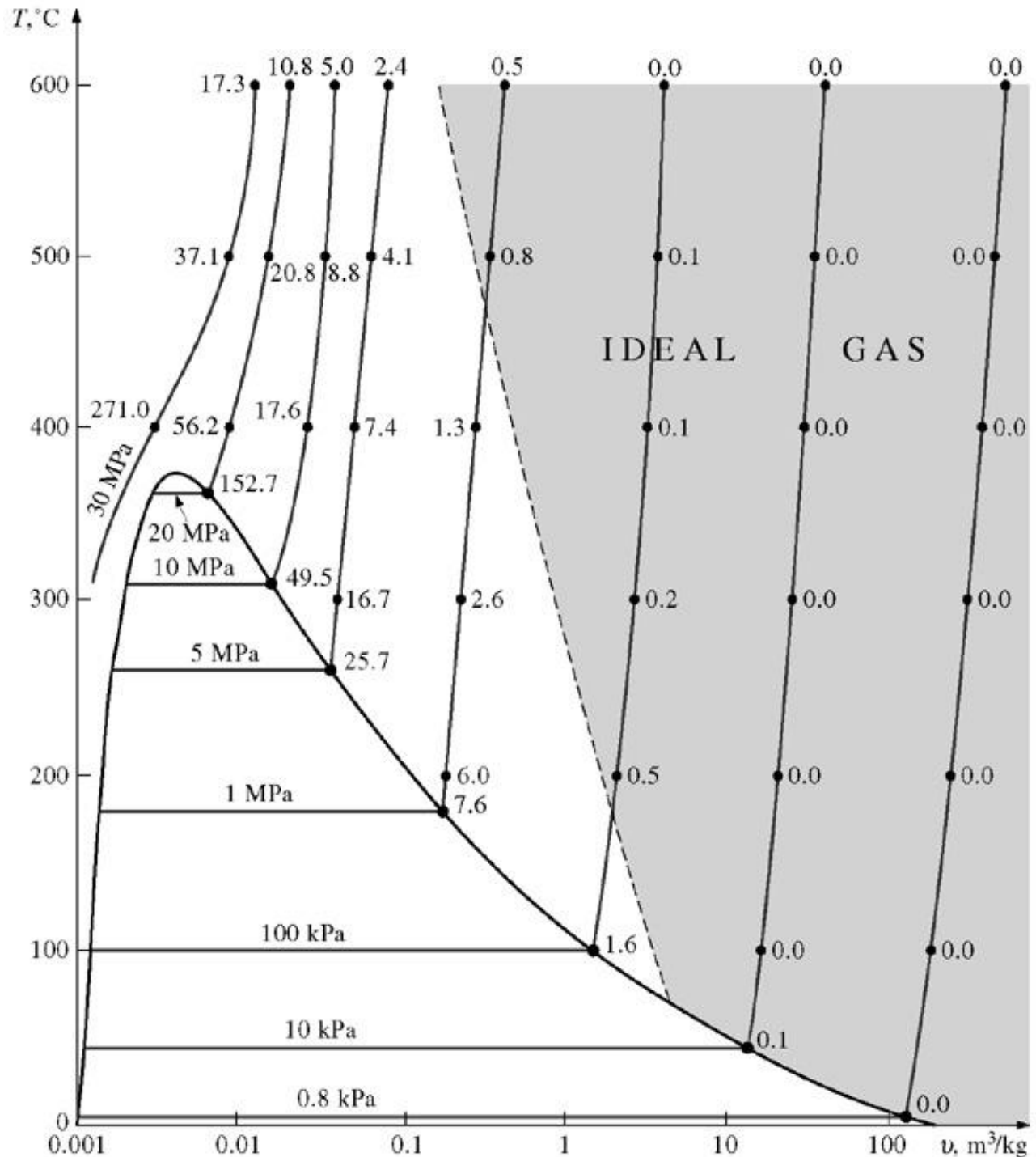


FIGURE 2-51
Comparison of Z
factors for
various gases.

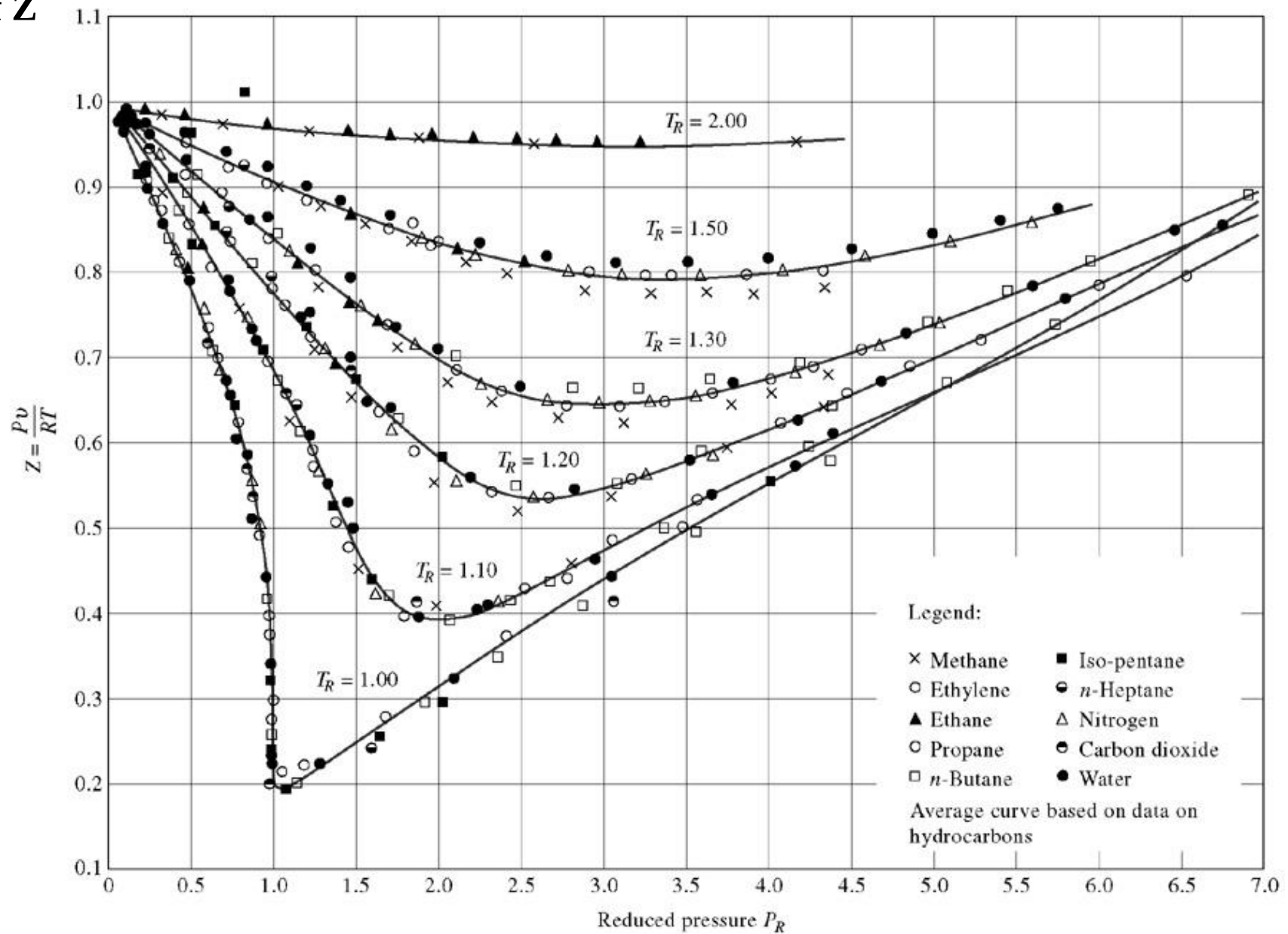


FIGURE 2-60
Percentage of
error involved in
various equations
of state for
nitrogen.

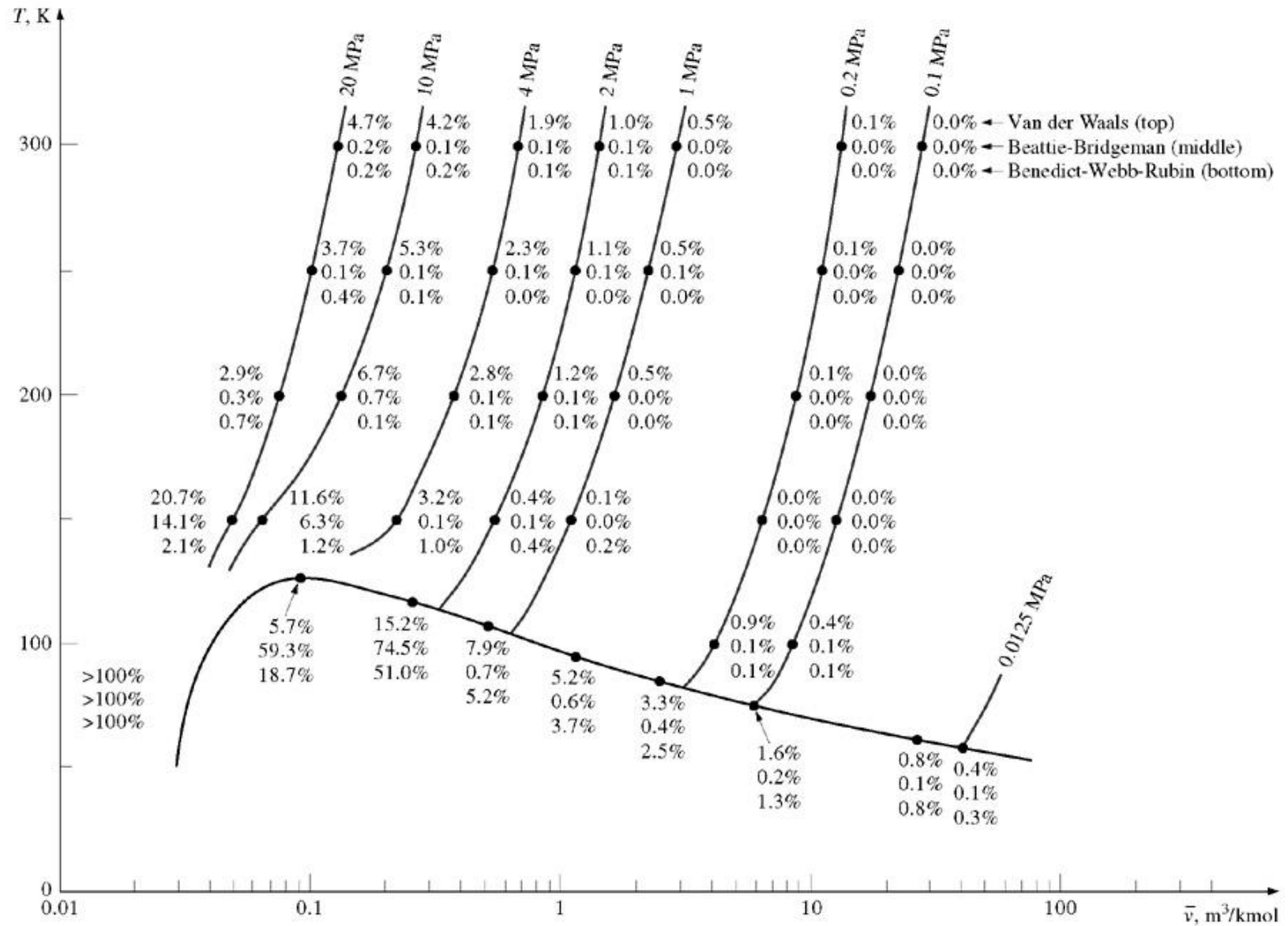


FIGURE 2-68
Ideal-gas constant-
pressure
specific heats for
some gases
(see Table A–2c for
 C_p equations).

