

16-A-2 us-isochoric1

At an absolute temperature of 0 Kelvin the entropy is zero. In an us-diagram (s on the horizontal axis) the slope of the isochoric process when s approaches zero goes to infinity

The slope of an isochor in a us-diagram (s on the horizontal axis) is given by: $(\frac{\partial u}{\partial s})_v$. From $du = TdS - Pdv$ it follows that this is equal to T. For s goes to zero the temperature also goes to zero, therefore the slope of the isochor for s goes to zero goes to zero. For s goes to infinity it would go to infinity.