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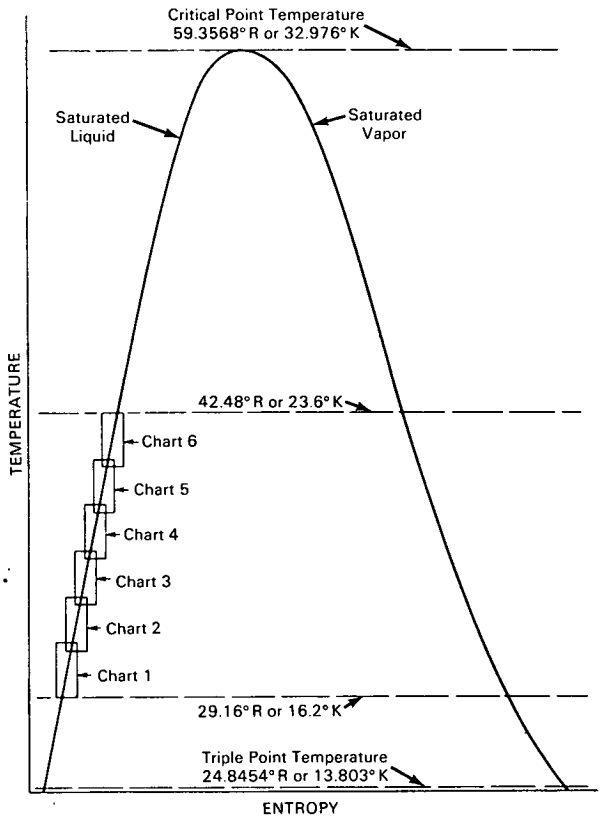
Thermodynamic Properties of Saturated Liquid Parahydrogen Charted for Important Temperature Range



Existing temperature-entropy diagrams for parahydrogen in or near the saturated liquid state, specifically between 29.16° and 42.48° R, were not adequate for some applications. At this state the pressure, density, enthalpy, and quality curves ran so close together on a normal scale of plotting that it was impractical to distinguish one curve from another. Therefore, to obtain reasonable accuracy in this range, it was necessary to expand these scale onto large charts.

Data on parahydrogen were developed previously by the National Bureau of Standards, from the Triple Point to 100° K at pressures to 340 atmospheres. These data have now been reprocessed, refined, and expanded to create six new entropy diagrams which cover the temperature range from 29.16° to 42.48° R

(continued overleaf)

(16.2° to 23.6°K), with pressures to 100 psia (6.8046 atm) and mixtures of the liquid and vapor phases to 0.003 quality.

The six entropy diagrams are contained in: *Thermodynamic Charts of Saturated Liquid Parahydrogen in British Units,* by R. D. McCarty and H. M. Roder, NBS Report 9263, Nov. 1966. Copies of this report are available from:

Technology Utilization Officer
AEC–NASA Space Nuclear Propulsion Office
U.S. Atomic Energy Commission
Washington, D.C. 20545
Reference: B67-10346

Notes:

1. The diagrams are printed in color, are 19×30 inches in size, and are suitable for wall mounting.
2. This information is of particular significance in the design, analysis, and operation of laboratory and large-scale commercial apparatus using near-saturated liquid hydrogen.

Patent status:

No patent action is contemplated by AEC or NASA.

Source: R. D. McCarty and H. M. Roder
of the National Bureau of Standards
under contract to
AEC–NASA Space Nuclear Propulsion Office
(NUC-10018)