

# Ton of refrigeration

A **ton of refrigeration (TR)**, also called a **refrigeration ton (RT)**, is a unit of power used in some countries (especially in North America) to describe the heat-extraction capacity of refrigeration and air conditioning equipment. It is defined as the rate of heat transfer that results in the melting of 1 short ton (2,000 lb; 907 kg) of pure ice at 0 °C (32 °F) in 24 hours.<sup>[1][2]</sup>

A refrigeration ton is approximately equivalent to 12,000 BTU/h or 3.5 kW. Air-conditioning and refrigeration equipment capacity in the U.S. is often specified in “tons” (of refrigeration). Many manufacturers also specify capacity in BTU/h, especially when specifying the performance of smaller equipment.

## 1 History

The ton of refrigeration is equivalent to the consumption of one ton of ice per day and originated during the transition from stored natural ice to mechanical refrigeration. Just as horsepower and candlepower were intuitive units of measure for people living through the transition from horse to motorized transport and from flame-based to electric lighting, so was the ton of refrigeration an intuitive unit of measure during a technological change, as the ice trade gradually adopted ever more artificial ice (ice from ice-making plant) in addition to its natural ice supplies. The TR unit was developed during the 1880s. Its definition was set at the level of an industry standard in 1903, when Thomas Shipley of the York Manufacturing Company led the formation of an industry association (the Ice Machine Builders Association of the United States) along with standardization of several equipment specifications.<sup>[3]</sup> In 1904 these efforts led to the founding of the American Society of Refrigerating Engineers (ASRE),<sup>[3]</sup> which was one of the predecessors of ASHRAE.

## 2 See also

- HVAC
- Joule
- Ton

## 3 References

- [1] Marks' Standard handbook for Mechanical Engineers, 8th Ed., McGraw Hill, p. 19–3
- [2] “NIST Guide to the SI”. National Institute of Standards and Technology. Retrieved 2007-05-18.
- [3] Rodengen 1997, pp. 18-36

## 4 Bibliography

- Rodengen, Jeffrey L (1997), *The Legend of York International*, Write Stuff Syndicate Inc, ISBN 9780945903178, LCCN 95062225, OCLC 37507402.

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### 5.1 Text

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