



What is the difference between Nm³ and Sm³? (Normalized & Standardized)

Unfortunately neither Nm³ (normal cubic meter) or Sm³ (standard cubic meter) are complete definitions in themselves. It is essential to know the standard reference conditions of temperature and pressure to define the gas volume since there are various debates about what normal and standard should be.

Most commonly used reference conditions are:

Normal cubic meter (Nm³) - Temperature: 0 °C, Pressure: 1.01325 barA

Standard cubic meter (Sm³) - Temperature: 15 °C, Pressure: 1.01325 barA

barA: absolute pressure

How do I calculate Nm³ and Sm³ and what is the conversion rate?

The volume of gases changes with temperature and pressure, therefore these parameters are also part of the conversion equation.

The conversion from Sm³ to Nm³:

$$V1/V2 = (P2 \times T1) / (P1 \times T2)$$

$$V1/V2 = (288.16 \times 1.013) / (273.16 \times 1.013) = 1.05491287$$

Temperature is entered in K; 273.16 is absolute zero

Interpretation: 1Nm³ is 5,49% larger than Sm³, 1Nm³>1Sm³

Some of our competitors use 15°C and 981mBar as reference conditions for standard cubic meter. The calculation is following:

$$V1/V2 = (288.16 \times 1.013) / (273.16 \times 0.981) = 1.08932389$$

Interpretation: 1Nm³ is 8,9% larger than Sm³. It also means the stated capacity of the generator stated in Nm³/h is 8.9% larger than same capacity defined in Sm³/h.

Assumption: It is essential to consider these facts when projecting the gas generating system or when actually making decision to purchase certain model because you might be actually buying less than you actually think you are.

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