

Cryogenics

Source: TH

Cryogenics is defined as the science of materials at temperatures below negative 153 degrees Celsius. It deals with extremely **low temperatures where common gases like hydrogen, nitrogen, and air become liquid.**

- Cryogenics, typically uses helium and nitrogen as the cryogenic fluid, the thing that cools a substance.
 - Nitrogen has a boiling point of negative 196 degrees C and helium has a negative
 269 degrees C. Below these temperatures they are liquid.
 - These liquids need to be stored in vacuum flasks or they could leak and damage their surroundings.

Use of Cryogenics:

- For example, hydrogen is one of the best rocket fuels but it can only be used as a liquid, so it needs to be cryogenically cooled.
- Cryogenic hydrogen and cryogenic oxygen power the third stage of <u>ISRO's LVM-3 rocket</u>.
- Magnetic resonance imaging (MRI) devices used in medical diagnostics use cryogenic fluids to cool their magnets.

 $I\!L$



Read more: 3D Printed Cryogenic Engine and Space Sector Privatisation

PDF Refernece URL: https://www.drishtiias.com/printpdf/cryogenics