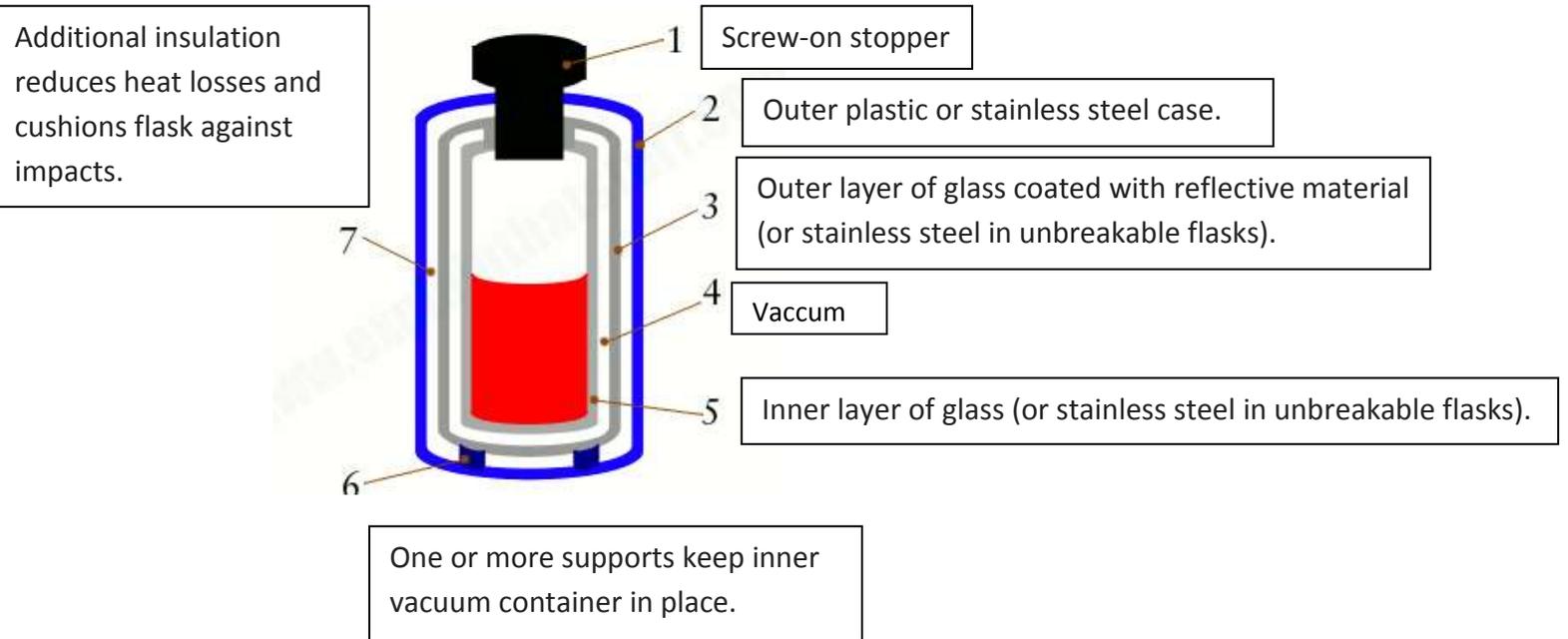


Vacuum Flask or Thermos is an insulating storage vessel that greatly lengthens the time over which its contents remain hotter or cooler than the flask's surroundings.

Instead of containing any kind of heating or cooling element, so as to keep hot things hot and cold things cold a thermos is designed to in a such a way that it minimizes transfer of heat by not allowing heat to escape or enter easily.

Heat can be transferred through the air. To keep heat from escaping, you need insulation. The best insulator possible is a vacuum, where there is no air.

Structure & Working



(A)The thermos consists of two flasks, placed one within the other and joined at the neck. The gap between the two flasks is partially evacuated of air during its construction and this creates a near-vacuum which significantly reduces heat transfer by conduction or convection

(B).The outer casing of a thermos flask is made up of plastic or metal. Plastic, being a poor conductor of heat, acts as an insulator preventing the heat loss through conduction.

(C). Inside it, is a double-walled container made of glass or stainless steel. Both the walls are polished so they are shiny. The space between the two walls is a vacuum; this prevents heat loss through convection since there are no air particles to carry out the transfer of heat. The shiny surface of the walls also prevents heat loss through radiation.

D). These few, simple features prevent virtually all heat transfer by either conduction, convection, or radiation. The vacuum prevents conduction and convection of air. The tight stopper prevents air from entering or leaving the flask, so convection isn't possible either. What about radiation? When radiation tries to leave the hot liquid, the reflective lining of the inner chamber reflects it straight back in again. There's virtually no way heat can escape from a vacuum flask and a hot drink stored inside will stay steaming hot for several hours.

(E) Similar is the case for cold drinks. Heat is unable to penetrate into the flask from outside environment easily. The sealed stopper stops heat getting in by convection; the vacuum stops conduction, and the metal lining between the outer case and the inner chamber stops heat radiating in either.

(F). Although some heat still escapes (or gets in) eventually, mostly through the stopper, but flasks like this are still a vast improvement on virtually every other kind of insulated drinks container.