



Science Virtual Learning

MPI Physics 240

Thermodynamics 5: Specific Heat

April 28, 2020



Lesson: MPI Thermodynamics 5 - Specific Heat
April 28, 2020

Objective: To understand heat, and how it changes the temperature of objects

This video discusses the nature of heat, and how it changes the temperature of objects

<https://youtu.be/dEI7jUOfG5g>

Video: Specific Heat



TABLE 19.1 Specific Heats of Some Substances at 25°C and Atmospheric Pressure

Substance	Specific Heat (J/kg · °C)	Substance	Specific Heat (J/kg · °C)
<i>Elemental solids</i>		<i>Other solids</i>	
Aluminum	900	Brass	380
Beryllium	1 830	Glass	837
Cadmium	230	Ice (−5°C)	2 090
Copper	387	Marble	860
Germanium	322	Wood	1 700
Gold	129	<i>Liquids</i>	
Iron	448	Alcohol (ethyl)	2 400
Lead	128	Mercury	140
Silicon	703	Water (15°C)	4 186
Silver	234	<i>Gas</i>	
		Steam (100°C)	2 010

Note: To convert values to units of cal/g · °C, divide by 4 186.

Specific Heat Table

1. An 8-oz (0.226 kg) cup of water is heated up in a microwave from 20.0°C to 92.0°C . How much heat did the water absorb?
2. A lab experiment shows that when 10000 J of heat are removed from a 2.00 kg block of metal, its temperature lowers by 12.9°C . What is the specific heat of the metal?



Video: <https://youtu.be/4Fd66h2p6mA>

Specific Heat - Examples



Homework

- Try to solve the problems yourself, then watch the solution video:
- <https://youtu.be/ov1Uy2fKMsw>

1. When 4280 J of heat are added to a chunk of ice, its temperature increases by 8.40°C . What is the mass of the ice?

2. A 0.750-kg chunk of hot brass is placed in a 0.222-kg container of water to cool. The temperature of the brass drops by 244°C .

a) How much heat flows out of the brass?

b) If all of that heat flows into the water, how much does its temperature increase?



That's it!

