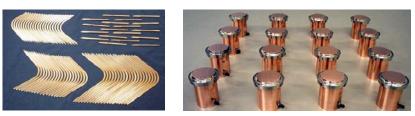


COPPER/WATER HEAT PIPES

Copper/water heat pipes are made of copper, use water as the working fluid, and typically operate in the temperature range of 20 to 150°C. ACT manufactures copper/water heat pipes into basic geometries: Tubular Heat Pipes and Planar Heat Pipes. The tubular heat pipes typically have outer diameters from 1/16" (1.5mm) to 1.5" (38mm). Custom diameters can be manufactured per customer requirements. The planar heat pipes are also called vapor chambers which are used as heat spreaders. Below are photos of examples of copper/water heat pipes manufactured at ACT.

Copper/water heat pipe are often combined with other components to form heat transfer assemblies. Some examples are shown below, including: Heat pipe Heat Sinks for electronics and energy conversion device cooling, Embedded Heat Pipe Heat



Examples of Tubular Copper/Water Heat Pipes Manufactured at ACT

Spreaders for electronics cooling, and Heat Pipe Heat Exchangers for electronics enclosure cooling, waste heat recovery and chemical process temperature control.



Heat Pipe Assembly Examples (from left to right): Heat Pipe Heat Sink, Embedded Heat Pipe Heat Spreader, and Heat pipe Heat Exchanger

Current custom designs and options include:

- Outer Diameter (OD): From 1/16" (1.5mm) to 1.5" (38mm)
- Cross section geometry: Round, rectangular or flattened
- Length: Any, depending on application
- Length geometry: Straight or multiple bends (certain bend radius limits apply)
- Bonding of heat pipes to assembly: Mechanical, epoxy or soldering
- Heat pipe surface coating: Nickel, tin

All of ACT's copper/water heat pipes are designed to survive numerous freeze/thaw cycles without any degradation as required in many applications.