

3 Semiconductor Manufacturing Process

CHEMICAL HEATER

In-line type chemical heater free from contamination caused by the elution of metal ions.

KELK Chemical Heater is an in-line resistance heater that accurately controls the temperature within a short period of time. It is used for high-temperature heating of chemicals for RCA cleaning and wet etching. Since only fluorocarbon resin and high-purity vitreous carbon are used for the area in contact with the liquids, this product is free from contamination by impurities and is compatible with acid and alkaline chemicals as well as organic solvents.

● Features

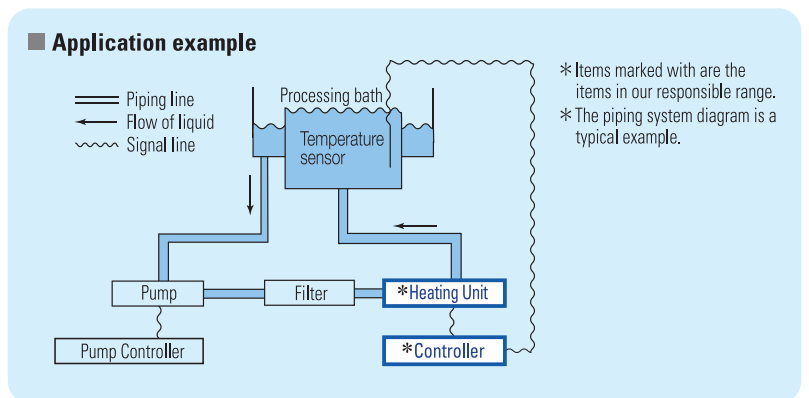
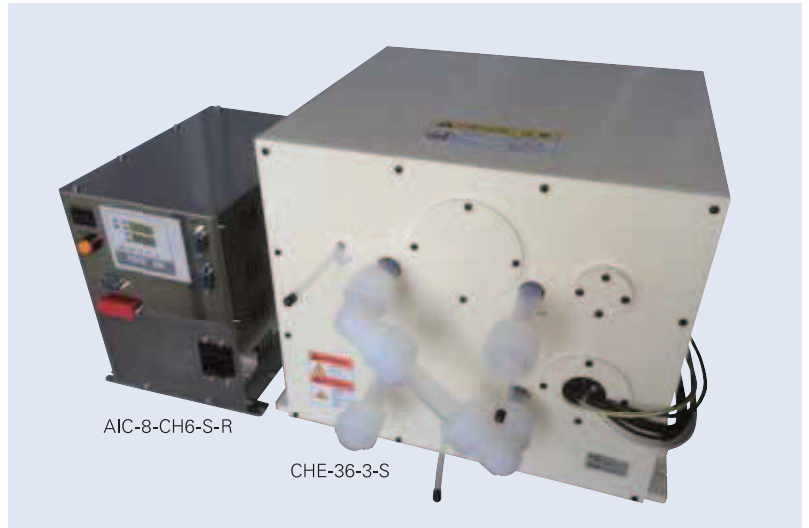
1. The use of high-purity vitreous carbon in the heat-transfer element that is in contact with the liquids eliminates any possibility of contamination caused by the elution of metal ions. Consequently, no film is necessary for protecting the surface, and thus the heater's performance does not deteriorate due to the film peeling off. Our unique construction doesn't use rubber O-rings making the heater compatible with acids and alkaline chemicals as well as organic solvents. (Patent pending)
2. The system incorporates a leakage sensor to detect chemical leakages and a temperature switch to detect abnormal temperatures. You can operate this heater knowing that your safety is assured.

● Applications

1. Controlling the temperatures of chemicals used in the semiconductor manufacturing wet process
 - Polymer removal solution
 - RCA cleaning solution
 - Etching solution
 - Development solution in the lithographic process
2. Plating and various surface treatment solutions, etc. [Applicable solutions]
 - Acid chemicals (hydrofluoric acid, nitric acid, etc.)
 - Alkaline chemicals (NaOH, KOH, etc.)
 - Organic chemicals

(Note 1) If you plan on using this heater for organic chemicals, please consult with us before ordering.

(Note 2) This heater cannot be used for chemicals containing ozone.



● Specifications

Model	Heating unit	CHE-36-3-S
	Controller	AIC-8-CH6-S-R
Heating method	Heating with resistant heater cartridge heater Direct circulation via in-line piping with the treatment tank	
Temperature setting range	25°C to 80°C (Varies depending on conditions, such as usage environment and type of chemicals)	
Temperature control accuracy	±0.5°C (For the set temperature range from 50°C to 80°C) (Note that this applies when the optimum PID setting has been made under the environmental conditions of constant usage)	
Heater power	6kW	
Temperature control method	PID control, with auto-tuning function	
Temperature setting method	Setting by using the UP/DOWN keys	
Temperature display method	Digital four-digit read-out (min 0.1°C)	
Type of material used in the area that comes in contact with liquid in the circulation system	Fluorocarbon resin High-purity vitreous carbon used for the heat transfer surface that comes in contact with the liquid	
Maximum allowable liquid pressure of circulation system	0.3MPa	
Minimum flow rate of circulation system ※1	15 (ℓ/min) or more	
Safety functions	14 self-diagnosis including overheating and leak detection Power off, alarm, error indication or signal output in case of error detection	
External communication function	RS-232C	
Overall dimension (mm) ※2	Heating unit	W380×D350×H325 Approx. 38kg
	Controller	W175×D278×H250 Approx. 9.0kg
Rated voltage [V]	AC200V Single phase 30A	

※1 Circulation flow should be stipulated flow rate or more. ※2 Not including the dimensions of any projections.