

# ACE INSTATHERM®

## INSTRUCTION SHEET

### IMPORTANT (Read before using all units)

Do not exceed the rated current marked on each unit. Units are not designed for direct use of line voltage. Voltage reducing controllers are available from ACE to match the maximum rated voltage for the vessel.

As the film gets hotter its resistance increases and a fall in current will be observed; if the voltage is increased to compensate, be sure to reduce the setting to the value of the "Max. Voltage" shown on the vessel before restarting a cold film. Switching ON to a high previous setting may result in over-load.

Do not exceed the stated voltage for the unit. Auto-transformers are the most economical way to manually control these heaters.

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If you should decide to use an auto-transformer directly with one of the units, be sure it is plugged into the mains so that the "hot" line and ground line are matched; otherwise, you can receive a 120V shock by touching earth to ground, such as a water pipe, even though the pointer reads only one (1) volt. The ACE Powerstats, No. 12081, are made especially for this purpose, and will indicate when hazardous voltages are present at the output. Turn voltage up slowly to approach the temperature needed.

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For baths, sand, Wood's metal or variations are sometimes used in place of oil as the heat exchange medium. Most of these metals shrink when solidifying, but some expand and some shrink and then expand. The force of expansion can break the vessel. Also, the liquid metal is conductive and usually hot enough to damage the elastomer and adhere to it, making removal very difficult; its use is not recommended.

The practice of using aluminum foil as a blanket to cover the immersed vessel to protect it from drafts and light can create problems. Some heat exchange liquids absorb mois-

ture when cold, and when reheated release the moisture to condense on the foil. If the foil is externally placed over the Instatherm vessel, the water may run down and penetrate the glass yarn of the cloth to form a shock hazard because the elastomer does not cover all of the fibers. If the foil is placed within the vessel, water droplets may run into hot oil, etc., and vaporize explosively spattering hot oil.

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Do not operate at full rated power when dry, or when less than half of the heating area is exposed. If the exposed area is dry, super-heating is present and the power should be reduced or the unit might be damaged. In tests in our laboratory, ethylene glycol, b.p. 196°C, was boiled for 45 days continuously without damage; boiling glycerine at approximately 293°C destroyed sections of the elastomer in six (6) hours.

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Do not empty and refill a hot vessel with cold liquid. Most vessels will tolerate a thermal temperature gradient across the wall of 100°C. Thus liquid at 0°C could be poured into a vessel where the exterior wall was 100°C; but the exterior is often 200°C or more when operating or immediately after power is turned off. Larger vessels, especially cylindrical ones, are likely to fall into this category.

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Stirring of oils is necessary for good temperature control. Use clip provided with oil baths to hold thermometer and/or thermocouple probe.

See back of sheet for cleaning and chemical resistance and maximum ratings of Instatherm Units.

### CONTROLLERS

ACE strongly recommends using J-Kem or Ace Controllers not only for Instatherm but for heaters in general for a number of reasons. Our controllers are manufactured using circuit techniques that have proven to provide maximum performance, reliability, ruggedness and safety. This includes "ease of operation" for the operator in controlling all size heaters. For questions, phone technical support at 1-800-223-4524.

## Cleaning and Chemical Resistance

The synthetic elastomer coating is resistant to most chemicals for short periods (½ hour). It will swell slightly in Ketones and aromatics; strong bases (pH 10.0) will attack it slowly as will strong (concentrated) oxidizing acids.

The contact bus contains metallic silver and is the most reactive.

The units will withstand cleaning in a standard washing machine for glassware, however, be sure rinsing and drying are thorough before re-using to avoid electrolyte corrosion.

Remove polymers and dried-on solids by refluxing a solvent first.

The best heat exchange fluids are the silicones and high boiling esters. Some halocarbons are also suitable. ACE supplies two bath oils, Catalog Nos. 14115-05 and 14115-12. The former is water white and suitable for temperatures to 180°C; the latter is amber in color from added inhibitors and suitable for temperatures to 230°C

### MAXIMUM RATINGS OF INSTATHERM UNITS

Cat. No.	Cap. mL or Size	Max. Volts	Max. Amps	Cat. No.	Capacity or Size	Max. Volts	Max. Amps
<b>Burlitch Column</b>				<b>Oil Baths</b>			
7818-34		40	6	9601-08	160	20	5
<b>Beaker, Griffin</b>				9601-12	340	40	6
9605-40	250	20	7	9601-14	700	40	8
9605-42	400	40	6	9601-16	1200	120	5
9605-44	600	40	8	9601-18	2600	120	10
<b>Desiccator</b>				9601-23	15,000	120	14
9625-04		40	10	9602-07	160	20	5
<b>Drying Apparatus</b>				9602-11	340	40	6
9632-04		40	3	9602-13	700	40	8
<b>Flask, Single Neck</b>				9602-15	1200	120	5
9635-158	500	40	6	9602-17	2600	120	10
9635-160	1000	40	10	9603-02	10 x 10 cm	40	10
<b>Flask, Two Necks</b>				9603-04	15 x 15 cm	120	8
9637-136	250	20	8	9603-06	19 x 18 cm	120	10
9637-138	500	40	6	<b>Reaction Flask/Heads</b>			
9637-170	3000	120	10	9655-33	24/40-24/40	40	8
<b>Flask, Three Necks</b>				9655-37	29/42-24/40	40	8
9642-127	250	20	8	9655-39	45/50-24/40	40	8
9642-129	500	40	7				
9642-131	1000	40	10				



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