



# TECHNOTE

## ELECTRIC WATER HEATER INSULATING WRAPS AND SAFETY

TN1303

In the past, residents have been advised to fully insulate their water heaters to minimize standby heat loss. In many parts of Washington, water heater insulation kits have been provided free of charge by utilities. Recently, though, there have been reports that the use of insulating blankets may cause overheating, premature failure of the tank and/or electrical components, and can in some cases void the manufacturer's warranty. There is particular concern voiced by Underwriter Laboratories with fire and electrical risks due to overheated wiring. The following information has been gathered from companies manufacturing electric storage type water heaters and addresses the above concerns (a list of respondents is provided at the end).

Most electric water heater companies do not as a rule recommend wrapping heaters with insulation. However, application of insulating blankets will not automatically void a water heater's warranty. Warranties will not cover premature overheating failures due to added insulation, nor will they cover rusting or corrosion of parts caused by trapped moisture in the insulating blanket.

Concerns about safety of the wrapped tank were addressed in a study undertaken by the Bonneville Power Administration. It was found that water heater insulation wraps may induce overheating in service wiring under extreme circumstances such as high water temperatures and heavy insulation over wiring boxes and access panels. However, overheating can be effectively prevented by using a small cutout in the wrap at the service-wiring entry box and reducing the tank temperature to 140°F or lower.

In recognition of the wide use of insulating blankets, many companies give the following cautions regarding added insulation:

- \* Do not cover access panels leading to thermostats, heating elements, junction box, external wiring.
- \* Do not cover the temperature pressure relief valve.
- \* Do not cover operating instructions, and any other safety installation related warning labels and materials affixed to the water heater.

- \* These same labels are applied to water heaters by prescription of American National Standards and federal laws pertaining to water heaters and must remain affixed to the water heater for ready reference by the user. Do not attempt to remove them and place them on the external insulation blanket.

### **What Do We Tell Consumers?**

Water heater insulation blankets are widely acknowledged as an effective way to reduce tank heat loss. Reductions of 500 to 600 kWh can be expected per year. Consumers who want to apply wraps to their tanks should be advised to set tank thermostats at or below 140°F prior to insulating. Lower temperatures are recommended for most households as they will further reduce water heating costs and minimize the risk of scalding. In fact, Washington House Bill 177 (effective January 1985) requires that water heater manufacturers and owners of rental property in Washington State set water heaters no higher than 120°F. Consumers who need to replace an old water heater are advised to purchase an energy efficient replacement with an insulation value of R-16 to R-20. Information on standby loss and insulation value is available in the manufacturer's specifications.

The following Electric Water Heater companies responded with information:

- \* A.O. Smith Co.; Edwin A. Nordstrom, Vice President-Engineering
- \* American Appliance Mfg. Corp.; Mike Deneau, Chief Engineer; Henry Jack Moore, Vice President-Engineering
- \* Bradford-White Corp.; M .J. Carfagno, Manager-Customer Services
- \* Dayton Electric Mfg. Co.; J.A. Holt, Technical Representative
- \* Ford Products Corp.; Lawrence C. Hahn, Warranty Administrator
- \* Rheem Water Heater Division; Paul G. Daugirda, Vice President Product Development and Research Engineering
- \* State Industries
- \* Vaughn Mfg. Corp.; Foster A. Cohoon, Sales Manager

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