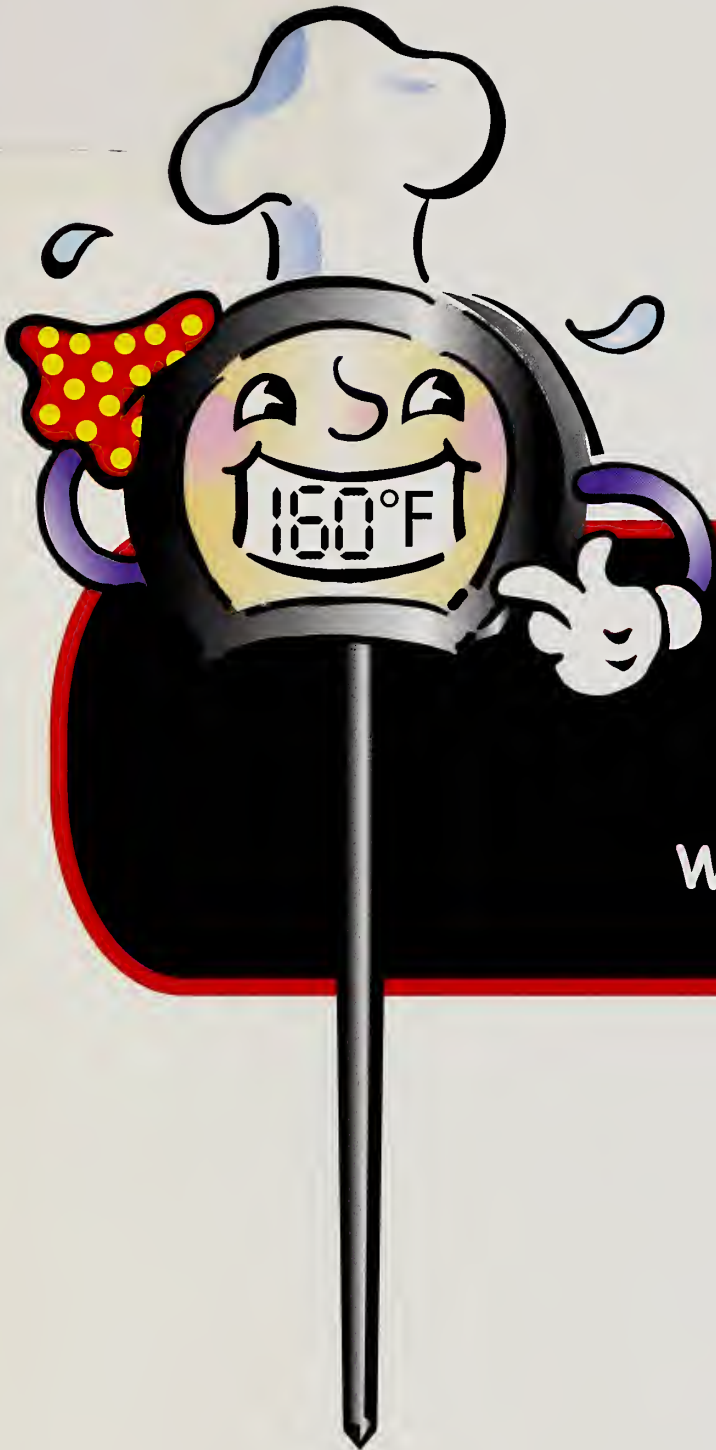


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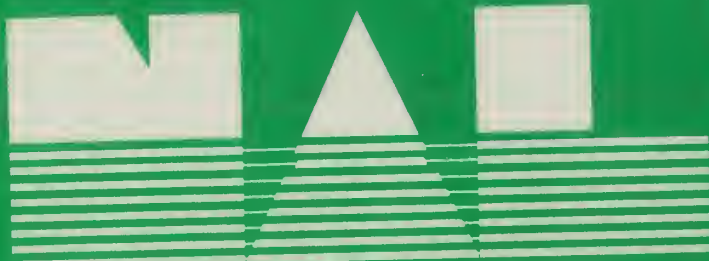
Thermy™ says:

"It's Safe to Bite
When The Temperature is Right!"

Food Safety and Inspection Service
U.S. Department of Agriculture

A National Consumer Education Campaign
to Promote Food Thermometer Use

United States
Department of
Agriculture



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Hi everyone,

My name is **Thermy**[™] and I am here to tell you about a great new consumer education program to promote the use of food thermometers.

They say you can't always judge a book by its cover. Well, this is also true for cooked foods. You can't judge if your food is done by looking at its color. Color can be misleading. For instance, USDA research shows that one out of every four hamburgers turns brown in the middle before it is safely cooked. Using a food thermometer is the only way to tell that food has reached a high enough temperature to destroy harmful bacteria.

Also, research shows that less than half the population even owns a food thermometer. And only 3 percent use one when cooking foods like hamburgers at home. Boy, do I feel left out! Left out of meat, poultry, egg dishes, and other cooked foods. Well, things don't have to be that way. Not at all.

And why not? That's because I have developed the enclosed kit of materials to help you get to know me and how I can help ensure meals are cooked to safe internal temperatures. After all, you want to know why "It's Safe to Bite When the Temperature is Right!"

The kit is loaded with all kinds of helpful materials to help launch my new campaign. There's a feature article for newspapers, a helpful brochure, fact sheets, tips for supermarkets and food safety educators, and artwork. Speaking of the artwork, don't you just love how I look!

I'm not only high-tech, but I am easy to use. And I should be used all year-round! Every time people prepare hamburgers, poultry, roasts, chops, egg casseroles, meat loaves, and combination dishes, they should think of me! That's how you can help.

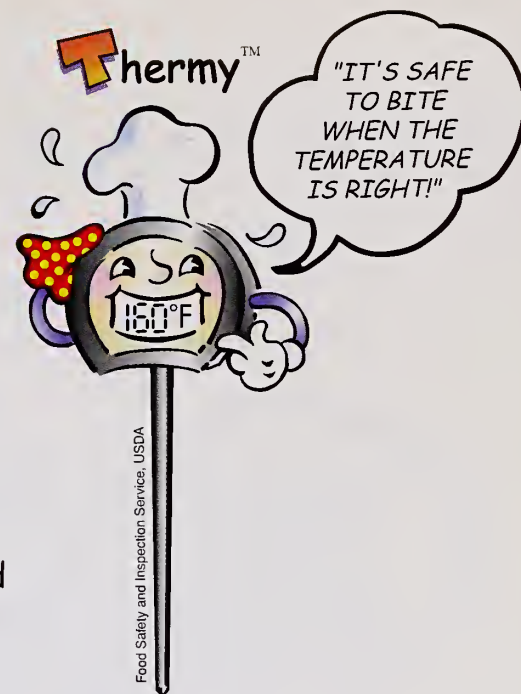
Do me a favor. Please take a little time to read through the enclosed materials. Then think about how you can help me educate consumers—to use me more often if they already own me ... or to buy me if they don't already own a food thermometer. Boy, I just can't wait to get into more kitchens!!!

If you have any questions about how you can help, just call the Food Safety Education Staff at the Food Safety and Inspection Service, USDA, at 202-720-7943. Also visit my Web page at www.fsis.usda.gov/thermy.

Hope to see you soon—EVERYWHERE.

Your friend,

Thermy[™]



Th

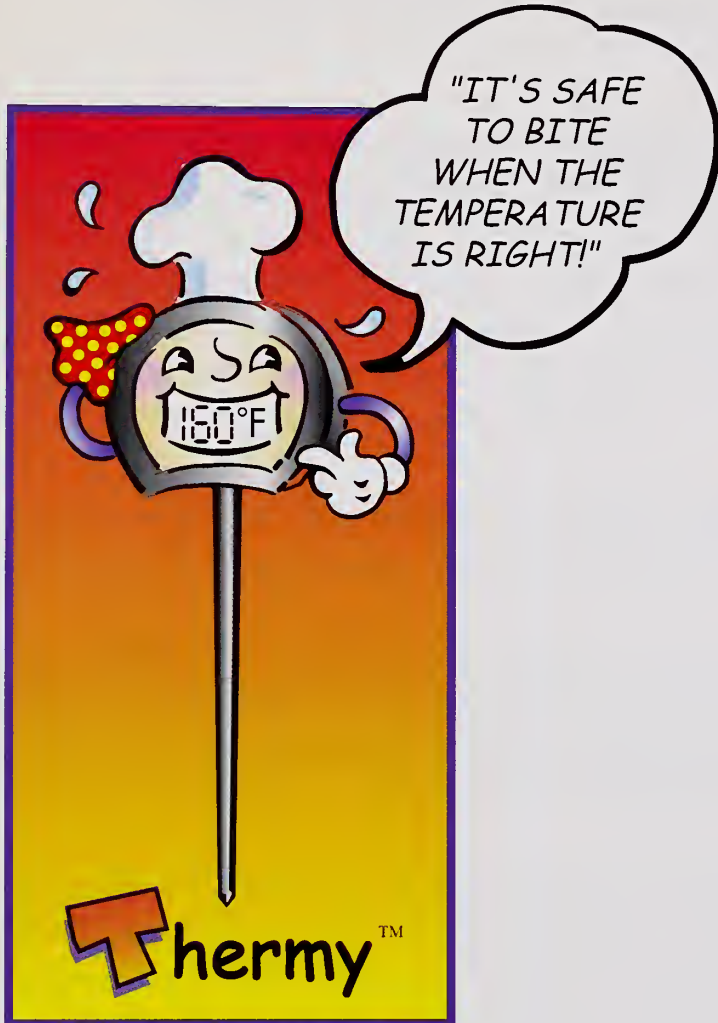
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Thermy™

Thermy™ is the messenger of a national consumer education campaign designed to promote the use of food thermometers, developed by the Food Safety and Inspection Service (FSIS), U.S. Department of Agriculture (USDA).

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Food Safety and Inspection Service, USDA



Thermy™

"IT'S SAFE TO BITE WHEN THE TEMPERATURE IS RIGHT!"

Temperature Rules!

- 145 °F** Beef, lamb & veal steaks & roasts, medium rare (medium—160 °F)
- 160 °F** Ground beef, pork, veal & lamb
Pork chops, ribs & roasts
Egg dishes
- 165 °F** Ground turkey & chicken
Stuffing & casseroles
Leftovers
- 170 °F** Chicken & turkey breasts
- 180 °F** Chicken & turkey whole bird, legs, thighs & wings

FSIS
Food Safety and Inspection Service
U.S. Department of Agriculture
www.fsis.usda.gov

FSIS Meat and Poultry Hotline
1-800-535-4555 • TTY: 1-800-256-7072
E-mail: mph hotline.fsis@usda.gov

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www.fsis.usda.gov/thermy



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The Thermy™ character and message have been consumer-tested. The national educational message is: "It's Safe to Bite When the Temperature is Right!"

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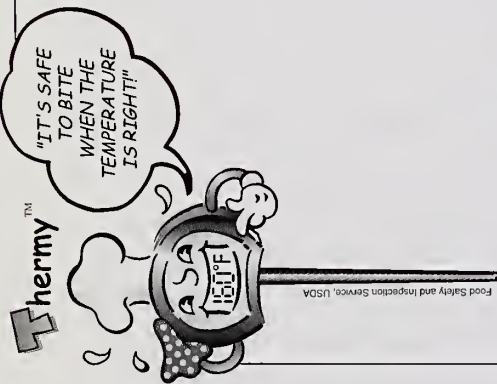
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- Use of the theme, messages, or art with commercial or trade names or on products does not imply approval or constitute endorsement.

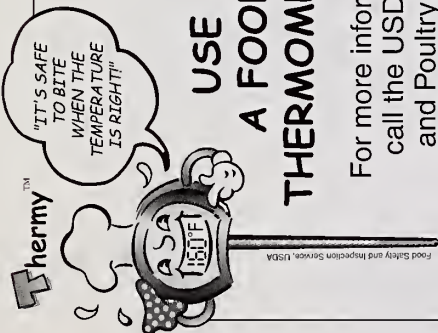


USE A FOOD THERMOMETER

It's the only way to tell if your food has reached a high enough temperature to destroy harmful bacteria.

For more information, call the USDA Meat and Poultry Hotline
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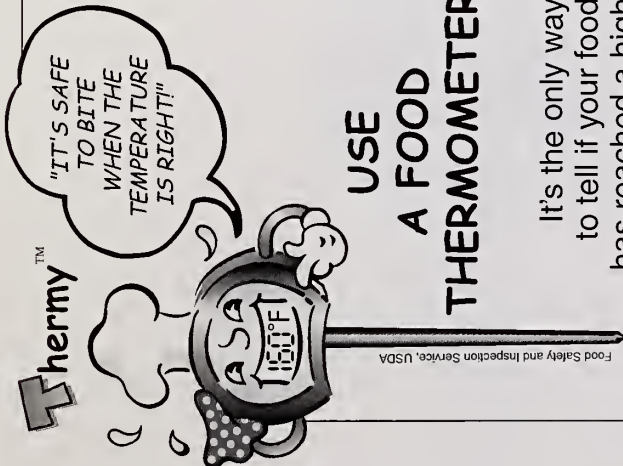
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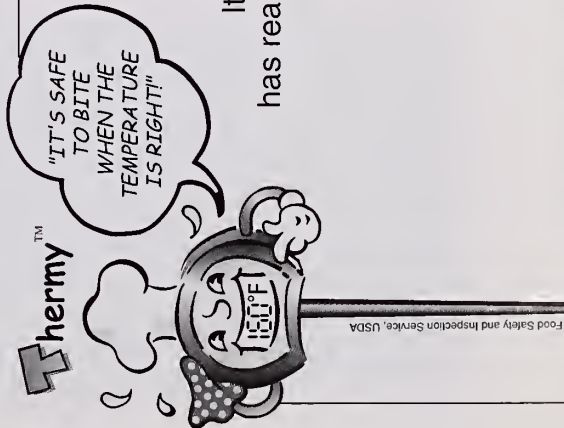


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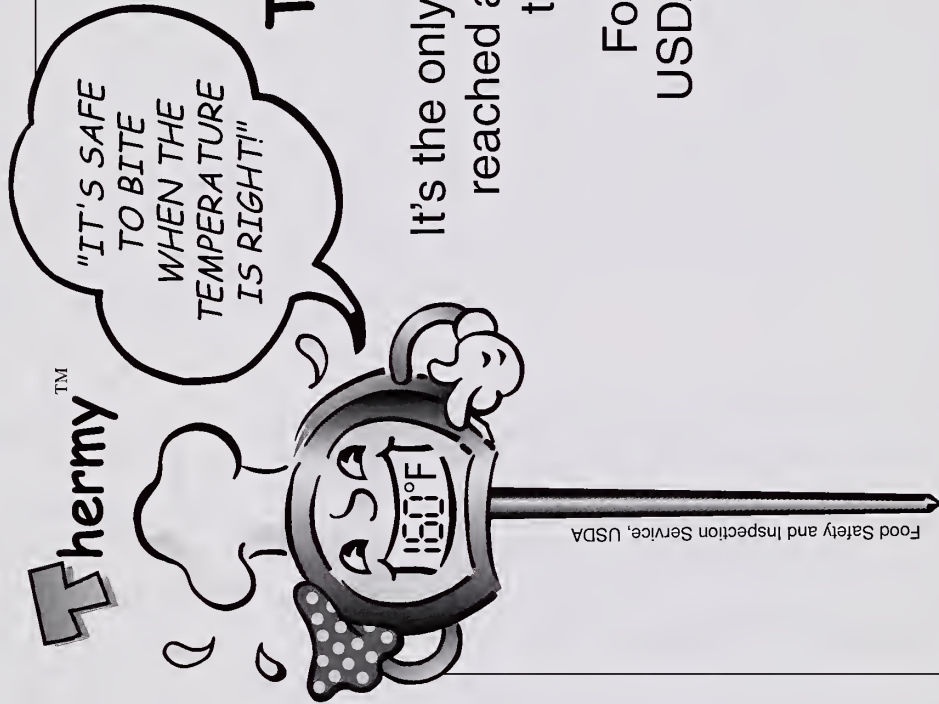


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USDA does not endorse any products, services, or organizations.

Usage Guidelines

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- There are no color or size restrictions for the Thermy™ art. However, suggested font and 4-color process (CMYK) are available for your use.
- No other copy or symbol may be printed over the Thermy™ art.
- Thermy™ art must never be modified, altered, or pieced apart in any way, unless specific permission has been granted by FSIS.
- Thermy™ art must display the correct safe internal temperature of the food, when used in connection with a specific food, as recommended to consumers by the FSIS. A list of safe internal temperatures for consumer use is attached.

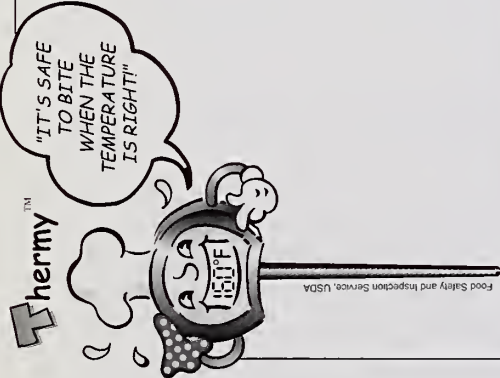
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If there are any questions of use, please contact the Food Safety Education Staff of the Food Safety and Inspection Service, USDA, at (202) 720-7943.

January 2000

TEMPERATURE RULES!

Food	°F
Ground Meat & Meat Mixtures	
Beef, Pork, Veal, Lamb	160
Turkey, Chicken	165
Fresh Beef, Veal, Lamb	
Medium Rare	145
Medium	160
Well Done	170
Poultry	
Chicken & Turkey, whole	180
Poultry breasts, roasts	170
Poultry thighs, wings, legs	180
Duck & Goose	180
Stuffing (cooked alone or in bird)	165
Fresh Pork	
Medium	160
Well Done	170
Ham	
Fresh (raw)	160
Pre-cooked (to reheat)	140
Eggs & Egg Dishes	
Eggs	Cook until yolk & white are firm
Egg dishes	160
Leftovers & Casseroles	
	165

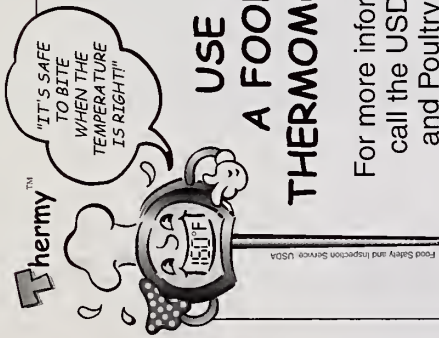


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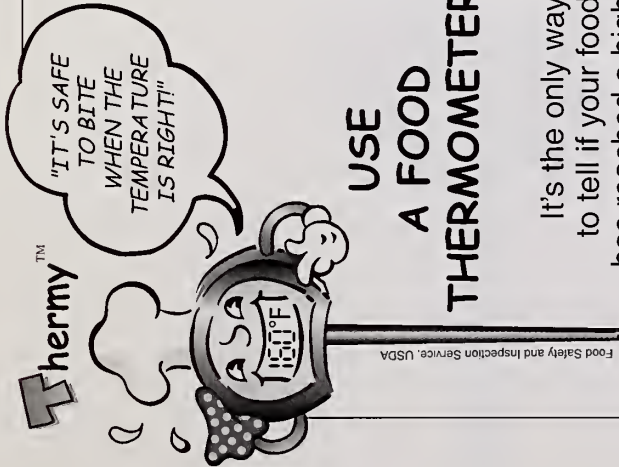
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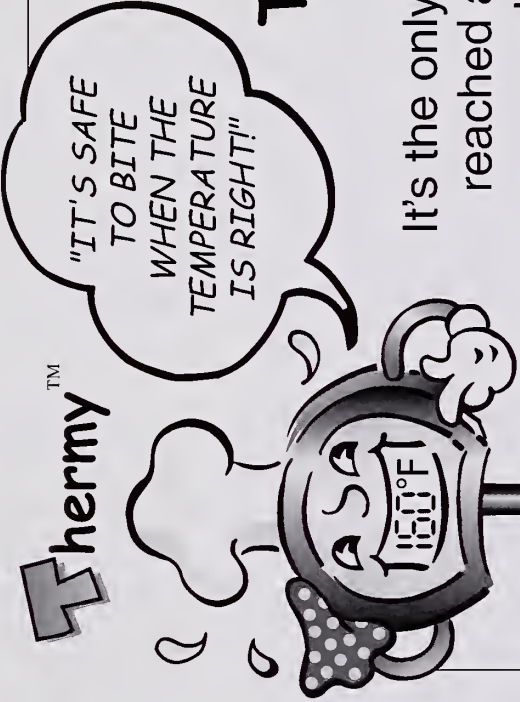


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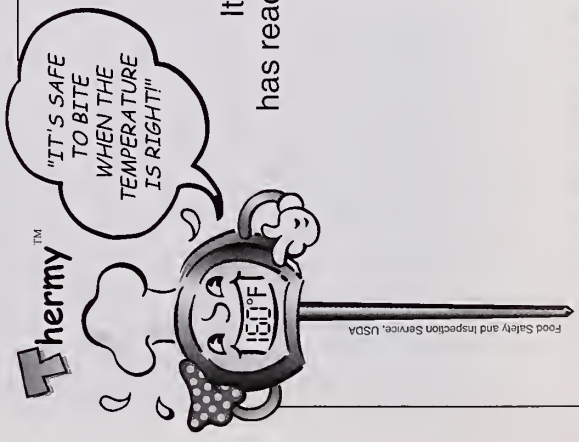


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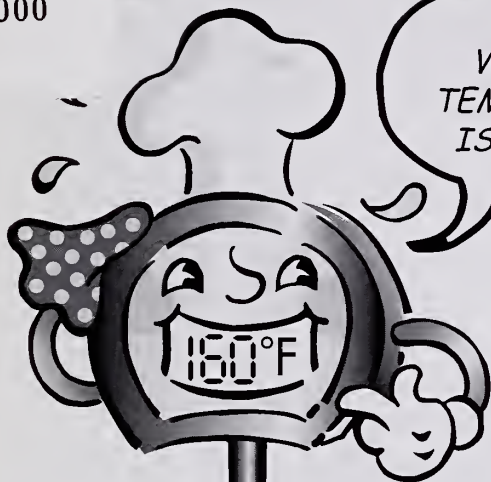
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 **Thermy**™

"IT'S SAFE
TO BITE
WHEN THE
TEMPERATURE
IS RIGHT!"



Food Safety and Inspection Service, USDA

Use A Food Thermometer

**Safe Temperature
Chart Inside!**

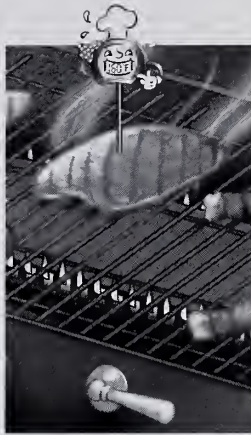


United States Department of Agriculture
Food Safety and Inspection Service

WHY USE A FOOD THERMOMETER?

"I want to keep my family safe."

"I used to overcook my food. Now my food is juicier – not dry as a bone."



People all over the country are taking Thermy's™ advice. They're using a food thermometer to check the temperature of everyday foods — like hamburgers, pork chops, and chicken breasts.

Most people think they know when food is "done" just by "eyeballing it." They look at it and trust their experience.

Experience is good, but it sometimes can be misleading. For instance, cooking by color is definitely misleading. Meat color — pink or brown — can fool you!

How do you know when your hamburger is cooked? Because it's brown inside?

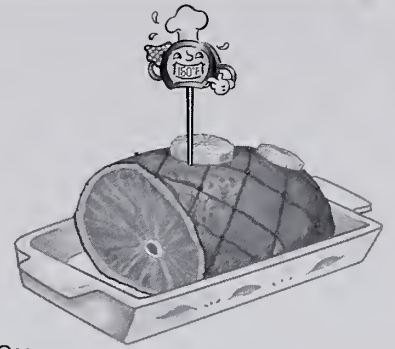
Think about this ... 1 out of every 4 hamburgers turns brown in the middle BEFORE it has reached a safe internal temperature, according to recent USDA research.



**Use a food thermometer.
Keep your family safe.
Be a better cook.**

DIGITAL, DIAL, & DISPOSABLE!

Thermometers are turning up everywhere in today's kitchens in all shapes and sizes — digital, instant-reads, probes for the oven and microwave, disposable indicators and sensor sticks, pop-ups, and even barbecue forks. They're high-tech and easy to use.



Some thermometers are meant to stay in the food while it's cooking; others are not. Some are ideal for checking thin foods, like the digital. Others, like the large-dial thermometer many people use, are really meant for large roasts and whole chickens and turkeys.

Choose and use the one that is right for you!



WHY IS IT IMPORTANT?

These are the facts!

- Millions of people get sick from dangerous bacteria in food every year.
- Public health data in 2000 show that there are more than 5 times the number of dangerous bacteria in our food than we were aware of in 1942.
- Many people don't link their illness to foodborne bacteria. They think they have a case of the flu.
- You can become sick anytime from 20 minutes to 6 weeks after eating food with some types of harmful bacteria.
- For some people who are at high risk — young children, pregnant women, people over 65, and people with chronic illnesses — getting sick from foodborne bacteria can cause serious health problems.

IT'S SAFE TO BITE WHEN THE TEMPERATURE IS RIGHT!

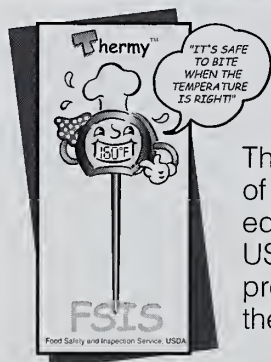
Using a food thermometer is the only sure way of knowing if your food has reached a high enough temperature to destroy foodborne bacteria.



Is it "done" yet?
Where is your food thermometer?

TEMPERATURE RULES!

Food	°F
Ground Meat & Meat Mixtures	
Beef, Pork, Veal, Lamb	160
Turkey, Chicken	165
Fresh Beef, Veal, Lamb	
Medium Rare	145
Medium	160
Well Done	170
Poultry	
Chicken & Turkey, whole	180
Poultry breasts, roast	170
Poultry thighs, wings, legs	180
Duck & Goose	180
Stuffing (cooked alone or in bird)	165
Fresh Pork	
Medium	160
Well Done	170
Ham	
Fresh (raw)	160
Pre-cooked (to reheat)	140
Eggs & Egg Dishes	
Eggs	Cook until yolk & white are firm
Egg dishes	160
Leftovers & Casseroles	
	165



Thermy™ is the messenger of a national consumer education campaign of the USDA/FSIS designed to promote the use of food thermometers.

www.fsis.usda.gov/thermy

For more information,
call USDA's Meat and Poultry Hotline at
1-800-535-4555
(TTY: 1-800-256-7072)

THERMY™ FIGHTS BAC!

Proper cooking is one of the four key steps for fighting BAC — bacteria that can be found in food. Be a BAC-fighter.

Fight BAC™ is a food safety education campaign of the Partnership for Food Safety Education. For more information, check the web site:
www.fightbac.org



Food Safety and Inspection Service
Food Safety Education Staff

April 2000

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Use A Food Thermometer

Thermy™



"IT'S SAFE
TO BITE
WHEN THE
TEMPERATURE
IS RIGHT!"

Temperature Rules!

- 145 °F** • Beef, lamb & veal steaks & roasts, medium rare (medium—160 °F)
- 160 °F** • Hamburger, meatloaf, pork, veal & lamb
 - Pork chops, ribs & roasts
 - Egg dishes
- 165 °F** • Ground turkey & chicken
 - Stuffing & casseroles
 - Leftovers
- 170 °F** • Chicken & turkey breasts
- 180 °F** • Chicken & turkey whole bird, legs, thighs & wings
 - Duck & goose

It's the only way to tell if your food has reached a high enough temperature to destroy harmful bacteria.

FSIS

Food Safety
and Inspection Service

U.S. Department of Agriculture

www.fsis.usda.gov/thermy

USDA Meat and Poultry Hotline
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E-mail: mphotonline.fsis@usda.gov

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Revised April 2000

Food Safety Education Staff
(202) 720-7943; FAX: (202) 720-1843

Kitchen Thermometers

One of the critical factors in controlling pathogens in food is controlling temperature. Disease-causing microorganisms such as bacteria, viruses, and parasites grow very slowly at low temperatures, multiply rapidly in mid-range temperatures, and are killed at high temperatures. For safety, perishable foods must be held at proper cold temperatures to inhibit bacterial growth or cooked to temperatures high enough to kill harmful microorganisms. It is essential to use a food thermometer when cooking meat, poultry, and egg products to prevent undercooking, and consequently, prevent foodborne illness.

Why Use a Food Thermometer?

Using a food thermometer is the only reliable way to ensure safety and to determine the “doneness” of meat, poultry, and egg products. To be safe, these foods must be cooked to an internal temperature high enough to destroy any harmful microorganisms that may be in the food.

“Doneness” refers to when a food is cooked to a desired state and indicates the sensory aspects of foods such as texture, appearance, and juiciness. Unlike the temperatures required for safety, these sensory aspects are subjective.

Color is Not a Reliable Indicator

Many food handlers believe that visible indicators, such as color changes, can be used to determine if foods are cooked to a point where pathogens are killed. However, recent research has shown that color and texture indicators are unreliable. For example, ground beef may turn brown before it reaches a temperature where pathogens are destroyed. A consumer preparing hamburger patties and using the brown color as an indicator of “doneness” is taking a chance that pathogenic

microorganisms may survive. A hamburger cooked to 160 °F, regardless of color, is safe.

Safety Versus Doneness

The temperature at which different pathogenic microorganisms are destroyed varies, as does the “doneness” temperature for different meat and poultry. A roast or steak that is not pierced in any way during processing or preparation and reaches an internal temperature of 145 °F is safe to eat. A consumer looking for a visual sign of “doneness” might continue cooking it until it is overcooked and dry. However, a consumer using a food thermometer to check for “doneness” can feel assured the food has reached a safe temperature and is not overcooked.

Likewise, poultry should reach at least 160 °F throughout for safety. However, at this temperature, the meat has not reached a traditional “done” texture and color. For this reason, most consumers prefer to cook it longer (to a higher temperature).

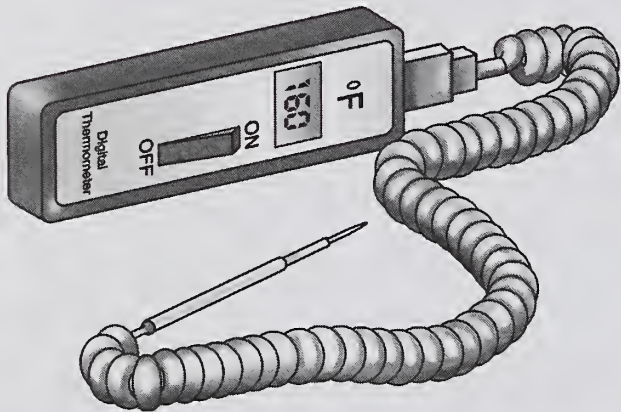
A food thermometer should also be used to ensure that cooked foods are held at safe temperatures until served — 40 °F or below, or 140 °F and above.

Types of Thermometers

Food thermometers come in several types and styles, and vary in level of technology and price.

Digital Food Thermometers

Thermocouple: Of all food thermometers, thermocouple thermometers reach and display the final temperature the fastest – within 2 to 5 seconds. The temperature is indicated on a digital display.



A thermocouple measures temperature at the junction of two fine wires located in the tip of the probe. Thermocouples used in scientific laboratories have very thin probes, similar to hypodermic needles, while others may have a thickness of 1/16 of an inch.

Since thermocouple thermometers respond so rapidly, the temperature can be quickly checked in a number of locations to ensure that the food is thoroughly cooked. This is especially useful for cooking large foods, such as roasts or turkeys, when checking the temperature in more than one place is advised. The thin probe of the thermocouple also enables it to accurately read the temperature of thin foods such as hamburger patties, pork chops, and chicken breasts.

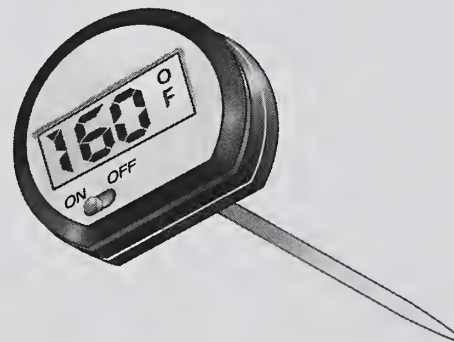
Thermocouples are not designed to remain in the food while it's cooking. They should be used near the end of the estimated cooking time to check for final cooking temperatures. To prevent overcooking, check the temperature before the food is expected to finish cooking.

Thermocouples can be calibrated for accuracy.

Thermistors: Thermistor-style food thermometers use a resistor (a ceramic semiconductor bonded in the tip with temperature-sensitive epoxy) to measure temperature. The thickness of the probe is approximately 1/8 of an inch and takes roughly 10 seconds to register the temperature on the digital display. Since the semiconductor is in the tip, thermistors can measure temperature in thin foods, as well as thick foods. Because the center of a food is usually cooler than the outer surface, place the tip in the center of the thickest part of the food.

Thermistors are not designed to remain in the food while it's cooking. They should be used near the end of the estimated cooking time to check for final cooking temperatures. To prevent overcooking, check the temperature before the food is expected to finish cooking.

Not all thermistors can be calibrated. Check the manufacturer's instructions.



Oven Cord Thermometers: This food thermometer allows the cook to check the temperature of food in the oven without opening the oven door. A base unit with a digital screen is attached to a thermistor-type food thermometer probe by a long metal cord. The probe is inserted into the food, and the cord extends from the oven to the base unit. The base can be placed on the counter or attached to the stovetop or oven door by a magnet. The thermometer is programmed for the desired temperature and beeps when it is reached. While designed for use in ovens, these thermometers can also be used to check foods cooking on the stove. Oven cord thermometers cannot be calibrated.

Thermometer Fork Combination: This utensil combines a cooking fork with a food thermometer. A temperature-sensing device is embedded in one of the tines of the fork. There are several different brands and styles of thermometer forks on the market; some using thermocouples and some using thermistors. The food temperature is indicated on a digital display or by indicator lights on the handle within 2 to 10 seconds (depending on the type). These lights will tell if the food has reached rare, medium, well done, etc. Particularly useful for grilling, the thermometer fork will accurately measure the internal temperature of even the thinnest foods. The thermometer fork should be used to check the temperature of a food towards the end of the estimated cooking time. Thermometer forks are not designed to remain in a food while in the oven or on the grill. Thermometer forks cannot be calibrated.



Dial Food Thermometers

Bimetallic-coil Thermometers: These thermometers contain a coil in the probe made of two different metals that are bonded together. The two metals have different rates of expansion. The coil, which is connected to the temperature indicator, expands when heated. This food thermometer senses temperature from its tip and up the stem for 2 to 2 1/2 inches. The resulting temperature is an average of the temperatures along the sensing area. These food thermometers have a dial display and are available as “oven-safe” and “instant-read.”

- **“Oven-safe” Bimetallic-coil Thermometers:** This food thermometer is designed to remain in the food while it is cooking in the oven, and is generally used for large items such as a roast or turkey. This food thermometer is convenient because it constantly shows the temperature of the food while it is cooking. However, if not left in the food while cooking, they can take as long as 1 to 2 minutes to register the correct temperature.

The bimetal food thermometer can accurately measure the temperature of relatively thick foods (such as beef roasts) or deep foods (foods in a stockpot). Because the temperature-sensing coil on the stem is between 2 to 2 1/2 inches long and the stem is relatively thick, it is not appropriate to measure the temperature of any food less than 3 inches thick.

There is concern that because heat conducts along the stem’s metal surface faster than through the food, the area of the food in contact with the thermometer tip will be hotter than the area a short distance to the side (the “potato nail effect”). To remedy this, the temperature should be taken in a second, and even third area, to verify the temperature of the food. Each time the thermometer is inserted into the food, let the thermometer equilibrate (come to temperature) at least 1 minute before reading the temperature.

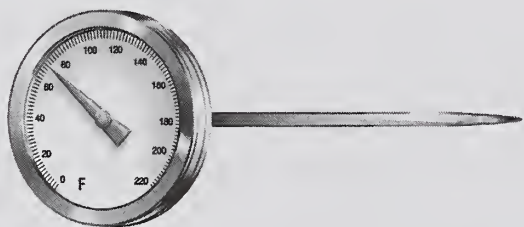
Some models can be calibrated. Check the manufacturer’s instructions.



• **“Instant Read” Bimetallic-coil**

Thermometers: This food thermometer quickly measures the temperature of a food in about 15 to 20 seconds. It is not designed to remain in the food while it is cooking in the oven, but should be used near the end of the estimated cooking time to check for final cooking temperatures. To prevent overcooking, check the temperature before the food is expected to finish cooking.

For accurate temperature measurement, the probe of the bimetallic-coil thermometer must be inserted the full length of the sensing area (usually 2 to 3 inches). If measuring the temperature of a thin food, such as a hamburger patty or boneless chicken breast, the probe should be inserted through the side of the food so that the entire sensing area is positioned through the center of the food. Some models can be calibrated. Check the manufacturer’s instructions.



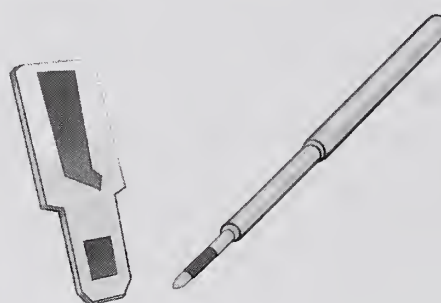
Single-Use Temperature Indicators

One of the most recent developments in the retail food market is the emergence of disposable temperature indicators. Several brands are available, and all make quick work of determining if a food has reached its final temperature. These temperature sensors are designed for specific temperature ranges, for example, 160 –170 °F. It is important that the sensors be used only with foods for which they are intended. Read the package directions to ensure that the temperature the sensor will reach is consistent with the safe temperatures listed in this publication.

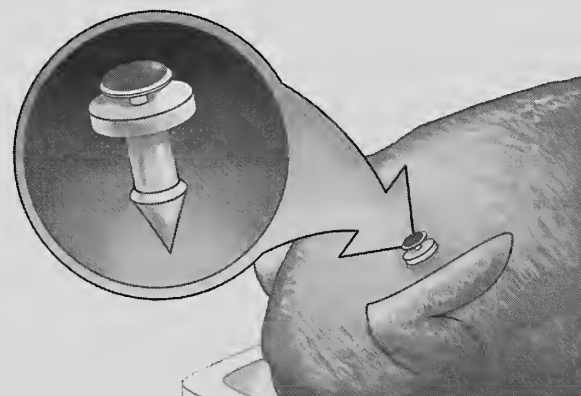
The sensors are made from special temperature-sensitive materials. The sensor is inserted into a food. When the food reaches the proper temperature, the sensor changes

color. They are designed to be used only once. However, if the desired temperature has not been reached, they can be reinserted until the temperature is reached. These sensors cannot be left in a food while it cooking. They should be used near the end of the estimated cooking time. To prevent overcooking, check the temperature before the food is expected to finish cooking.

Disposable temperature indicators are made from materials approved by the FDA for contact with food.

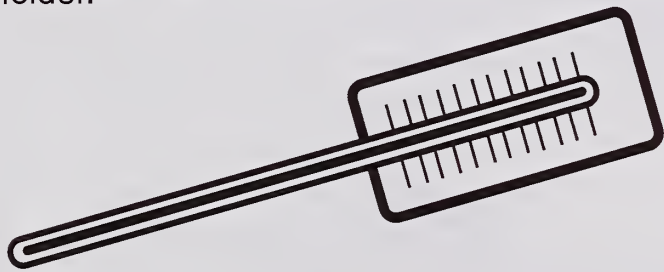


Pop-Up Timers: Commonly used in turkeys and roasting chickens since 1965, the “pop-up” temperature device is constructed from a food-approved nylon. The inside contains a stainless steel spring and firing material. The firing material is made of an organic salt compound or an alloy of metals commonly used in other thermo-sensing devices. The tip of the stem is imbedded in the firing material until it melts, releasing the stem, which is then “popped up” by means of the spring. This indicates that the food has reached the final temperature for safety and doneness. Pop-up timers are reliable within 1 to 2 °F if accurately placed in a food; however, checking the temperature of other parts of the food with a conventional food thermometer is recommended.

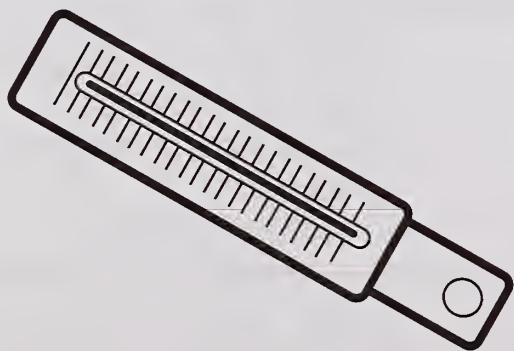


Other Types of Food Thermometers

Liquid-filled Thermometers: Also called “spirit-filled” or “liquid in glass” thermometers, these thermometers are the oldest kind of food thermometer used in home kitchens. They have either metal or glass stems. As the internal temperature of the food increases, the colored liquid inside the stem expands and rises to indicate the temperature on a scale. Heat conduction in the metal stems can cause false high readings. They are designed to remain in the food while it is cooking. They should be inserted at least 2 inches deep in the thickest part of the food, and are, therefore, not appropriate for thin foods. Some liquid-filled thermometers can be calibrated by carefully moving the glass stem within the holder.



Candy/Jelly/Deep Fry Thermometers: These thermometers will measure temperatures ranging from 100 to 400 °F. They are used to measure the extra-high temperatures required of candy and jelly making, as well as frying with hot oil.

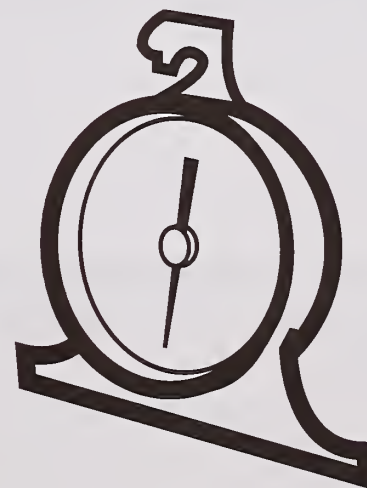


Appliance Thermometers

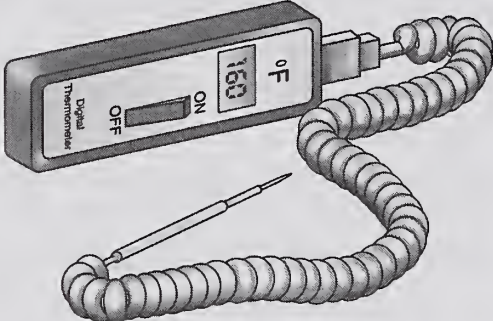



Refrigerator/Freezer Thermometers: For safety, it is important to verify the temperature of refrigerators and freezers. Refrigerators should maintain a temperature no higher than 40 °F. Frozen food will hold its top quality for the longest possible time when the freezer maintains 0 °F. An appliance thermometer can be kept in the refrigerator and freezer to monitor the temperature. This can be critical in the event of a power outage. When the power goes back on, if the refrigerator is 40 °F or colder, and the freezer is still colder than 40 °F, the food is safe. These bimetallic-coil thermometers are specially designed to provide accuracy at cold temperatures.



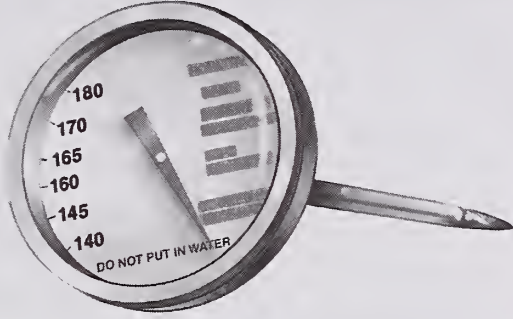
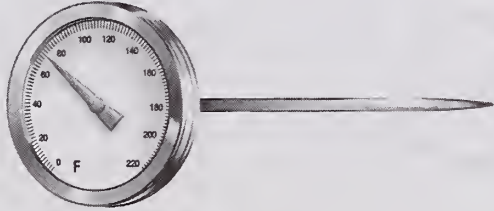
Oven Thermometers: An oven thermometer can be left in the oven to verify that the oven is heating to the desired temperatures. These bimetallic-coil thermometers can measure temperatures from 100 to 600 °F.



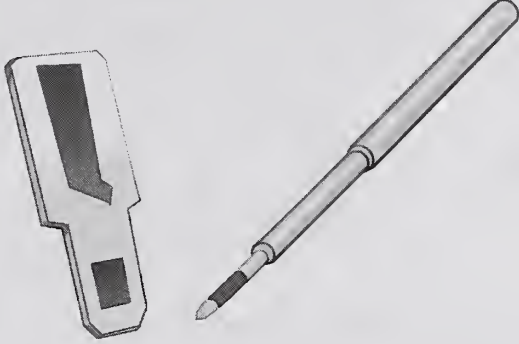
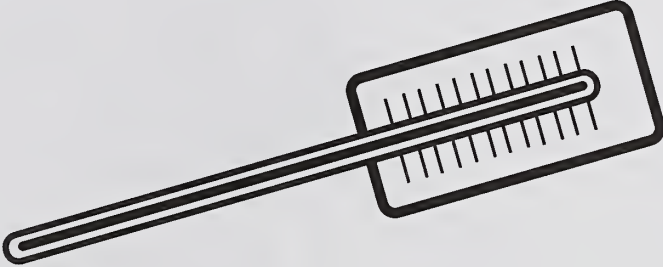
Food Thermometers

Digital Thermometers			
Types	Speed	Placement	Usage Considerations
Thermocouple	2–5 seconds	1/4" or deeper in the food, as needed	<ul style="list-style-type: none"> • Gives fastest reading • Good for measuring temperatures of thick and thin foods • Not designed to remain in food while it's cooking • Check internal temperature of food near the end of cooking time • Can be calibrated • More costly; may be difficult for consumers to find in stores
			
Thermistor	10 seconds	At least 1/2" deep in the food	<ul style="list-style-type: none"> • Gives fast reading • Can measure temperature in thin and thick foods • Not designed to remain in food while it's cooking • Check internal temperature of food near the end of cooking time • Some models can be calibrated; check manufacturer's instructions • Available in "kitchen" stores
			
Oven Cord Thermometer	10 seconds	At least 1/2" deep in the food	<ul style="list-style-type: none"> • Can be used in most foods • Can also be used outside the oven • Designed to remain in the food while it is cooking in oven or in covered pot • Base unit sits on stovetop or counter • Cannot be calibrated
			
Thermometer Fork Combination	2–10 seconds	At least 1/4" in the thickest part of food	<ul style="list-style-type: none"> • Can be used in most foods • Not designed to remain in food while it is cooking • Sensor in tine of fork must be fully inserted • Check internal temperature of food near the end of cooking time • Cannot be calibrated • Convenient for grilling
			

Food Thermometers (con't)

Dial Thermometers			
Types	Speed	Placement	Usage Considerations
Oven-Safe, Bimetal	1–2 minutes	2–2 1/2" deep in the thickest part of the food	<ul style="list-style-type: none"> • Can be used in roasts, casseroles, and soups • Not appropriate for thin foods • Can remain in food while it's cooking • Heat conduction of metal stem can cause false high reading • Some models can be calibrated; check manufacturer's instructions
			
Instant-Read, Bimetal	15–20 seconds	2–2 1/2" deep in the thickest part of the food	<ul style="list-style-type: none"> • Can be used in roasts, casseroles, and soups • Temperature is averaged along probe, from tip to 2–3" up the stem • Cannot measure thin foods unless inserted sideways • Not designed to remain in food while it is cooking • Use to check the internal temperature of a food at the end of cooking time • Some models can be calibrated; check manufacturer's instructions • Readily available in stores
			

Food Thermometers (con't)

Other			
Types	Speed	Placement	Usage Considerations
Single-Use Temperature Indicators	5–10 seconds	Approx. 1/2" deep (follow manufacturer's directions)	<ul style="list-style-type: none"> • Designed to be used only once • Designed for specific temperature ranges • Should only be used with food for which they are intended • Temperature-sensitive material changes color when the desired temperature is reached
			
Liquid-Filled (glass or metal stem)	1–2 minutes	At least 2" deep in the thickest part of the food	<ul style="list-style-type: none"> • Used in roasts, casseroles, and soups • Can remain in food while it's cooking • Cannot measure thin foods • Some can be calibrated; check manufacturer's instructions • Possible breakage of glass stem while in food • Heat conduction of metal stem can cause false high reading
			

Doneness and Safety

Most pathogens are destroyed between 140 and 160 °F. However, for best quality, meat and poultry require various temperatures for “doneness.”

Recommended Internal Temperatures*	
Food	°F
Ground Meat & Meat Mixtures	
Beef, Pork, Veal, Lamb	160
Turkey, Chicken	165
Fresh Beef, Veal, Lamb	
Medium Rare	145
Medium	160
Well Done	170
Poultry	
Chicken & Turkey, whole	180
Poultry breasts, roast	170
Poultry thighs, wings	180
Duck & Goose	180
Stuffing (cooked alone or in bird)	165
Fresh Pork	
Medium	160
Well Done	170
Ham	
Fresh (raw)	160
Pre-cooked (to reheat)	140
Eggs & Egg Dishes	
Eggs	Cook until yolk & white are firm
Egg dishes	160
Leftovers & Casseroles	
	165

*These temperatures are recommended for consumer cooking. They are not intended for processing, institutional, or foodservice preparation. Food service professionals should consult their state or local food code.

Using the Food Thermometer

Most available food thermometers will give an accurate reading within 2 to 4 °F. The reading will only be correct, however, if the thermometer is placed in the proper location in the food. If not inserted correctly, or if the food thermometer is placed in the wrong area, the reading will not accurately reflect the internal temperature of the food. In general, the food thermometer should be placed in the thickest part of the food, away from bone, fat, or gristle.

Check Manufacturer’s Instructions

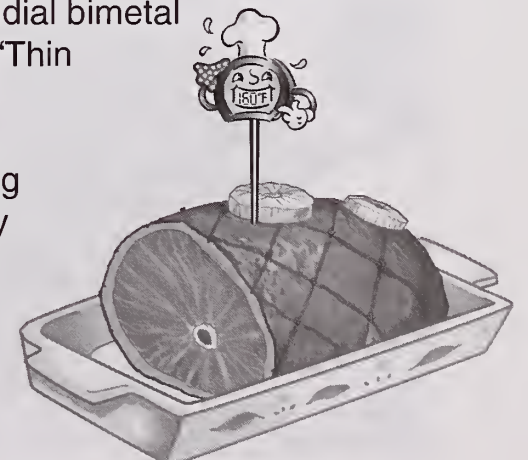
Before using a food thermometer, read the manufacturer’s instructions first. The instructions should tell how far the thermometer must be inserted in a food to give an accurate reading. If instructions are not available, check the stem of the food thermometer for an indentation, or “dimple.” This shows one end of the location of the sensing device. Dial thermometers must penetrate about 2 to 3 inches into the food. Most digital thermometers will read the temperature in a small area of the tip.

Where to Place the Food Thermometer

Meat

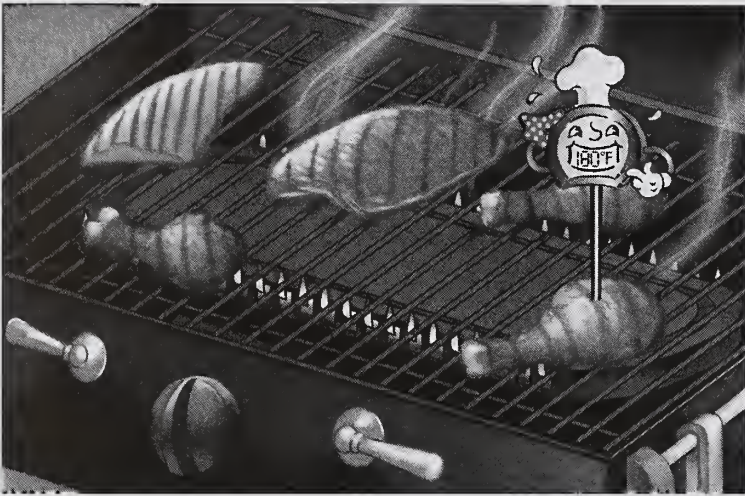
When taking the temperature of beef, pork, or lamb roasts, the food thermometer should be placed midway in the roast, avoiding the bone. When cooking hamburgers, steaks, or chops, insert a thermistor or thermocouple in the thickest part, away from bone, fat, or gristle. If using a dial bimetal thermometer, read “Thin Foods” below.

When the food being cooked is irregularly shaped, such as with a beef roast, check the temperature in several places.



Poultry

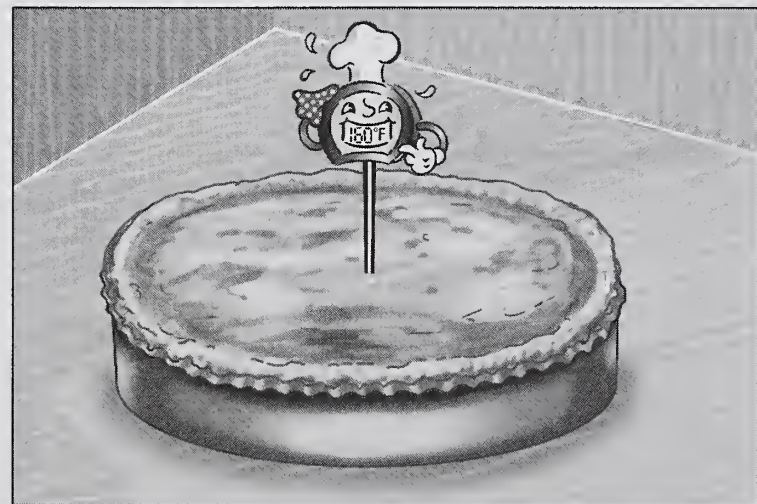
When cooking whole poultry, the food thermometer should be inserted into the thickest part of the thigh (avoiding the bone). If stuffed, the center of the stuffing should be checked after the thigh reads 180 °F (stuffing must reach 165 °F). If cooking poultry parts, insert food thermometer into the thickest area, avoiding the bone. The food thermometer may be inserted sideways if necessary. When the food is irregularly shaped, the temperature should be checked in several places.



To avoid burning fingers, it may be helpful to remove the food from the heat source (if cooking on a grill or in a frying pan) and insert the food thermometer sideways after placing the item on a clean spatula or plate.

Combination Dishes

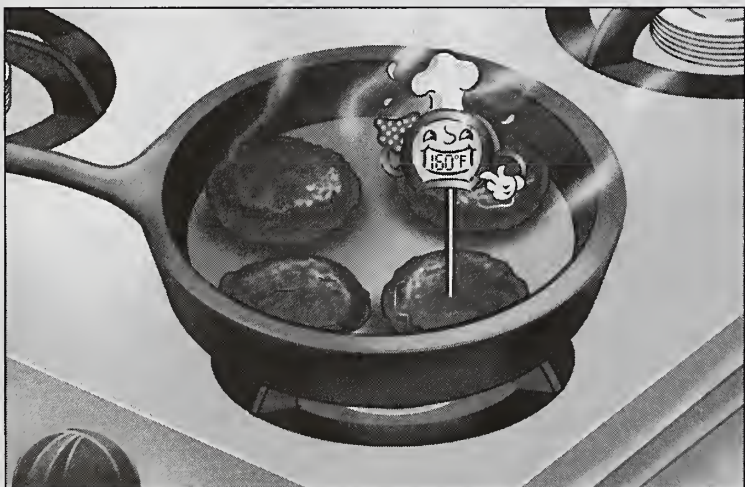
For casseroles and other combination dishes, place the food thermometer into the thickest portion of the food or the center of the dish. Egg dishes and dishes containing ground meat and poultry should be checked in several places.



Thin Foods

When measuring the temperature of a thin food, such as a hamburger patty, pork chop, or chicken breast, a thermistor or thermocouple food thermometer should be used, if possible.

However, if using an “instant-read” dial bimetallic-coil food thermometer, the probe must be inserted in the side of the food so that entire sensing area (usually 2-3 inches) is positioned through the center of the food.



Thermometer Care

As with any cooking utensil, food thermometers should be washed with hot soapy water. Most thermometers should not be immersed in water. Wash carefully by hand.

Use caution when using a food thermometer. Some models have plastic faces, which can melt if placed too close to heat or dropped in hot liquid.

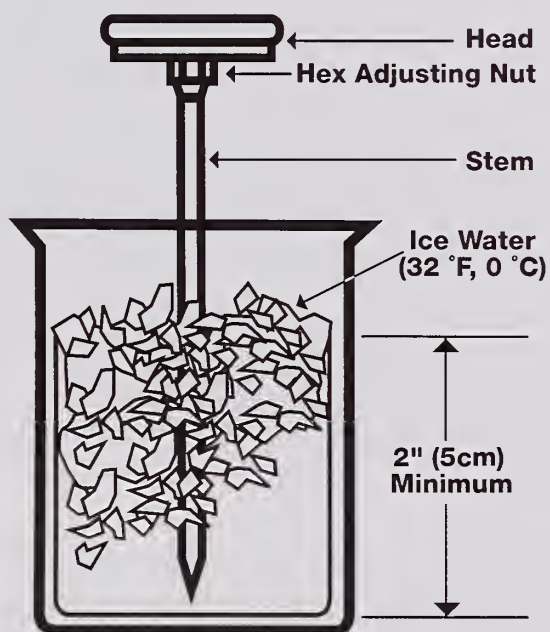
Thermometer probes are sharp and should be stored with the probe in the stem sheath. Some glass thermometers are sensitive to rough handling and should be stored in their packaging for extra protection or in a location where they will not be jostled.

Calibrating a Thermometer

There are two ways to check the accuracy of a food thermometer. One method uses ice water, the other uses boiling water. Many food thermometers have a calibration nut under the dial that can be adjusted. Check the package for instructions.

Ice Water

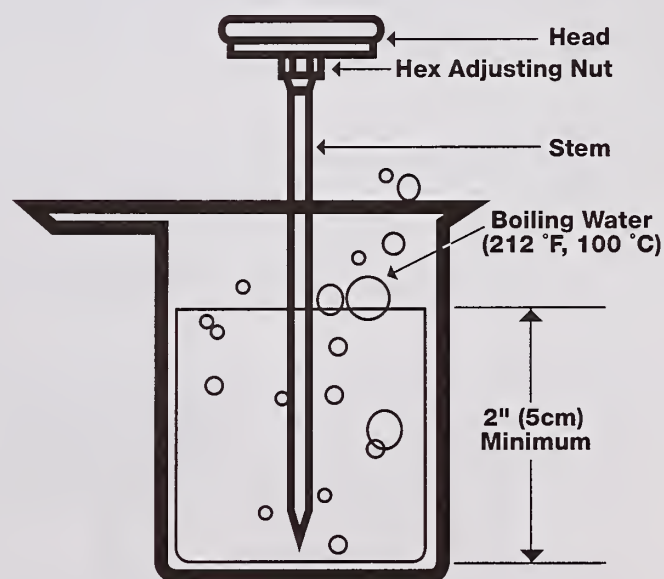
To use the ice water method, fill a large glass with finely crushed ice. Add clean tap water to the top of the ice and stir well. Immerse the food thermometer stem a minimum of 2 inches into the mixture, touching neither the sides nor the bottom of the glass. Wait a minimum of 30 seconds before adjusting. (For ease in handling, the stem of the food thermometer can be placed through the clip section of the stem sheath and, holding the sheath horizontally, lowered into the water.) Without removing the stem from the ice, hold the adjusting nut under the head of the thermometer with a suitable tool and turn the head so the pointer reads 32 °F.



Boiling Water

To use the boiling water method, bring a pot of clean tap water to a full rolling boil. Immerse the stem of a food thermometer in boiling water a minimum of 2 inches and wait at least 30 seconds. (For ease in handling, the stem of the food thermometer can be placed through the clip section of the stem sheath and, holding the sheath horizontally, lowered into the boiling water.) Without removing the stem from the pan, hold the adjusting nut under the head of the food thermometer with a suitable tool and turn the head so the thermometer reads 212 °F.

For true accuracy, distilled water must be used and the atmospheric pressure must be one atmosphere (29.921 inches of mercury). A consumer using tap water in unknown atmospheric conditions would probably not measure water boiling at 212 °F. Most likely it would boil at least 2 °F, and perhaps as much as 5 °F, lower. Remember that water boils at a lower temperature in a high altitude area. Check with the local Cooperative Extension Service or Health Department for the exact temperature of boiling water.



For Additional Information

Even if the food thermometer cannot be calibrated, it should still be checked for accuracy using either method. Any inaccuracies can be taken into consideration when using the food thermometer, or the food thermometer can be replaced. For example, water boils at 212 °F. If the food thermometer reads 214 °F in boiling water, it is reading 2 degrees too high. Therefore 2 degrees must be subtracted from the temperature displayed when taking a reading in food to find out the true temperature. In another example, for safety, ground beef patties must reach 160 °F. If the thermometer is reading 2 degrees too high, 2 degrees would be added to the desired temperature, meaning hamburger patties must be cooked to 162 °F.

For additional food safety information about meat, poultry, or egg products, call the toll-free

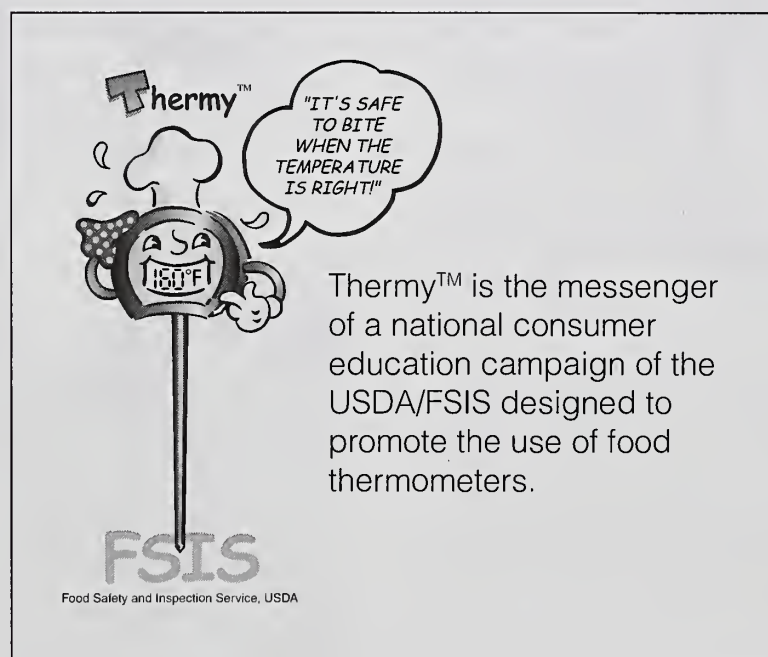
USDA Meat and Poultry Hotline

1 (800) 535-4555
(202) 720-3333 (Washington, DC)
TTY: 1 (800) 256-7072

It is staffed by home economists, dietitians and food technologists weekdays year round from 10 a.m. to 4 p.m. Eastern time. An extensive selection of food safety recordings can be heard 24 hours a day using a touch-tone phone.

The Meat and Poultry Hotline can be contacted by e-mail at mpholine.fsis@usda.gov.

Information is also available from the FSIS
Web site: www.fsis.usda.gov



The USDA is an equal opportunity provider and employer.

USDA Launches Food Safety Education Campaign to Encourage Use of Food Thermometers in Meat, Poultry, and Egg Products

WASHINGTON, D.C.—The United States Department of Agriculture launched in Spring 2000 a new food safety education campaign to promote the use of food thermometers. The campaign theme is: "It's Safe to Bite When the Temperature is Right!"

"This national food safety education campaign is designed to encourage consumers to use a food thermometer when cooking meat, poultry, and egg products. Using a food thermometer is the only way to tell that food has reached a high enough temperature to destroy harmful pathogens that may be in the raw food," said Under Secretary for Food Safety Catherine Woteki.

"Color is misleading and should not be relied on to indicate a safely cooked product. Meat or poultry color can fool even the most experienced cook. USDA research shows that one out of every four hamburgers turns brown in the middle before it is safely cooked," Woteki said.

USDA introduced its new messenger, "Thermy™," to promote the use of food thermometers in the home. "Consumers will soon see "Thermy™" at many retail stores and in broadcast messages as a reminder to purchase and use a food thermometer when cooking," Woteki said.

A number of grocery chains around the country are also launching "Thermy™" thermometer campaigns this week in cooperation with USDA.

"We are pleased to see this industry cooperation," said Tom Billy, Administrator of the USDA's Food Safety and Inspection Service. "I am concerned that currently less than half the population owns a food thermometer. Also, only a small percent of consumers use one often when cooking small foods like hamburgers, pork chops, or chicken breasts."

Food thermometers help ensure food is cooked to a safe temperature, prevent overcooking, and take the guesswork out of preparing a safe meal. "Food thermometers are not just for checking the safety of a Thanksgiving turkey," says Billy. "They should be used year-round, every time you prepare hamburgers, poultry, roasts, chops, egg casseroles, meat loaves, and combination dishes."

Billy said that there are a wide variety of reliable food thermometers available in grocery and kitchen supply stores, and that many are inexpensive. "They are high-tech and easy to use. Their cost is minimal when considering your family's safety. This is especially true for people who are at high-risk, including young children, pregnant women, people over 65, and those with chronic illnesses."

The food thermometer campaign is an education program of the Food Safety and Inspection Service, USDA. For more information about "Thermy™" and the food thermometer campaign, call the nationwide, toll-free USDA Meat and Poultry Hotline at 1-800-535-4555 (TTY: 1-800-256-7072). In addition, food safety information is available on the FSIS Web site: www.fsis.usda.gov/thermy.



RESEARCH

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THERMOMETERS ARE KEY TO SAFETY



Consumer behavior research shows that cooking by color is just one of the ways consumers typically judge whether or not food is “done.” Consumers said they also “eyeball” the food, go by recommended cooking times, and trust their experience and judgement. The only problem is, those methods may be misleading them.

In 1995, for instance, a study by Kansas State University indicated that ground beef may turn brown before it’s cooked to a safe internal temperature sufficient to destroy potentially dangerous pathogens.

With that information in hand, the Food Safety and Inspection Service (FSIS) commissioned the U.S. Department of Agriculture’s (USDA) Agricultural Research Service (ARS) to examine the color of ground beef nationwide as it relates to doneness.

THE 1998 FINDINGS?

- One out of every four hamburgers turns brown before it’s been cooked to a safe internal temperature.
- And yet, only 3 percent of consumers checked hamburgers with a food thermometer according to a 1998 consumer food safety survey conducted by the Food and Drug Administration and FSIS.

WHICH GROUND BEEF PATTY IS COOKED TO A SAFE INTERNAL TEMPERATURE?



This IS a safely cooked hamburger, cooked to an internal temperature of 160 °F, even though it’s pink inside.



This is NOT a safely cooked hamburger. Even though it’s brown inside, it is undercooked. Research has shown that some ground beef patties look done at internal temperatures as low as 135 °F.

For more information, check out the FSIS Technical Information publication titled “Color of Cooked Ground Beef as It Relates to Doneness” (8/98). It’s available through the web: www.fsis.usda.gov/OA/topics/gb.htm.

WHAT DOES THIS RESEARCH MEAN TO TODAY’S CONSUMERS?

The only way to know food has been cooked to a safe internal temperature is to use a food thermometer.

The goal of the FSIS Thermy™ campaign, “It’s Safe to Bite When the Temperature is Right!”, is to increase consumer use of food thermometers. And today’s thermometer technologies make checking the temperature of “thin” food—like hamburgers or chicken fillets—a “piece of cake.” It only takes a few seconds.

For instance, digital instant-read thermometers need to be inserted only a very short way into food. As a result, consumers can easily check the temperature of thin foods by inserting the thermometer probe into food from the top.

It’s not complicated—and it’s worth the effort. This is especially true for people who are high-risk for foodborne illness—young children, people over 65, pregnant women, and people with chronic illnesses.

For more information on different types of thermometers and their uses, check out FSIS’ Web site at www.fsis.usda.gov/thermy or call the USDA Meat and Poultry Hotline, **1-800-535-4555** (TTY: 1-800-256-7072).

SUPERMARKET SUCCESS STORIES

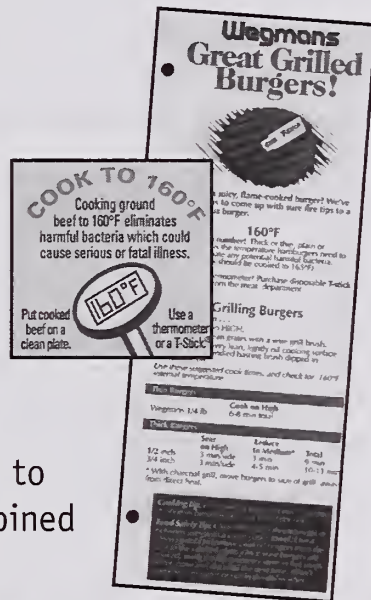


Many grocery chains are simultaneously launching their Thermy™ campaigns along with FSIS, and there is no doubt that their campaigns will go over with a bang. Just look at what other grocery stores have done with similar thermometer campaigns. The results speak for themselves. Thermometer sales are soaring! Read the exciting and successful things others have done.

WEGMANS

Upstate New York

Wegmans jumpstarted thermometer education campaigns in 1998 when they created a bright yellow label for their ground beef packages that advised consumers to cook to 160 °F. This message, combined with their brochures and advertisements, reversed the downward slide of hamburger sales while causing store thermometer sales to rapidly climb. The chain has sold over 100,000 digital instant-read thermometers since their campaign began. Shortly after the initial launch, they added probes for ovens and grills to the product line. By Summer 2000, they will introduce digital fork thermometers.

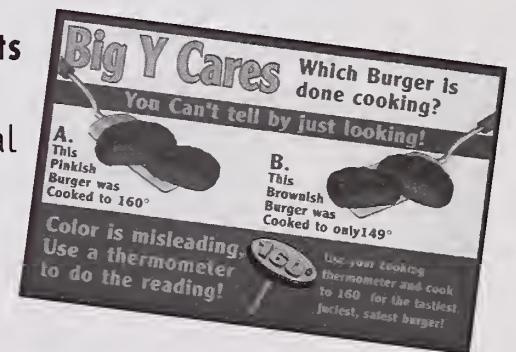


Consumer Advisor, Odonna Mathews, were featured speakers at the press-packed event. Giant Food now sells disposable temperature indicators, called "T-sticks," and quick-response digital thermometers in all of their meat departments. From January to June 1999, Giant Food reported sales of more than 60,000 digital thermometers and T-sticks. Giant continues to feature product labeling, thermometers, and brochures at their meat counters, and plans on future seasonal thermometer education campaigns.

BIG Y FOODS

Connecticut & Massachusetts

Just in time for Memorial Day 1999, Big Y kicked off their thermometer promotion, "Color is misleading. Use a thermometer to do the reading!" in 44 grocery stores. Big Y promoted digital thermometers in meat departments, provided cooking demonstrations, and handed out literature to consumers on the importance of using a food thermometer. Since the kickoff, Big Y reports increased interaction between the meat counter associates and customers. Thermometer sales have been excellent and stores are enthusiastically reordering the "Cook to 160 °F" promotion labels.



GIANT FOOD, INC.

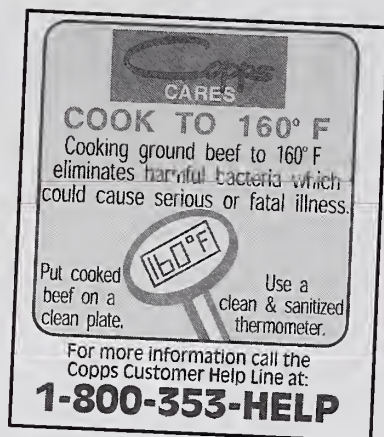
Metropolitan Washington, DC area

Giant Food kicked off its hot new campaign, "Don't Put It On the Bun Until It's Done" during January 1999. USDA's Under Secretary for Food Safety, Catherine E. Woteki, and Giant's

COPPS

Wisconsin

February 1999 marked the start of the Copps food thermometer campaign. Copps partnered with the Wisconsin Department of Agriculture to promote their new "Cook to 160 °F" label. The week long kickoff included in-store demonstrations on how to cook hamburger using a food thermometer. Adding to the festivities was BAC, the Partnership for Food Safety Education's Fight BAC!™ costumed character. Since the launch, Copps reports that sales of digital and disposable thermometers have been steadily rising. Copps features food safety education information on their Web site: www.copps.com.



SAFEWAY, ALBERTSON'S, BUTTREY'S, KROGER (CITY MARKETS)

Colorado & Wyoming

Barbecues and fireworks surrounded the Independence Day 1999 launch of the food thermometer campaign, "Cook It Right...Before You Take A Bite." Teaming with Colorado State University Cooperative Extension, the grocery stores gave cooking demonstrations on how to cook hamburgers to a safe temperature. Hundreds of lucky customers reaped the benefits by getting to eat the safe, juicy hamburgers. The stores also set up point-of-purchase displays and handed out food thermometer information and free disposable thermometers. The stores' survey results showed an increase in customer awareness of the importance of using a temperature indicator from 10% to 47%. Customer usage of food thermometers increased from 3% to 14%.

TIPS FOR FOOD SAFETY EDUCATORS

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How You Can Help Promote Thermy™

The purpose of the Thermy™ campaign is to focus public attention on the importance of using a food thermometer when cooking to help prevent foodborne illness. Visual indicators are not reliable. Using a food thermometer is the only way to ensure that food has been cooked to a safe temperature. Listed below are some ideas we hope will be helpful in bringing the Thermy™ message to your community. Use some of these ideas, expand on them, or try your own. Also think about extending your reach by partnering with other food safety educators in your community.



GETTING THE MESSAGE OUT TO WHERE PEOPLE ARE

Shopping malls, supermarkets, senior and community centers, schools and libraries, daycare centers, county or state fairs, health fairs, community and youth organizations, recreational events, hospitals, and HMO's are good places for promoting Thermy™.

- 1** Set up a Thermy™ exhibit in a shopping mall, supermarket, community center, county or state fair, or at a health fair. Offer cooking demonstrations on how to use food thermometers in different foods. Partner with a youth, student, or community organization to staff the exhibit and distribute Thermy™ information.
- 2** Place free Thermy™ brochures at different locations in your community—in local libraries, and senior and community centers.
- 3** Speak to senior groups about the special importance of food safety for older persons. Also about how food thermometers have changed and improved—there are many more out there than the large dial thermometer that they might be using. Remind them that while they might have relied on visual indicators in the past, they are not reliable. They must take extra care when preparing foods because of their heightened susceptibility to severe foodborne illness as a result of age or underlying chronic conditions.
- 4** Mail Thermy™ materials to daycare center directors. Remind them that infants and young children are at higher risk for foodborne illness because their immune systems are not fully developed. Encourage them to reproduce and distribute these materials to parents or use the information in center newsletters.
- 5** Encourage local elementary schools to hold a Thermy™ day featuring kids cooking with local chefs showing the importance of using a food thermometer. Contact your local chapter of the American Culinary Federation's Chef and Child Foundation for chefs who volunteer in schools. Offer poster and essay contests on the importance of using a food thermometer. Give out Thermy™ awards. Invite parents to demonstrate with their children the importance of cooking to safe temperatures and using a food thermometer. Print Thermy™ stickers or create other give-aways to excite children and encourage their participation.
- 6** Contact local middle and high school home economics teachers and science teachers about including Thermy™ and the use of food thermometers in their curriculum. Encourage cooking experiments/demonstrations to show how unreliable visual indicators and personal experience are and how easy it is to use a food thermometer. A good example on how to conduct this experiment is in the Fight BAC!™ curriculum, "Your Game Plan for Food Safety,"

from the Partnership for Food Safety Education. For this experiment and others, order or download the curriculum from their Web site (www.fightbac.org).

7 Ask about getting Thermy™, a costumed character mascot, at your local events!

GETTING THE MESSAGE OUT THROUGH THE MEDIA

Television, radio, and print media are an effective way of getting food safety information before large numbers of people. Typically, local media want to be involved with the communities they serve, especially regarding health issues.

1 Distribute the public service announcement to television and radio stations in your community and ask that they broadcast it at various times of the day and all through the year.

2 Contact local consumer reporters to get them to promote the use of food thermometers and the Thermy™ character and message. Encourage them to air the public service announcement during their broadcast.

3 Send the news feature and the reproducible Thermy™ artwork and print ads to local newspapers, journals, and magazines with a request that they promote Thermy™ and the importance of using food thermometers. Inquire about a special newspaper insert or supplement. Some papers will print one supplement free per month for various causes, while others will sell ad space in the supplement to offset printing costs.

4 Advertise Thermy™ on your local food channel, having the message, "It's Safe to Bite When the Temperature is Right!", scrolled (words moving across the bottom of the screen) and include messages about food safety. Local food retailers may be interested in sponsoring the messages. Contact the local cable TV station's advertising staff early to negotiate a rate, create the text, and produce the message.

5 Use the cable access channel in your area to promote thermometer use. Create a segment on food safety and using food thermometers. These programs are often aired repeatedly over a long period of time.

6 Partner with local newspapers and grocery stores to sponsor the following events for elementary and middle school students:

- spelling contests using words related to food safety, food thermometers, and foodborne illness;
- essay contests on the message, "It's Safe to Bite When the Temperature is Right!";
- coloring contests; and
- poster contests.

Submit entries to the newspaper or store. Display entries in school cafeterias and homerooms or in grocery stores. Contest winners (and their entries) get their picture in the newspaper. Give prizes to the winners.

7 Many newspapers have sections targeted to children. Work with dailies or weeklies in your area to feature Thermy™ and children's food safety materials in their Kids Pages.

For more information on using Thermy™, see "Guidelines for Use of Thermy™ Art and Educational Materials" or contact us.

Food Safety Education Staff
Food Safety and Inspection Service
U.S. Department of Agriculture

Phone: (202) 720-7943
Fax: (202) 720-1843
E mail: fsis.outreach@usda.gov
Web site: www.fsis.usda.gov/thermy

USDA Meat and Poultry Hotline
1-800-535-4555
TTY: 1-800-256-7072

SUPERMARKET TIPS

How Your Store(s) Can Help Promote Thermy™

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The purpose of the Thermy™ campaign is to focus public attention on the importance of using food thermometers when cooking to help prevent foodborne illness. Visual indicators are not reliable. Using a food thermometer is the only way to ensure that food has been cooked to a safe temperature. The Thermy™ campaign presents an excellent opportunity to demonstrate your store's commitment to community involvement and food safety. It can help increase your store's visibility in your community and enhance your company's reputation as an organization committed to public service.



DON'T LIMIT YOURSELF. THINK BIG!

Advertising and promotion can make your Thermy™ program come alive. The following are some recommended ideas for using reproducible art.

CROSS-MERCHANDISING—Promote food thermometers in your meat department and check-out lines, as well as in your housewares department.

DISPLAYS—Use floor or counter displays featuring a variety of food thermometers (digital, dial, disposable, etc.).

BAG STUFFERS AND BROCHURES—Give Thermy™ brochures as a bag stuffer. Place the brochures in your store's meat section, information center, and at your check-out lines.

GROCERY BAGS—Print the Thermy™ artwork and slogan on your grocery bags.

PROMOTIONAL GIVE-AWAYS—Consider producing small promotional give-aways that your shoppers will keep and educate them over an extended period—Thermy™ refrigerator magnets, buttons, pot holders, and jar openers.

PUBLIC ADDRESS SYSTEM—Record advertisements and air over your store's public address system. Remind customers to go back and pick up that food thermometer they meant to put in their shopping cart.

ADVERTISING—Publicize your involvement and commitment in the Thermy™ campaign by inserting informational ads or columns as part of your local newspaper advertising. This will also encourage thermometer sales.

SIGNAGE—Use the Thermy™ logo and message to make colorful signs, banners, posters, etc., to get customer attention. Be creative.

Place colorful visual reminders near certain meats telling customers that there's no need to overcook meat for it to be safe. Thermometers can help make them be a better cook. For example, for ground beef, turkey, and chicken—"Are your burgers hard as hockey pucks? That won't happen if you use a thermometer. Keep them juicy."

YEAR-ROUND PROMOTIONS—Remind customers that using a food thermometer and food safety is a year-round issue. Promote Thermy™ during each season and holiday—St. Patrick's Day, Passover, Easter, summer, Oktoberfest, Thanksgiving, Christmas. Place thermometers near popular meats. Also display recommended cooking temperatures (temperature chart on back).

SPECIAL EVENTS—Stage events in your stores, such as cooking demonstrations on how to use food thermometers in different foods. Invite a local chef, nutritionist, or local cooperative extension agent to partner in your efforts. Bring Thermy™ to life by asking about getting Thermy™, a costumed character, at your store!

CONTESTS—Partner with local elementary/middle schools and newspapers to sponsor the following events for area students:

- spelling contests using words related to food thermometers, food safety, and foodborne illness;
- essay contests on the message, "It's Safe to Bite When the Temperature is Right!";
- coloring contests; and
- poster contests.

Display entries in your stores and school cafeterias and classrooms. Contest winners (and their entries) get their picture in the newspaper. Give prizes to the winners.

TEMPERATURE RULES!

Food	°F
Ground Meat & Meat Mixtures	
Beef, Pork, Veal, Lamb	160
Turkey, Chicken	165
Fresh Beef, Veal, Lamb	
Medium Rare	145
Medium	160
Well Done	170
Poultry	
Chicken, whole	180
Turkey, whole	180
Poultry breasts, roasts	170
Poultry thighs, wings	180
Duck & Goose	180
Stuffing (cooked alone or in bird)	165
Fresh Pork	
Medium	160
Well Done	170
Ham	
Fresh (raw)	160
Pre-cooked (to reheat)	140
Eggs & Egg Dishes	
Eggs	Cook until yolk & white are firm
Egg dishes	160

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"IT'S SAFE TO BITE WHEN THE TEMPERATURE IS RIGHT!"



Thermy Rules!

1. Always use a food thermometer when you cook.

A food thermometer will help you make sure your food has reached a high enough temperature to kill harmful bacteria.

2. The color of cooked meat—whether it's pink or brown inside—can fool you.

The only way to be sure cooked food is safe to eat is by using a food thermometer.

3. Place the thermometer in the thickest part of most foods, away from any bones and fat.

4. Cook food to a safe internal temperature.

145 °F—Beef, lamb, and veal steaks and roasts.

160 °F—Ground beef, pork, veal, and lamb. Pork chops, ribs, and roasts. Egg dishes.

165 °F—Ground turkey and chicken. Stuffing, casseroles, and leftovers.

170 °F—Chicken and turkey breasts.

180 °F—Chicken and turkey: whole bird, legs, thighs, and wings.

Temperatures are in degrees Fahrenheit (°F).

5. Check the temperature in several places to be sure the food is cooked evenly.

6. Wash the food thermometer with hot, soapy water after using it.

Unscramble each of the clue words. Copy the letters in the numbered cells to the other cells with the same number.

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FODO

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NIOKOGC

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RURTEMPATEE

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Food Safety and Inspection Service
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FIGHT BAC!

CLEAN
Wash hands and surfaces often.

SEPARATE
Don't cross-contaminate.

CHILL
Refrigerate promptly.

COOK
Cook to proper temperatures.

Keep Food Safe From Bacteria

TM

Fight BAC!TM is a national consumer education campaign from the Partnership for Food Safety Education.

www.fightbac.org