

CATEGORY TO STUDY: BLENDERS

Overview

Blenders are countertop appliances that can whip up smoothies and soups and even make nut butter. As the name implies, this small appliance is great for “blending” foods together, but it does much more. It can chop, grind, crush, puree, emulsify, and pulverize food, beverages, and other substances. While there are different types of blenders, the key feature they all have in common is a spinning blade connected to a motor.

A Brief History of Blenders

The blender is considered a revolutionary kitchen gadget that led to the development of many future electric kitchen appliances and tools. The blender received its start in Racine, Wisconsin, where Stephen J. Poplawski invented this appliance in 1919 as a drink mixer. Patented in 1922, this small appliance was initially used commercially in drug store soda fountain counters to make malted milkshakes (Blender Adviser, n.d.).

In the 1930s, Fred Osius, a founder of the Hamilton Beach Company, created his version of a new and improved blender. In need of money to support his venture, Osius sought out Fred Waring, a popular big band leader, for financial backing in 1933. Waring not only provided the cash but also promoted Osius’s “Miracle Mixer” while he was on tour with his band. Waring was no ordinary bandleader or financier. He fascinated gadgets and was a former Penn State architectural and engineering student. He found some technical problems with the appliance, redesigned it, and relaunched it under his own company name in 1937 at the National Restaurant Show in Chicago. The “Miracle Mixer” was eventually renamed the Waring Blender. This blender not only became a popular tool in the kitchen but also made its way to hospitals and labs. For example, Jonas Salk used the Waring Blender in developing the polio vaccine in the 1950s. Conair eventually bought out Waring, but the Waring blender can still be found on store shelves (Blender Adviser, n.d.; FoodReference.com, n.d.; TheInventors.org, 2006)

Another prominent figure in the history of the blender was John Oster. Oster wanted to diversify his company (a maker of motorized barber tools) into electric kitchen appliances. He trademarked his new, more powerful version of the blender as the “Osterizer” in 1946. Oster’s company was bought by Sunbeam Products, with the Oster blender continuing to be a popular brand today (Blender Adviser, n.d.; Wills, 2019).

Blenders have continued to evolve, and several other brands have entered the marketplace as this small kitchen appliance continues to be a mainstay in today’s home kitchen.

Selection Features

(Consumer Reports, 2021; Papantoniou & Quinn, 2021)

There are several factors to examine when deciding which blender to purchase.

Type:

1. Premium or High-Performance—higher horsepower and better blade strength elevate the blending power of these units above traditional models. These models have the power to transform a variety of ingredients to a smooth consistency or grind to a fine powder.
2. Conventional—less expensive than premium models; best for lower-intensity, traditional blending tasks such as making milkshakes or smoothies.
3. Personal—newer blender category; compact and usually makes one to two servings. With the mixing container doubling as a travel jar, this blender type aims to meet the needs of people who want to make on-the-go smoothies or other drinks. Not intended for hard-core blending.
4. Immersion—a specialized blender where the exposed blades are submerged into food or drink in another container, like a saucepan. Has limited power/functions (i.e., best for blending, not chopping). Considered a complement to traditional blenders rather than a replacement.

Container: Container options typically include glass or plastic. The downside of glass is that it is heavy and has potential for breakage. If glass is preferred, look for one that has been thermal shock tested to withstand heat extremes of ice to heat. Plastic containers are lighter, and the risk of breakage is less; however, plastic can absorb odors and stains. Whether glass or plastic, choose wide-mouth containers (i.e., wide at the top) for easier loading of ingredients and cleaning. Easy-to-read measurement markings may also be significant. Availability of replacement containers may be important; especially for personal blenders (Immersion blenders do not have containers). Size of the container may also vary. Be sure to purchase one that is large enough to meet your needs.

Controls: Touchpad controls are the easiest to clean. Push buttons make it easy to switch from one speed to the next, but cleaning is challenging. Dial controls wipe down easily, but can be a challenge to switch speeds. Flip switches have limited blending options but easy cleaning.

Blades: Strong blades are important to withstand tasks such as pulverizing and last for a long time.

Speed: Blenders can have 2 to 17 speeds. Three speeds are considered adequate. Speeds are difficult to distinguish when there are more than 12 speeds. A pulse setting is usually desirable precision is better – a nice feature when blending delicate ingredients. High-performance blenders may come with preprogrammed settings.

Power: Blender power ranges 300 to 1,000+ watts, with manufacturer claims that higher wattage equals better performance. However, some evaluators indicate the overall design of the blender (i.e., blade assembly and shape of the container) affects performance more than the wattage.

Warranty: Ranges 1 to 7+ years

Size Specifications: Including weight (ease of picking up/moving) and height, width, and depth (for countertop placement).

Accessories: May include additional containers, scrapers, cups, lids, recipe books.

References

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SAMPLE CLASS BLENDERS:



Vitamix E310 Explorian Blender,
Professional-Grade, 48 oz.
Container, Red

[Visit the Vitamix Store](#)

★★★★★ 3,753 ratings

Amazon's Choice in Countertop Blenders by Vitamix

Price: ~~\$349.95~~ **prime** & FREE Returns
or 5 monthly payments of \$69.99

Get a \$150 Gift Card: Pay \$199.95 ~~\$349.95~~ upon approval for
the Amazon Prime Rewards Visa Card. No annual fee.

Color: Red



Style: **Blender**

Blender

Blender + Cup

Blender + Scraper

Color Red
Material Tritan
Brand Vitamix
Voltage 120 Volts
Item Dimensions LxWxH 11 x 8 x 17 inches

About this item

- Variable Speed Control: Ten variable speeds allow you to refine every texture with culinary precision, from the smoothest purées to the heartiest soups
- Pulse Feature: Layer coarse chops over smooth purées for heartier recipes, such as chunky salsas or thick vegetable soups.
- The 48-ounce container is ideal for blending medium batches for small family meals.
- Hardened Stainless-Steel Blades: Our aircraft-grade stainless steel blades are designed to handle the toughest ingredients, so from the first blend to the last, you get the same quality results.
- Self-Cleaning: With a drop of dish soap and warm water, your Vitamix machine can clean itself in 30 to 60 seconds.
- 5-Year Full Warranty: We stand behind the quality of our machines with full warranties, covering all parts, performance, labor, and two-way shipping at no cost to you.
- What's in the Box: motor base, 48 oz. container, mini-tamper, cookbook

2.



NutriBullet ZNBF30500Z Blender Combo 1200 Watt, 1200W, Dark Gray

Visit the NutriBullet Store

★★★★★ 6,937 ratings

Amazon's Choice in Countertop Blenders by NutriBullet

List Price: ~~\$139.99~~ Details

Price: **\$114.99** ✓prime & FREE Returns

You Save: **\$25.00** (18%)

Thank you for being a Prime member. Get a \$150 Gift Card: Pay \$0.00 upon approval for the Amazon Prime Rewards Visa Card.

May be available at a lower price from other sellers, potentially without free Prime shipping.

About this item

- NutriBullet blender combo will take your nutrition extraction to the next level with the versatility of both a multi-serving pitcher and a single serve cup.
- Three precision speeds, A pulse function and the extract program offer full control at the Press of a button. 1200 watts of power let you make an endless array of smoothies, soups, sauces, nut butters and beyond.
- Includes: (1) 1200W motor base, (1) 64 oz blender with lid and vented lid cap, (1) Tamper, (1) 32 oz cup, (1) 24 oz cup, (2) to-go lids, (1) easy-twist Extractor blade, and recipe book
- The easy-twist Extractor blade is made of powerful stainless steel and designed with cyclonic action. Our super-durable BPA-free pitcher and cups are made of high-performance plastic.
- Hassle-free cleaning - simply place pitcher and cups in the dishwasher and rinse The easy twist Extractor blades with soap and water.
- Unit dimensions: 8.07 L x 7.75 W x 16.97 H
- This item includes a 1 year Limited warranty.
- Note: Refer to user manual before use
- Product built to North American & Canadian Electrical standards

May be available at a lower price from other sellers, potentially without free Prime shipping.

Special Feature	Manual
Brand	NutriBullet
Color	Dark Gray
Material	Stainless Steel, Plastic
Item Weight	64 Ounces

3.



Oster Blender | Pro 1200 with Glass Jar, 24-Ounce Smoothie Cup, Brushed Nickel

[Visit the Oster Store](#)

★★★★★ 10,298 ratings

Amazon's Choice for "oster blender"

List Price: ~~\$79.99~~ [Details](#)

Price: **\$59.99** ✓prime & FREE Returns

You Save: **\$20.00 (25%)**

Thank you for being a Prime member. Get a \$150 Gift Card: Pay \$0.00 upon approval for the Amazon Prime Rewards Visa Card.

May be available at a lower price from other sellers, potentially without free Prime shipping.

Color	Brushed Nickel
Material	Plastic
Brand	Oster
Item Dimensions LxWxH	14.25 x 7.25 x 8 inches
Wattage	1200 watts

About this item

- Smart settings technology and 7 speeds including 3 pre-programmed settings for the most common blender creations
- Dual direction blade technology for extra blending power to chop and grind with precision extra wide 3.5" blade system allows ingredients to flow down into the blade easier for faster and smoother results
- 1200 power watts and 900 watts of ice crushing power
- 6 cup dishwasher safe Boroclass glass jar withstands thermal shock
- Pulse feature for added control and precision; Featuring a 50% larger blade system (compared to previous Oster blender models) and patented dual direction blade technology that blends in forward and reverse motion
- Oster 10 year Duralast all metal drive limited warranty for lasting durability
- Includes extra large capacity 24 ounces smoothie cup

4.



Roll over image to zoom in

Color	Passion Red
Brand	KitchenAid
Voltage	110 Volts
Item Dimensions LxWxH	9.02 x 7.59 x 15.8 inches
Wattage	1200.00

About this item

- Unique asymmetric blade that blends at four distinct angles to pull contents into the blade. Working with the 1.5 peak HP motor*, the blade creates a powerful blending vortex to power through the toughest ingredients. *Laboratory Measurement of peak horsepower output of motor.
- 3 preset recipe programs: ice crush, icy drinks & smoothie and 5-speed variable speed dial
- Soft start feature starts the motor at a slower speed to pull food into the blade, then quickly increases to the selected speed setting to avoid splatter
- Intelli-speed motor control senses contents and maintains the optimal speed to power through all ingredients
- K400 blender accessories available* - 8-oz. Small Batch Jar Expansion Pack (KSB2042BBA), 16-oz Personal Blender Jar Expansion Pack (KSB2032PJA). *sold separately.

KitchenAid KSB4027PA K400 Countertop Blender, 56 Oz, Passion Red





Visit the KitchenAid Store

★★★★☆ 689 ratings

Price: **\$249.00** ✓prime & FREE Returns
or 5 monthly payments of **\$49.80**

Get a \$150 Gift Card: Pay **\$99.00** ~~\$249.00~~ upon approval for the Amazon Prime Rewards Visa Card. No annual fee.

Color: **Passion Red**

 \$249.95	 \$249.00 ✓prime
 2 options from \$249.95	 \$249.00 ✓prime

Scenario

Bridgette has decided she needs to start eating healthier. Fewer donuts for breakfast, more smoothies. Also more soups and salads. She is also preparing more sauces. She finds using a hand mixer just does not blend the sauce ingredients as well as it could. Bridgette has decided it is time to invest in a blender, one that can accomplish all those tasks: making smoothies, soups, and blending ingredients -- so the stronger the blender and the more accessories it contains, the better. She especially wants an on-the-go smoothie container in addition to the traditional container. She is willing to spend up to \$350. She wants a model that is easy to clean (both the base and the container). She also prefers a plastic container so she has less chance of breaking it, but is not opposed to a glass container as long as it can withstand thermal shock. She plans to use the blender all the time, so a strong warranty is important.

STANDARDS

ALTERNATIVE SOLUTIONS	PRICE	CLEANING	PLASTIC CONTAINER	SMOOTHIE CONTAINER	WARRANTY
1. Vitamix E310	\$350.00	☑/ 😞	☑	😞	☑
2. NutriBullet ZNBE30500Z	\$115.00	☑ +	?	☑	😞
3. Oster Blender PRO1200	\$60.00	☑/ 😞	😞	☑	☑
4. KitchenAid KSB4027PA	\$250.00	😞	?	☑/ 😞	?

Placement: 3-2-1-4

The Oster Blender (#3) was ranked highest for several reasons: 1) price requirement met; this was actually \$290 below budget; 2) the buttons on the base were raised slightly but are far enough apart that it shouldn't be too hard to clean between them; 3) although the primary container was not plastic, the glass was designed to withstand thermal shock; 4) the unit included a 24 oz smoothie container; and 5) it had a 10-year limited warranty; plus, at the lower cost, Bridgette could afford to replace the unit in a few years if needed. The next best choice was the NutriBullet (#2). It was designed the best for cleaning with a smooth surface on the base. The material for the container was not described and would need to be investigated before making a final decision. This unit was the best choice for smoothie containers with 24- and 32-ounce containers. However, it fell short with only a 1-year warranty. The Vitamix (#1) had the extra feature of cleaning the container on the unit, but the dials made the base more challenging to clean. In addition, additional smoothie containers were not available. The KitchenAid (#4) also had dial controls on the base, making cleaning challenging. The container material and warranty information were not provided. Smoothie containers were available but sold separately.

CATEGORY TO STUDY: Microwave Ovens

Overview

A microwave oven uses electromagnetic energy, similar to radio waves, to produce heat in substances such as food. Microwaves, as they are commonly called, have become essential kitchen appliances. Its ability to cook and reheat quickly has made it a "must-have" in today's kitchen. There are two types of microwave ovens – one being wall and cabinet "built-ins" that are usually placed over a stove/range (known as over-the-range, or OTR, microwaves), and the second being a "countertop" oven. What started as limited function units has now evolved into ovens that can sense when food is done by measuring the steam food emits, turntables to rotate food, and shortcut keys with preset cooking times.

A Brief History of Microwave Ovens

Magnetron tubes were a necessity in World War II to generate "microwaves" for short-range military radar. With the end of the war, makers of these tubes, like Raytheon Technologies, needed to find new applications to replace lost sales due to the war's end. Heating foods was one such application. Using radio waves to heat foods was not a new concept at the time. For example, at the 1933 World's Fair in Chicago, Westinghouse demonstrated cooking steak and potatoes between two metal plates using a 10-kilowatt shortwave radio transmitter (Ackerman, 2016).

The actual evolution of today's microwave, however, started as an accidental discovery from Raytheon engineer Percy Spencer, and it all started with a candy bar. Mr. Spencer was visiting his magnetron lab with his favorite chocolate bar in his pocket. While standing in front of an active radar set, he realized suddenly he had a pocketful of melted chocolate. This accident led him to investigate other foods, starting with popcorn that exploded all over the lab when it was near the magnetron. Next, he moved to eggs. For this trial, he cut a hole in the side of a kettle, inserted an egg (still in its shell), and placed a magnetron over the hole to direct microwaves into the kettle. The result? A doubting fellow engineer peeped into the kettle and got a face full of exploding egg! Those two cooking experiments prompted Spencer and Raytheon to file for a patent in 1946 to use microwaves to cook food (Ackerman, 2016; ETHW, 2017).

Raytheon introduced the first commercial Radarange microwave oven in 1946. The target market for this very large appliance was restaurants and airlines to reheat meals on airplanes. Microwaves for consumer use were scaled down in size and first available in 1955 when Raytheon licensed their microwave technology to Tappan. Tappan's RL-1 was a wall-mounted unit, but its high cost of \$1,295 (equivalent to approximately \$13,000 in 2021) made it unaffordable for most consumers. Raytheon, however, did not abandon its pursuit of a consumer-based unit. They acquired the Amana Refrigeration company in 1965, followed by introducing the Amana Radarange in 1967 at the more affordable but still expensive price of \$495 (equivalent to almost \$5,000 in 2021 dollars) (Ackerman, 2016).

For this appliance to "cook" food, the electron tube (i.e., magnetron) generates "microwaves," causing water molecules to vibrate. This action causes the water molecules to bump into one another (i.e., friction) and other food molecules, such as protein and fat, producing heat and increasing the food's temperature. The "microwaves" first hit the food's exterior, with heat produced from the friction to the interior of the food (Sargianis, 2019). At one point, consumers were worried about radiation from microwaves being harmful to human health. However, "microwaves" emitted by this appliance produce

non-ionizing radiation that doesn't have the same risks as radiation from ionizing sources. Plus, the FDA has strict safety standards that manufacturers must meet (FDA, 2020).

Microwave cooking does have its limitations as it cannot produce crispy, brown crusts – you still need your conventional oven for this (ETHW, 2017). Despite these limits, today, microwave ovens are one of the most heavily used kitchen appliances, from reheating a cup of coffee to cooking a frozen dinner and more.

Selection Factors

(Consumer Reports, 2021; Farrell, 2021; Lake Abdelrahman, 2019)

There are several factors to consider when deciding which microwave to purchase.

Type – over-the-range (OTR)/Built-In vs. countertop model

- Countertop microwave – as the name implies, this model sits on the countertop or a cart and just needs to be plugged in to use; most common and most affordable
- OTR or built-in model – this model frees up counter space but requires installation, possibly by a professional; they stay with the home – you do not take these with you when you move

Size/dimensions – consider height, width, and depth to confirm the unit will fit in the desired space

Capacity – how much space is in the interior of the microwave; usually ranges from 0.5 cubic feet (large enough for a dinner plate) to up to 2 cubic feet, with 1 to 2 cubic feet being the most common

Wattage -- more watts typically means faster, more even cooking; however, a 100-watt difference does not matter much

Cooking quality --

- Speed food is defrosted/heated
- How evenly food is heated

Predicted reliability -- manufacturers say microwaves should last at least ten years

Owner satisfaction

Cost -- countertop microwaves cost less than other types, with costs starting as low as \$50. Built-ins can cost between \$200 to over \$1000








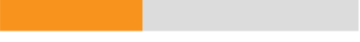


Other features --



- Turntables and trays – rotates the food for more even cooking
- Quick keys -- 30-second or 1-minute presets, for example
- Automatic cooking and/or defrost – senses how long it will take for the item to cook or defrost
- Racks – allow cooking of multiple dishes/food items at the same time
- Shortcut keys -- preset buttons from cooking popular foods)
- Convection cooking, grilling, and browning – these cooking functions are not available in traditional microwaves
- Child lock – prevents children from opening the door and possibly getting burned from hot food
- Communication with a virtual assistant device like Alexa

References

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SAMPLE CLASS MICROWAVE OVENS:

Type/model/cost/description	Consumer Reports Rating
<p>1. Mid-sized countertop model</p>  <p>Panasonic NN-SN67HS</p> <p>Price \$140.00 Shop</p> <p><u>Description:</u> External dimensions: Height = 12 in; Width = 20 in; Depth = 16 in 1.2 cubic-foot capacity 1200-watt Features: <ul style="list-style-type: none"> • a sensor • auto-defrost • touchpad controls </p>	<p>PREDICTED RELIABILITY <small>i</small>  3 / 5</p> <p>HEATING EVENNESS <small>i</small>  4 / 5</p> <p>DEFROSTING EVENNESS <small>i</small>  5 / 5</p> <p>SPEED OF HEATING <small>i</small>  5 / 5</p>
<p>2. Large countertop model</p>  <p>Samsung MS14K6000AS</p> <p>Price \$170.00 Shop</p> <p><u>Description:</u> External dimensions: Height = 12 in; Width = 22 in; Depth = 17 in 1.4 cubic-foot capacity 1000-watt Features: <ul style="list-style-type: none"> • a sensor • auto-defrost • touchpad controls </p>	<p>PREDICTED RELIABILITY <small>i</small>  3 / 5</p> <p>HEATING EVENNESS <small>i</small>  2 / 5</p> <p>DEFROSTING EVENNESS <small>i</small>  4 / 5</p> <p>SPEED OF HEATING <small>i</small>  3 / 5</p>

Type/model/cost/description	Consumer Reports Rating												
<p>3. Built-in model</p>  <p>KitchenAid KMBD104GSS Price \$1,440.00 Shop</p> <p><u>Description:</u> External dimensions: Height = 16 in; Width = 24 in; Depth = 23 in 1.2 cubic-foot capacity 950-watt Features: <ul style="list-style-type: none"> • a sensor • auto-defrost • touchpad controls </p>	<table border="0"> <tr> <td>PREDICTED RELIABILITY <small>i</small></td> <td></td> <td>2 / 5</td> </tr> <tr> <td>HEATING EVENNESS <small>i</small></td> <td></td> <td>3 / 5</td> </tr> <tr> <td>DEFROSTING EVENNESS <small>i</small></td> <td></td> <td>4 / 5</td> </tr> <tr> <td>SPEED OF HEATING <small>i</small></td> <td></td> <td>3 / 5</td> </tr> </table>	PREDICTED RELIABILITY <small>i</small>		2 / 5	HEATING EVENNESS <small>i</small>		3 / 5	DEFROSTING EVENNESS <small>i</small>		4 / 5	SPEED OF HEATING <small>i</small>		3 / 5
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DEFROSTING EVENNESS <small>i</small>		4 / 5											
SPEED OF HEATING <small>i</small>		3 / 5											
<p>4. Over-the-range model</p>  <p>Whirlpool WMH54521JZ Price \$400.00 Shop</p> <p><u>Description:</u> External dimensions: Height = 17 in; Width = 30 in; Depth = 16 in 2.1 cubic-foot capacity 1000-watt Features: <ul style="list-style-type: none"> • a sensor • auto-defrost • touchpad controls • wire rack for bi-level cooking </p>	<table border="0"> <tr> <td>PREDICTED RELIABILITY <small>i</small></td> <td></td> <td>5 / 5</td> </tr> <tr> <td>HEATING EVENNESS <small>i</small></td> <td></td> <td>5 / 5</td> </tr> <tr> <td>DEFROSTING EVENNESS <small>i</small></td> <td></td> <td>5 / 5</td> </tr> <tr> <td>SPEED OF HEATING <small>i</small></td> <td></td> <td>4 / 5</td> </tr> </table>	PREDICTED RELIABILITY <small>i</small>		5 / 5	HEATING EVENNESS <small>i</small>		5 / 5	DEFROSTING EVENNESS <small>i</small>		5 / 5	SPEED OF HEATING <small>i</small>		4 / 5
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SPEED OF HEATING <small>i</small>		4 / 5											

Scenario

Pablo's mom is updating the kitchen. She would like to free up space on the counter and put a microwave over the stove, though she's not opposed to just replacing her current microwave with another countertop model. The family uses their microwave frequently to defrost, cook and reheat foods. They are a very busy family so the quicker their meals can be cooked or heated, the better but the food has to be heated evenly. Pablo's mom also wants to make sure they have a brand and model that will last. She's willing to spend up to \$375, so she wants her investment to be worth it.

STANDARDS

ALTERNATIVE SOLUTIONS	COSTS \$375 OR LESS	Defrosts	Heats up evenly and quickly	Built-in or Countertop model
1. Panasonic NN-SN67HS	\$140.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Countertop
2. Samsung MS14k600AS	\$170.00	<input checked="" type="checkbox"/>	?	Countertop
3. KitchenAid KMBD104GSS	\$1440.00	<input checked="" type="checkbox"/>	?	Built-In
4. Whirlpool WMH54521JZ	\$400.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Over the range

Placement: 4-1-2-3

The Whirlpool microwave oven (#4) was ranked first for several reasons: 1) it's a built-in model, so it frees up at least 20 inches of space on the countertop; 2) it gets very high marks for reliability, defrosting, and heating, and it includes a rack that allows cooking multiple foods on two levels, which means speedier meal preparation. The one drawback to the Whirlpool model is that it is over budget, but not by much. Second in the rankings is the Panasonic unit (#1). It's very reasonably priced and receives very good reviews. The drawback is the counter space it will take up. The Samsung (#2) takes up more counter space and gets very mediocre reviews, as does the KitchenAid (#3), which costs more than three times more than the Whirlpool.

Additional information on the quality of brands can be obtained from *Consumer Reports*

www.ConsumerReports.org

CATEGORY TO STUDY: TOASTERS/TOASTER OVENS

Overview

In the U.S., an estimated 75 million people eat toast every day, making the toaster one of the most important small appliances in today's kitchen (Quick Servant Company, 2016). Food manufacturers have made toasters even more important to consumers by creating foods specifically designed for the toaster, such as pop-tarts and waffles. The toaster oven is not only an alternative to the regular toaster, but has also become popular as an energy-efficient way to cook and reheat small volumes of food that you would typically prepare in a traditional oven. Both types of toasters have seen many improvements over the years, with many options now available to consumers.

A Brief History of Toasters

People have been toasting bread for centuries.

Before the toaster was invented, toasting was done over a fire or flame using various tools, such as a long metal fork or in a metal frame (Snodgrass, 2004). "Toasting" started to change in 1893 when Alan MacMasters from Edinburgh, Scotland, invented the first electric toaster. General Electric came out with their first electric toaster in 1909 (Kyalo, 2021). Toaster ovens came onto the scene at this time as well, with Westinghouse Electric Company's in 1910 (Cooper, 2019). However, these early toasters only toasted bread on one side. That changed in 1913 when the Copeman Electric Stove Company introduced the "toaster that turns toast" that toasted both sides of the bread (Hagley, 2017).

In 1919, the automatic "pop-up" feature was added to an electric toaster designed for restaurants, and by 1926 the product was redesigned for home use and sold it under the brand name *Toastmaster*. This new kitchen gadget introduced features we commonly see in toasters today – toasting both sides of the bread simultaneously, a timer for the heating element, and automatic ejecting the toast when finished (Hagley, 2017). It wasn't cheap, selling for \$13.50, which doesn't sound like much but that is the equivalent of more than \$150 today (FoodReference.com, n.d.).

By the 1960s, prices were low enough that the toaster was commonly found on the kitchen countertop of most U.S. households (Kyalo, 2021). Since then, toasters and toaster ovens have continued to evolve with new features resulting in many choices for consumers today.

Selection Features

(Consumer Reports, 2021; Cook's Illustrated, 2019; McManus, 2021)

There are several factors to examine when deciding which toaster to purchase.

Type:

1. Two or four-slice toasters: This appliance is the least expensive of the two and is a good choice if you only need to toast some type of bread or toaster pastry in the morning. Two-slice models are purchased more than four-sliced models.
2. Toaster ovens: Toaster ovens provide more versatility as they can broil, bake, roast, and reheat small quantities of food, in addition to making toast. This appliance is available as a countertop model and models that are mounted underneath a cabinet.

Design: Several options of exterior finishes are available (i.e., chrome, copper, brushed metal, and a variety of colors). Retro and contemporary designs are also options. Two-slice models may have two side-by-side openings or one long slot. Slot widths and depths vary with toasters, with the widest slots designed for bagels and thicker bread slices. Also, slots less than 5 inches deep are typically too shallow. Some models have windows to let you see your bread toasting.

Toaster ovens size vary widely and are important considerations relative to available counter space. The size of the food that will be prepared in the oven is also a consideration. For example, if you intend to heat frozen pizza in this appliance, the interior needs to be large enough to accommodate this food. Interior lights may be available on some models.

Controls: Choices include "shade" dials (i.e., how light or dark you want your toast), as well as the more precise numbered dials and electronic touchpads. The toast automatically pops up when ready for most toasters, but how high it pops up is different. This feature is important as it impacts how easy or hard it is to get the toast out of the slots. Some models don't have auto pop-up and instead have a chime or click to indicate the toast is ready.

Toaster ovens may have special settings for warming, reheating, broiling, and defrosting. Some models have a convection setting; these models have a fan that allows faster cooking at a lower temperature. An air-frying feature is also available with some models.

Performance: For even browning of bread, toasters have the advantage over toaster ovens. However, toaster ovens are used to cook a wider variety of foods – essentially, most foods you would cook in a traditional oven, but smaller quantities. All toasters/toaster ovens have an automatic shutoff feature, with some having a "countdown" feature.

The numbers of wires on the heating elements of toasters make a difference, with the best models having around 15 wires on each side of the toasting slots. Additionally, the heating element may be wires or quartz rods.

For toaster ovens, the adjustability of the racks is a consideration, especially if you plan to broil food.

Cleanup: Toasters have a crumb tray that is hinged or removable, which is the easier of the two to clean. Nonstick and porcelain interiors are easier to wipe down than other surfaces. Appliances with few vents and holes in the housing reduce cleanup as there are fewer places for grease and grime to collect.

SAMPLE CLASS TOASTERS:

#1



Breville
BOV900BSS the
Smart Oven Air
Fryer Pro,
Countertop
Convection Oven,
Brushed Stainless
Steel

Visit the Breville Store
★★★★★ 5,274
ratings

Brand: Breville

Color: Brushed Stainless Steel

Item Dimensions (LxWxH):
17.5 x 21.5 x 12.7 inches

Material: Stainless Steel

Price: \$399.95 & FREE Returns

About this item

- The Breville Smart Oven Air with Element iQ System is a versatile countertop oven allowing you to roast, air fry and dehydrate; Use super convection to reduce cooking time by up to 30% and choose from 13 cooking functions; Includes an interior oven light
- ELEMENT iQ SYSTEM: Using 6 independent quartz elements, smart algorithms steer power to where and when it's needed to create the ideal cooking environment; Sensing and digital PID temperature control eliminates cold spots for precise and even cooking
- AIR FRY & DEHYDRATE SETTINGS: Air fry French fries and other family favorites; Higher temperatures combined with super convection (maximized air flow) deliver crispy golden air fried foods; Dehydrate a wide range of food, up to 4 trays of goodness at once
- SUPER CONVECTION TECHNOLOGY: 2 speed convection fan (super & regular) offers greater cooking control; Super convection provides a greater volume of hot air to ensure fast and even heat distribution perfect for air frying, dehydration and roasting
- 13 COOKING FUNCTIONS: Super versatile countertop oven and air fryer with 13 functions to guide you to perfection: Toast, Bagel, Broil, Bake, Roast, Warm, Pizza, Proof, Air Fry, Reheat, Cookies, Slow Cook and Dehydrate
- EXTRA LARGE CAPACITY: Extra large 21.5 x 17.1 x 12.7 inch interior with capacity for 9 slices of bread, a 14 pound turkey, air frying French fries and slow cooking with a 5 qt Dutch oven; Large enough to fit most 9 x 13 inch pans and 12 cup muffin trays
- INTERIOR OVEN LIGHT: Integrated oven light automatically turns on at the end of the cooking cycle to help you see inside; It can be turned on at any time to see your progress; Replaceable componentry like your regular large oven
- LCD DISPLAY: LCD display to easily access the built in smart functionality and all cooking functions; The LCD also indicates when pre-heat has completed and automatically begins to count down on the cooking time for perfect results
- INCLUDED ACCESSORIES: 13 inch Pizza Pan; Two Oven Racks; 9 x13 inch Broil Rack and Enamel Roasting Pan; Mesh basket rack for dehydrating and air frying
- WARRANTY: 2 Year Limited Product Warranty; Power: 1800 Watts; Voltage: 110 to 120 Volts

#2



\$29⁹⁹

Oster 2 Slice, Bread, Bagel Toaster, Metallic Grey

Color: **Metallic Gray**

Brand Oster

Color Metallic Gray

Material Stainless Steel

Item 11.7 x 6.9 x 7.3

Dimensions inches

LxWxH

Item 3.9 Pounds

Weight

About this item

- **ADVANCED TOAST TECHNOLOGY:** Designed with Advanced Toast Technology and auto-adjusting bread guides for consistent, even toasting, every time
- **EXTRA-WIDE SLOTS:** Made with 2 extra-wide slots to easily accommodate a variety of bread types, from bagels to artisanal breads
- **7 SHADE SETTINGS:** Features 7 toast shade presets from light to dark, to make it easy to customize your toasted bread just the way you like it
- **CUSTOMIZABLE TOASTING TIMES:** Bagel, Frozen and Pastry settings automatically adjust toasting times, for perfectly toasted results
- **LIFT LEVER:** Integrated high-rise lever lifts toast out for easy retrieval

#3



Cuisinart CPT-435
Countdown 4-
Slice Brushed
Stainless Steel
Toaster

Brand Cuisinart

Color Brushed Stainless

Material Alloy Steel

Item 12.6 x 12.3 x 9

Dimensions inches

LxWxH

Item 7.1 Pounds

Weight

Price: \$79.95

About this item

- Stainless steel housing and blue backlit LCD countdown feature display
- Blue LED function buttons. Note: Kindly refer the user manual before usage of the product.
- 7 Shade settings as well as Bagel, Defrost and Reheat options
- Removable crumb tray
- Self-adjusting 1-1/2-Inch wide slots.
- Stainless Steel Housing

#4



Cuisinart TOB-135N Deluxe Convection Toaster Oven Broiler

Visit the Cuisinart Store
★★★★★ 1,009 ratings

Price: \$174.89

Brand	Cuisinart
Color	Silver
Item	18.5 x 15.35 x 9.84 inches
Dimensions	9.84 inches
LxWxH	
Item Weight	17.75 Pounds
Finish Type	Polished

About this item

- 1. Spacious 0.6 cubic-foot capacity Fits 6 slices of bread or a 12" pizza
- 2. Digital controls allow you to set the temperature in increments of 25 degrees with large blue backlit display; 9 functions
- 3. Convection fan cooks food faster and more evenly
- 4. Easy-clean nonstick interior
- 5. Clock and 2-hour timer; automatic shutoff
- 6. Included Components: Toaster Oven Unit

Scenario

Natalie and Brian have cooked meals with their parents and want to start making their own, especially breakfasts and lunches. Avocado toast for breakfast, grilled cheese for lunch, pizza for all three meals. Mom says to remember they have to clean as well as cook. Their current toaster is a basic two-slice model, but they need one that can do more than brown bread. The kids have been given a budget of up to \$200 to spend.

STANDARDS

ALTERNATIVE SOLUTIONS	PRICE	TYPE: TOASTER OR TOASTER OVEN	SPECIAL SETTINGS	Can it bake a pizza?	Easy Cleaning
1. Breville Smart Oven Air Fryer Pro	\$399.95	Toaster Oven	<input checked="" type="checkbox"/> Roast, air fry, dehydrate, convection	<input checked="" type="checkbox"/>	?
2. Oster 2 slice toaster	\$29.99	Toaster	☹️	☹️	?
3. Cuisinart Countdown 4 Slice Toaster	\$79.95	Toaster	☹️	☹️	?
4. Cuisinart Deluxe Convection Toaster Oven	\$174.89	Toaster Oven	<input checked="" type="checkbox"/> 9 functions; convection	<input checked="" type="checkbox"/> medium-sized one	<input checked="" type="checkbox"/>

Placement: 4-1-2-3

The Cuisinart Deluxe Convection Toaster Oven (#4) was ranked highest. Since it is a toaster oven, it can make all the foods that Natalie and Brian want to make, and it has a non-stick interior for easy cleaning. While the Breville (#1) also meets their cooking needs and has many cool features, it is over budget. The two toasters (#2 & #3) won't meet their needs as they can only make toast with these appliances. The Oster model has a slight edge because of the price, but neither model is suitable.

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CATEGORY TO STUDY: Multi-Cookers

Overview

Multi-cookers are countertop appliances that can "do it all." No more need for a separate slow, pressure, rice, or steam cooker or sauté pan--this appliance handles all these tasks. It frees up space on your countertop as well as your time. Sales of multi-cookers have skyrocketed over the past several years as families have learned about this appliance's versatility. Some models are pressure cookers, all have a slow-cook function. Additional appliance functions could include air-frying, crisping, dehydrating, and sous vide.

Additional convenience factors could include clarity of the touch controls, multi-cooker programming ease, and cooking surface durability.

A Brief History of Multi-Cookers

While multi-cookers have several functions, they are well known for their pressurized cooking and slow cooking features. The first pressurized cooking pot was believed to have been made in the 17th century by Denis Papin, a French physicist. Alfred Vischer advanced pressurized cooking by introducing his Flex-Seal Speed Cooker in 1938--the first pressure cooker designed for home use on a stove. Electric rice cookers, another form of pressurized cooking, were developed in Japan in the 1950s and moved pressurized cooking from the stovetop to the countertop. Interestingly, the first electric pressure cooker patent wasn't until Chinese scientist, Yong-Guang, obtained it in 1991.

The first slow cooker was created in 1936 by Chicago-based inventor Irving Naxon. However, it wasn't until the 1950s when Naxon introduced his invention to the marketplace as the Naxon Beanery. However, this small appliance did not become popular in home kitchens until the 1970s after Rival Manufacturing bought the rights to the Nixon Beanery, updated it, and rebranded it "Crock-Pot." While it continued to be a common kitchen appliance, the slow cooker's popularity experienced a resurgence in 2005 when a new generation of cooks looked for ways to serve "from scratch" meals that didn't take time away from other family activities.

The electric multi-cooker for home use was first introduced in 2010 via Amazon as the Instant Pot[®]. Robert Wang was credited with inventing this hybrid of slow and pressurized cooking. Initial units were marketed as a cooking powerhouse that had functions of six appliances. The multi-cooker popularity has brought other companies into the mix, with units now being produced by companies other than Instant Pot[®]. Functionality has continued to advance, with some models touting ten or more different cooking functions -- with many performed in half the time it traditionally takes -- making this appliance one of the most prized appliances in today's kitchen. In fact, these multi-function wonders are now the tops of wedding registry gift lists, with a Facebook following of 1.3 million members in the Instant Pot[®] Community alone.

Selection Factors

Due to the nature of the appliance, there are several factors to examine when deciding which multi-cooker to purchase.

Cooking Methods:

Pressure Cooking: High-temperature steam and pressure results in cooking times up to 50% faster while retaining nutrients. Pressure cooking also tenderizes cheaper cuts of meat. This function is typically considered the most important, with a Cook's Illustrated survey indicating that 93% of respondents reporting pressure cooking was their primary use of this appliance.

Slow Cooking: **Slow-cooking** involves searing meat well in oil or butter at a relatively high temperature before the **cooking process** is finished off slowly and gently in the oven at a lower temperature. Slow cooking helps to tenderize less expensive cuts of meat, which saves money.

Rice Cooking: Multi-cookers use pressure to cook rice in a fraction of the time it takes to cook in a covered pot on the stove.

Sautéing: Instead of dirtying another pan on the stove, recipes that call for browning meat or sautéing vegetables before cooking can be done directly in the multi-cooker. Some multi-cookers may use the terms searing or browning for this function. Different temperature levels such as low, medium, or high may be included, with some models indicating an exact temperature (i.e., 350F).

Steaming: Gentle heat prevents foods from drying out and minimizes the risk of burning or scorching food. Steam-cooked foods retain more flavor, texture, and color with less vitamin, minerals, and nutrient loss.

Other food preparation methods: Some multi-cookers have additional food preparation functions such as sous vide, ferment, air-fry, baking, yogurt-making, and more.

Size: Models are available in 3-, 6-, and 8-quart sizes. The 8-quart model provides more surface area for functions such as sautéing, but the tradeoff is a comparatively heavier, larger unit.

Convenience: In addition to offering multiple cooking methods, additional convenience features include a delay start timer that allows food to be put into the multi-cooker in advance and selecting a later time to start cooking the meal. Some multi-cookers have buttons for specific dishes such as meat, fish, or rice. The keep-warm function automatically kicks in after the food is cooked and keeps it warm until it is ready to be served. Some multi-cookers may also include accommodating cooking adjustments for high-altitude locations such as Colorado. Manufacturers have also introduced units with "Smart WiFi" to control the appliance from a smart device (i.e., phone or tablet).

Alerts: Alert systems "beep" or provide a sound to alert the user when the unit is ready to perform certain functions.

Pots: Pots may be non-stick or stainless steel. While non-stick is easier to clean, stainless steel provides more even cooking.

Dishwasher Safe Insert and Lid

Accessories: Could include a stainless steel steam basket, trivet, temperature probe, and/or condensation collector.

Appliance Specifications: Including weight (ease of picking up/moving), height, width, and depth (for countertop placement).

Warranty: Length of time the product is covered for product defects.

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SAMPLE CLASS MULTI-COOKERS:



1.

Zavor LUX LCD : ZSELL02

Features

PROGRAMMABLE [i](#)

Yes

OF PRESET COOKING MODES [i](#)

10

NONSTICK POT [i](#)

No

DISHWASHER SAFE INSERT [i](#)

Yes

DISHWASHER SAFE LID [i](#)

No

ACCESSORIES [i](#)

Stainless steel steam basket, trivet, condensation collector

Specs

TOTAL WEIGHT (LBS.) [i](#)

12

EXTERIOR HEIGHT (IN.)

14

EXTERIOR WIDTH (IN.)

14

EXTERIOR DEPTH (IN.)

12

WARRANTY (YRS.) [i](#)

1

\$159.95

In stock

Home Depot

\$159.95

In stock

Sur La Table

Free Shipping on Orders \$75+.

\$159.95

In stock

Walmart

Big Summer Savings - Over 1,000 Rollbacks and More Low Prices.

\$159.95

In stock

Wayfair

\$159.99

In stock

Bed Bath & Beyond

Featured functions: Pressure Cook (high and low), Slow Cook (high and low), Steam, Saute, Flex (that allows to Sous Vide), Simmer, Yogurt, Grains, Eggs, Dessert, Keep Warm and Time Delay to program cooking time at your convenience
Over 33 programmable settings include: Hard Boiled Eggs, Meat, Beans, Soup, Risotto, Vegetable, Omelette, Cheesecake and more!



Wolf Gourmet Multi Cooker WGSC100S

2.

Features

PROGRAMMABLE [i](#)

Yes

Specs

OF PRESET COOKING MODES [i](#)

6

TOTAL WEIGHT (LBS.) :

22

NONSTICK POT [i](#)

No

EXTERIOR HEIGHT (IN.)

12

DISHWASHER SAFE INSERT [i](#)

Yes

EXTERIOR WIDTH (IN.)

18

DISHWASHER SAFE LID [i](#)

Yes

EXTERIOR DEPTH (IN.)

15

ACCESSORIES [i](#)

Sous vide rack, temperature probe

WARRANTY (YRS.) [i](#)

5

\$599.95

[In stock](#)

Best Buy

\$649.95

[Prime Eligible](#)

Amazon

\$812.99

[In stock](#)

Macys.com

PROGRAM: Select one or two heat settings and cooking times for customized cooking, or insert the temperature probe into the food and set the temperature to your preferred doneness
RICE: Cook 6-18 cups of white or brown rice
SAUTÉ & SEAR: Precise sautéing and searing on low, medium, and high temperature settings
SOUS VIDE: Gently bring foods to a precise temperature in a warm water bath using the probe



3.

Instant Pot Duo Evo Plus 10-In-1 Multi-Cooker

Features

PROGRAMMABLE [i](#)

Yes

OF PRESET COOKING MODES [i](#)

8

NONSTICK POT [i](#)

No

DISHWASHER SAFE INSERT [i](#)

Yes

DISHWASHER SAFE LID [i](#)

Yes

ACCESSORIES [i](#)

Steam Rack, Condensation Collector

Specs

TOTAL WEIGHT (LBS.) [i](#)

13

EXTERIOR HEIGHT (IN.)

13

EXTERIOR WIDTH (IN.)

13

EXTERIOR DEPTH (IN.)

13

WARRANTY (YRS.) [i](#)

1

Price: **\$130.89**

Instant Pot Duo Evo Plus is the latest evolution of the all-time bestseller Instant Pot Duo Series; With 20 plus enhancements, it is the fastest in the class, the easiest to use for new users and the most customizable for experienced Instant Pot owners

Cooks fast & saves time: Cooks up to 70 % faster; New 1400w heating element reduces preheating time allowing you to make meals faster; Pressure release time is shortened with our new QuickCool technology

Consistently delicious as you like it: 48 customizable presets for soups, beans, rice, ribs and more;

Takes the guesswork out and makes cooking dishes everyone will love easy; Programs like sous vide and bake make preparing chef quality entrees and desserts easy



4.

Black+Decker PR100 11-In-1 Cooking Pot Multi-Cooker

Features

PROGRAMMABLE [i](#)

Yes

Specs

OF PRESET COOKING MODES [i](#)

8

TOTAL WEIGHT (LBS.)

11

NONSTICK POT [i](#)

Yes

EXTERIOR HEIGHT (IN.)

11

DISHWASHER SAFE INSERT [i](#)

Yes

EXTERIOR WIDTH (IN.)

18

DISHWASHER SAFE LID [i](#)

No

EXTERIOR DEPTH (IN.)

11

ACCESSORIES [i](#)

Rice Spoon, Trivet, Measuring cup

WARRANTY (YRS.) [i](#)

2

Faster Cooking! - Pressure cooking gets dinner on the table faster*! Enjoy the full flavor of all your favorites in a fraction of the time

7-in-1 Cooking Pot - The 7 dedicated pressure cooker functions make it easy to prepare a variety of foods in an instant*. Functions include: white rice, brown rice, beans, meat, steaming, soup, and manual programming

4 Non-Pressure Functions - Go beyond pressure-cooking for even more one pot meals with settings for traditional slow cooking (high or low heat), browning, and keeping food warm

9 Added Safety Features - Carefully designed with a system of safety checks for peace of mind every time you use the pressure cooker

Cookbook and Accessories Included - Delicious recipes

\$74.98

Prime Eligible

Amazon

\$79.99

In stock

Walmart

Big Summer Savings - Over 1,000 Rollbacks and More Low Prices.

Scenario

Monique's dad is finding he has less and less time to cook for dinner every night. Most weekday afternoons are spent transporting Monique and her brothers to various after-school activities. By the time they're ready to go home, everyone is tired and hungry, so they end up grabbing dinner from fast-food restaurants. Dad knows that's not good for their budget or their health. He's been hearing about these multi-cookers, where he has the option of either slow-cooking a meal to be ready when they get home or pressure-cooking items in half the time of using an oven. He's decided it's time to invest in one of these appliances, but he doesn't want to spend over \$175. He loves having the slow cook/pressure cook option as well as having the option to program the meal to be cooked by a certain time. The kids are in charge of cleaning up after dinner, so ease of cleaning is important. Finally, Dad doesn't want to leave this appliance on the countertop--it just adds to kitchen clutter. Therefore, it has to be easy to move from cabinet to countertop and back.

STANDARDS

ALTERNATIVE SOLUTIONS	COSTS \$175 OR LESS	PROGRAMMABLE	EASY CLEAN UP	ABILITY TO BE MOVED
1. Zavor LUX LCD: ZSELL02	\$160.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Wolf Gourmet Multi-Cooker WGSC100S	\$600.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Instant Pot Duo Evo Plus 10-In-1 Multi-Cooker	\$131.00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Black+Decker PR100 11-In-1 Cooking Pot Multi-Cooker	\$75.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Placement: 3-4-1-2

The Instant Pot Duo Evo Plus was ranked first because it meets all of the criteria. For easy clean-up, the insert and lid are dishwasher safe. While the pot does not provide the easy-to-clean non-stick pot, the pot may be stainless steel, which is a better cooking surface and still relatively easy to clean. Monique's dad will want to confirm this before purchasing. Additional information for the Instant Pot indicates it provides 70% faster cooking than previous models; however, it is unclear how the Instant Pot's cooking speed compares to the other three models evaluated. Since speed is an important factor for Monique's dad, he may want to check into this before making a final decision. The price for #4 (Black+Decker PR100) is attractive, and it is 2 pounds lighter than the Instant Pot, making it a bit easier to move. However, clean-up may be a greater challenge as only the insert is dishwasher safe and not the lid, plus the width is 18 inches (compared to 13 inches for the Instant Pot), meaning more counter space is needed. The Zavor LUX LCD (#1) is still within budget, but the clean-up concern is similar to the

Black+Decker model. Weight and width for this brand are similar to the Instant Pot. The Wolf Gourmet unit is not financially feasible as it exceeds the budget by \$425. Also, it comes in as the largest at 22 pounds with a width of 18 inches, making moving the unit a challenge and uses more counter space than the Instant Pot.

Add information on the quality of brands can be obtained from *Consumer Reports*
www.ConsumerReports.org