

Oil Smoke Points

What Is the Smoke Point?

The **smoke point** generally refers to the temperature at which a cooking fat or oil begins to break down to glycerol and free fatty acids. The glycerol is then further broken down to acrolein, which is a component of the bluish smoke produced at the smoke point. Acrolein is what causes oil smoke to be extremely irritating to the eyes and throat. The smoke point also marks the beginning of both flavor and nutritional degradation and is thus a key consideration when selecting a fat for cooking and frying. The smoke point of a specific oil dictates the maximum temperature, and therefore, how a particular fat may be used. For instance, stir-frying is a very high temperature process requiring fat/oil with a high smoke point. Oils with a low smoke point (those under 350° Fahrenheit/177° Celcius) are generally not heated.

At What Point Will Oil Catch on Fire?

Considerably above the temperature of the smoke point is the **flash point**, the point at which combustion (fire) occurs. Fire will also occur when oil is accidentally poured/splattered into a flame.

Nutrient and Health Considerations

The smoke point of various fats is important to note because a fat is no longer safe for consumption after it has exceeded its smoke point and has begun to break down. Once fat/oil hits its smoke point, it will usually emit a harsh smell and fill the air with smoke. Other times, if relatively little fat/oil is used, it may darken and become gummy, making it difficult to remove. In addition, fats that have gone past their smoke points contain large quantities of free radicals, which contribute to the risk of cancer.

Refined Oils

Refining oils (which takes out impurities, volatile oils, and often a lot of the flavor) increases their smoke point.

The table that follows lists some approximate values for smoke points of various common fats/oils.



Fat/Oil	Smoke Point	
Flax seed oil, Unrefined	225°F	107°C
Safflower oil, Unrefined	225°F	107°C
Sunflower oil, Unrefined	225°F	107°C
Corn oil, Unrefined	320°F	160°C
Peanut oil, Unrefined	320°F	160°C
Safflower oil, Semi-refined	320°F	160°C
Soybean oil, Unrefined	320°F	160°C
Sunflower oil (High-Oleic), Unrefined	320°F	160°C
Walnut oil, Unrefined	320°F	160°C
Hemp oil	330°F	165°C
Butter	350°F	177°C
Coconut oil, Unrefined	350°F	177°C
Sesame oil, Unrefined	350°F	177°C
Soybean oil, Semi-refined	350°F	177°C
Vegetable shortening	360°F	182°C
Lard	370°F	182°C
Olive oil, Extra Virgin	375°F	191°C
Walnut oil, Semi-refined	400°F	204°C
Olive oil, Low-Acidity Extra Virgin	405°F	207°C
Macadamia oil	413°F	210°C
Almond oil	420°F	216°C
Cottonseed oil	420°F	216°C
Grapeseed oil	420°F	216°C
Olive oil, Virgin	420°F	216°C
Hazelnut oil	430°F	221°C
Coconut oil, Refined	450°F	232°C
Corn oil, Refined	450°F	232°C
Peanut oil, Refined	450°F	232°C
Sesame oil, Semi-refined	450°F	232°C
Soybean oil, Refined	450°F	232°C
Sunflower oil, Semi-refined	450°F	232°C

Fat/Oil	Smoke Point	
Sunflower oil, Refined	450°F	232°C
Palm oil, Fractionated	455°F	235°C
Olive oil, Pomace (Light)	460°F	238°C
Canola oil, Expeller Pressed	464°F	240°C
Olive oil, Extra Light	468°F	242°C
Canola oil, Refined	470°F	240°C
Canola oil, High Oleic	475°F	246°C
Ghee (clarified butter)	485°F	252°C
Rice bran oil	490°F	254°C
Safflower oil, Refined	510°F	266°C
Avocado oil	520°F	271°C

