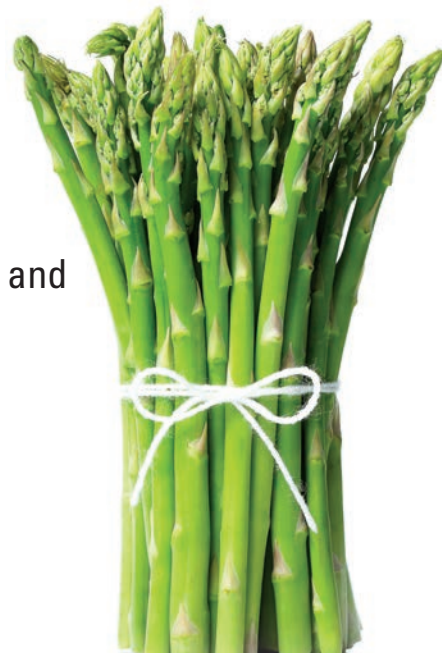




# Methyl Mercaptan

Use in vegetable, savory, dairy, brown and fruit flavors

John Wright; johnwrightflavorist@gmail.com



Regular readers of my column may have noted a modest bias toward sulfur compounds that have spectacular effects in less-than-obvious applications. The key benefit of admitting an obvious bias is that it can then be further indulged without undue guilt.

Methyl mercaptan (FEMA# 2716, CAS# 74-93-1) has a unique aroma, reminiscent of asparagus and cabbages, and is clearly a great candidate for a wide range of vegetable flavors. However, it is also surprisingly important in many other diverse flavor types. It can be rather difficult to use because it is highly volatile, with a boiling point of only 6°C. The use of relatively diluted solutions helps to solve the problem, typically 1% of methyl mercaptan in propylene glycol or triacetin.

The dose rates given are the levels of methyl mercaptan to be used in flavors that are intended to be dosed at 0.05% in a ready-to-drink taster, beverage or bouillon application.

## Vegetable Flavors

**Asparagus:** Methyl mercaptan is a key character recognition component of asparagus flavors. Levels vary, but 300 ppm is a good starting point.

**Cabbage:** Similar levels also play a vital part in cabbage flavors and are particularly helpful to recreate a pickled cabbage, sauerkraut character.

**Seaweed:** In seaweed flavors, 200 ppm is an effective level and plays a useful part in both the fresh and dried characters.

**Onion:** Fried onion character can be difficult to reproduce, and methyl mercaptan plays a useful part, adding realism and complexity at around 150 ppm in flavors.

**Bell pepper:** Roasted bell pepper flavors in particular benefit from the addition of levels ranging from 100–150 ppm. Lower levels, around 40 ppm, are preferred in jalapeño flavors.

**Mushroom:** Cooked mushroom flavors only require the addition of around 10 ppm of methyl mercaptan, but shitake mushroom and truffle flavors are a very different story and can take levels up to 100 ppm.

**Soy sauce:** Levels between 50 and 100 ppm in soy sauce flavors add significantly to the typical character.

**Potato:** Methyl mercaptan is an important ingredient in many different types of potato flavors, but it is especially useful in french fry and potato chip flavors at levels ranging from 20–100 ppm.

**Sweet corn:** Similar levels perform a similar function in cooked sweet corn flavors and contribute above all to the character of toasted corn in snacks.

**Chives:** Raw chive flavors are also attractive in snack flavors, and a good level of use is around 50 ppm.

**Garlic:** This ingredient is especially useful in fried type flavors, but the ideal level is much lower than in fried onion flavors, around 20 ppm or less.

## Savory Flavors

**Fried prawn:** The level of use in fried prawn and lobster flavors can be very varied, ranging from around 50 ppm up to 400 ppm or 500 ppm in more sulfurous, heavily fried profiles.

**Beef:** Lower levels are effective in boiled beef flavors, around 100 ppm, but up to 200 ppm can be used in fried or roast beef flavors.

**Egg:** Cooked egg flavors are dominated by sulfur notes and levels of use can range from 100–200 ppm.

**Lamb:** Similar levels, around 100 ppm, are useful in both stewed and fried lamb flavors.

**Bacon:** Fried bacon flavors can also use varied levels, but 100 ppm is a good starting place.

**Chicken:** The effect in chicken flavors is very similar, but the optimum levels of use are approximately half of those used in beef flavors.

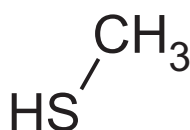
**Ham:** Ham and pork flavors only require a quite subtle sulfur effect, and 20 ppm is effective.

## Dairy Flavors

**Toasted cheese:** Methyl mercaptan rounds out toasted cheese flavors and adds realism at levels around 50 ppm.

Methyl mercaptan

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**Cheese:** Methyl mercaptan levels in cheese flavors are generally higher in Emmental and cheddar types than in uncooked cheese flavors.

**Condensed milk:** Only a subtle effect is required in condensed milk flavors, and 10 ppm is quite effective.

## Brown Flavors

**Brown sugar:** Raw sugar cane and brown sugar flavors can accommodate a surprisingly high level of methyl mercaptan, around 300 ppm.

**Chocolate:** Dark chocolate and cocoa flavors can also use high levels, ranging from 100–200 ppm.

**Vanilla:** At first sight this chemical may seem a very unpromising ingredient for vanilla flavors. While levels of use can vary, they may reach up to 100 ppm.

**Tea:** Green tea flavors are in a similar category and also benefit from levels up to 100 ppm. Black tea flavors typically use lower levels, around 20 ppm.

**Coffee:** Methyl mercaptan can also be useful in coffee flavors in the range from 10–50 ppm.

**Malt:** This ingredient can be effective to offset methional and add complexity to malt flavors at 20 ppm.

**Nuts:** Many nut flavors, but especially peanut flavors, are improved by subtle additions in the region of 10 ppm. Hazelnut flavors also benefit, but the levels are lower.

**Bread:** Similar levels, around 10 ppm, work well, especially in fermented style bread flavors.

## Fruit Flavors

**Peach:** Methyl mercaptan is an interesting addition to the complex of catty and peach skin sulfur notes in peach flavors, adding realism and impact at levels of 10–50 ppm.

**Strawberry:** This obviously vegetal note will work surprisingly well, even at moderately high levels, up to 20 ppm, in fresh strawberry flavors.

**Watermelon:** The same applies to melon flavors in general, and particularly watermelon flavors, also at levels up to 20 ppm.

**Orange:** Fresh orange juice has a noticeable sulfurous note, which can be recreated by adding 10–20 ppm of methyl mercaptan.

**Lemon:** The same is true, with the same levels, of lemon flavors, and the effect is to increase the impression of freshness.

**Grapefruit:** Once again the same effect of freshly squeezed juice can be introduced by adding 20 ppm of this ingredient, which also serves to subtly counterbalance the catty notes in the juice.

**Lychee:** This asparagus sulfur note is very obviously important to the initial impact of lychee flavors but,

because the overall character is quite subtle, lower levels, in the region of 10 ppm, are most effective.

**Pineapple:** Canned pineapple flavors are already highly sulfurous, and the addition of 5 ppm is all that is needed to round out the character.

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