**A Biological Process**

Making wine is a biological process. Live yeast added to grape juice digests the juice’s sugar giving off [alcohol](http://indianapublicmedia.org/amomentofscience/what_beer_does_to_your_brain/)as a byproduct. How much alcohol is produced depends on how much sugar the juice starts with. But eighteen percent alcohol is about as strong as any wine can get before the yeast poisons itself and the fermentation stops.

**The Process**

Brandy begins as wine but is then distilled, raising the[alcohol concentration](http://indianapublicmedia.org/amomentofscience/breathalyzers-2/) to forty or fifty percent–well above the level that would kill any yeast.

To see how distillation works, picture steam from a kettle hitting a cold windowpane, where it condenses and drips off. The water dripping off is called “distilled water,” which is different from tap water because it no longer contains the salts and minerals with much higher boiling points, which were left behind when the [water](http://indianapublicmedia.org/amomentofscience/cold-feet/)in the kettle turned to steam.

**Wine And Alcohol**

Wine is roughly one part alcohol to five parts water, but the[boiling point](http://indianapublicmedia.org/amomentofscience/boiling-water-boiling-clouds/)for alcohol is only 173 degrees Fahrenheit- 39 degrees lower than the boiling point for water.

So the alcohol in wine can be distilled into brandy by heating the wine to just over 173 degrees — hot enough to boil the alcohol, but not hot enough to boil the water.

**Legal Or Illegal?**

The steam, which is mostly alcohol, is then run through cold tubing where it condenses and drips into a container.

Although the water doesn’t actually boil, some water still evaporates with the alcohol which is why even the strongest liquor is not a hundred percent alcohol. But most of the water is left behind. Making wine is a biological process which is legal in most states. But remove the water to make brandy, and you’re committing a[federal offense](http://indianapublicmedia.org/amomentofscience/drinking-wine-may-lower-risk-of-dementia/).

### 生物过程

酿酒是一个生物过程。添加到葡萄汁中的活酵母消化了果汁中的糖，释放出作为副产品的[酒精](http://indianapublicmedia.org/amomentofscience/what_beer_does_to_your_brain/)。产生多少酒精取决于果汁的起始糖含量。但是，在酵母中毒和发酵停止之前，百分之十八的酒精含量与任何葡萄酒一样强。

### 过程

白兰地以葡萄酒开始，然后蒸馏，将[酒精浓度](http://indianapublicmedia.org/amomentofscience/breathalyzers-2/)提高到百分之四十五，远高于杀死任何酵母的水平。

要了解蒸馏是如何工作的，请将水壶中的蒸汽喷到冷窗玻璃上，凝结并滴下。滴落的水被称为“蒸馏水”，它与自来水不同，因为它不再含有沸点高得多的盐和矿物质，当水壶中的[水](http://indianapublicmedia.org/amomentofscience/cold-feet/)变成蒸汽时，这些盐和矿物质被留下。

### 葡萄酒和酒精

葡萄酒大约是一份酒精到五份水，但酒精的[沸点](http://indianapublicmedia.org/amomentofscience/boiling-water-boiling-clouds/)仅比水的沸点低173华氏度-39度。

因此，葡萄酒中的酒精可以通过将葡萄酒加热到略高于173度来蒸馏成白兰地 - 热到足以煮沸酒精，但不够热，不能煮沸水。

### 合法还是非法？

然后，主要是酒精的蒸汽通过冷管，在那里冷凝并滴入容器中。

虽然水实际上没有煮沸，但是一些水仍然随着酒精蒸发，这就是为什么即使是最强的酒也不是百分之百的酒。但大部分水都被遗忘了。酿酒是一种在大多数州都合法的生物过程。但是除去水以制作白兰地，你就是在犯下[联邦罪](http://indianapublicmedia.org/amomentofscience/drinking-wine-may-lower-risk-of-dementia/)。