



12<sup>th</sup> May 2020

### Boost Up Hand Sanitizer – Alcohol

The base Ethyl Alcohol used in the production of this product is 99.9% pure and is watered down to bring it to a level that is safe to use in sanitizers.

The concentration of Ethyl Alcohol in a hand sanitizer is usually described as a percentage (%), this percentage may be expressed by volume or by weight and this depends on the quantity of ingredients.

When Ethyl Alcohol and water are mixed, the volume of liquid contracts.

As noted on the MSDS, the base volume of liquid used had 72% of it as Ethyl Alcohol. Once the production of the hand sanitizer was completed, and the chemical volume contracted, the concentration of Ethyl Alcohol increased.

In the case of Boost Up Hand Sanitizer, the back label indicates the mass weight of Ethyl Alcohol used in the process is 72%. The actual final percentage of Ethyl Alcohol of the finished product is represented as 75% (this is printed on the front label).

The international standard for testing to complete the MSDS allows for +/- 5% variance when tested. Therefore when testing is completed, regardless of the test showing 73% or 78% final percentage of Ethyl Alcohol, the universal number used for representation of Ethyl Alcohol volume is 75%.

To confirm, the Ethyl Alcohol weight (%) used in the manufacture process is NOT the same as the Ethyl Alcohol volume (%) reflected within the finished product.

Please see below table that shows the concentrations of Hand Sanitizers to compare the values of both scales (the two different scales are necessary because the volume “contracts” if Ethyl Alcohol and water are mixed):

Concentration of ethanol by weight (w/w):	Concentration of ethanol by volume (v/v):	Standard Labelling:
71%	77.8%	75%
72%	78.6%	75%
73%	79.5%	75%

#### References:

<https://wissen.science-and-fun.de/chemistry/chemistry/density-tables/ethanol-water-mixtures/>  
<https://www.bode-science-center.com/center/hand-hygiene/hand-disinfection/detail-hand-disinfection/article/ethanol-concentration-table-what-is-the-percentage-by-volume-or-weight.html>

While we appreciate the confusion, the labelling is accurate and truly reflects the correct Ethyl Alcohol content used in the manufacture of the Boost Up Hand Sanitizer and the volume present in the final product.

Yours Sincerely,  
Cameron McLean

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