

Problems that May Arise from Expressing Regulatory Limits for Wine in Relation to Ethanol (Alcohol)

1 Introduction

The globalisation of the market for wine has taken place at an unprecedented pace in recent years – generally far faster than governments have been able to adapt their regulations so that unnecessary and costly impediments to international trade do not become apparent. The result has been a patchwork quilt of disparate regulatory provisions which producers have to navigate in order to send products into various export markets. Often the differences in regulations are technical in nature and revolve around the limits imposed on various constituents of wine and the ways in which those limits are expressed in the relevant rules.

This paper explores one of these issues – the expression of a limit for a given substance in wine on a “Per Unit Volume of Ethanol (Alcohol) in the wine” basis (called the PUVOE approach in this paper), rather than the more conventional approach of “Per Unit Volume of Wine” (the PUVOW approach). This may seem like a small and innocuous distinction but in fact it has caused several significant trade issues over the last few years and thus became a focus of attention for FIVS¹, as one important part of its vision concerns the elimination of trade distortions of all kinds.

This paper will explore this topic in some detail, showing that:

- the governments of several significant wine producing countries, together with the members of FIVS, having considered this issue, each endorsed the PUVOW approach and discouraged the use of the PUVOE in good regulatory practice principles for wine (see Section 2 below);
- the rationale for the PUVOE approach may be more appropriate in the case of distilled spirits than in wine;
- the PUVOE approach to expressing limits is used quite rarely in wine regulations around the world; and
- the PUVOE approach to expressing limits for wine has several significant disadvantages in comparison with the PUVOW approach, which may have been the impetus for the adoption of the principles noted in Section 2.

¹ [FIVS](#) is a global trade federation for the alcohol beverage industry since 1951. It is committed to providing a venue and developing tools to encourage social, environmental, and economic sustainability among its members and the wider sector, in keeping with the United Nations Sustainable Development Goals. Its membership includes producers, importers, exporters, and trade associations (currently accounting for 75% of the wine traded globally). It also welcome and collaborate effectively with affiliates from allied industries.

It is hoped that, by giving some of the background and argumentation that supports the principle of using the PUVOW approach to express limits for wine rather than the PUVOE approach, more governments may be encouraged to adopt this approach in their own regulatory frameworks to express limits for wine.

2 International Intergovernmental and Industry Agreements

In 2013, FIVS adopted a set of “Regulatory Principles to Enhance Coherence and to Facilitate Trade in Wine,”² with the aim of encouraging governments to regulate wine appropriately in the light of its unique characteristics as a food product. These principles were adopted by the unanimous consensus of FIVS members (producers and trade associations drawn from all the major wine producing regions of the world). The Fifth Principle of this collection deals with the expression of limits for substances in wine in relation to the alcohol (ethanol) content of the wine, and urges governments as follows:

“Express regulatory limits on a ‘per unit volume of wine’ basis rather than ‘per unit volume of alcohol’ in the wine.”

During their meeting in Tbilisi in August of 2014, the governments of the World Wine Trade Group (at that time comprising Argentina, Australia, Canada, Chile, Georgia, New Zealand, South Africa, and the United States of America, and jointly accounting for about one third of global wine production³) adopted a set of 11 Good Regulatory Practice Principles for Wine (now referred to as the “Tbilisi Statement”)⁴.

The Fifth Principle in this agreement, dealing with the same subject is stated in the following words:

“Expression of regulatory limits. Governments should express regulatory limits relating to wine on a ‘per unit volume of wine’ basis rather than a ‘per unit volume of alcohol’ basis.”

Thus, there is complete agreement on this topic between the governments of several significant wine-producing countries and producers and trade associations from all over the wine producing world.

3 Rationale for the PUVOE Approach to Expressing Limits for Wine

The practice of expressing limits for substances in alcoholic beverages using a PUVOE approach seems to have begun in the case of distilled spirits, in relation to assessing the appropriate taxes payable.

² This paper may be downloaded from the FIVS website at this address:

<https://www.fivs.org/virtuallibrary/link/id/28095/challenge/940740172/hash/13ba06808aa91bad28d9a8a5f54d63ed37d1cc0d/>

³ State of the Vitiviniculture World Market April 2018: <http://www.oiv.int/public/medias/5958/oiv-state-of-the-vitiviniculture-world-market-april-2018.pdf>

⁴ The Tbilisi Statement Principles may be examined on the Industry Section website at this address: <https://www.wwtg-gmcv.org/action>, and on the government section website here: <https://www.trade.gov/td/ocg/principles.pdf>

Customs officials inspecting spirit on bonded premises for taxation purposes need to know only the volume of ethanol contained in the various storage vessels. A range of alcoholic strengths of spirit can be present in such premises, depending on the different stages of production, so it is logical to focus on the volume of ethanol present rather than the volume of spirit. A culture then seems to have developed over time of expressing the concentration of substances contained in distilled spirits in terms of the ethanol content rather than the entire volume of the product. As a result, the concentrations of “contained substances” of interest in distilled spirits (such as methanol) are most often expressed using a PUVOE approach.

The PUVOE approach to expressing regulatory limits for wine is very rare (see Section 4.2) and presumably has arisen from the existing, common practice in the case of distilled spirits. It is still seen from time to time in proposals for wine regulations notified to the World Trade Organization (WTO), but this phenomenon has become less frequent, presumably because regulatory authorities have become aware that it has several significant disadvantages when applied to wine that generally do not occur in the case of distilled spirits. These will be outlined in the next section.

As an example, the International Organisation of Vine and Wine (OIV) method for the determination of methanol in wine (Method OIV-MA-AS312-03A)⁵ notes that “(t)he concentration of methanol may be expressed in mg/L or in mg/100 mL absolute alcohol” (ethanol). However, the OIV maximum acceptable limits for methanol in wine limits are set on a PUVOW basis, with a limit for methanol “(r)esidue *in the wine*” (emphasis added) of 400 mg/L for red wines and 250 mg/L for white and rosé wines.⁶

4 Disadvantages of the PUVOE Approach to Expressing Limits for Wine

Whatever the perceived advantages may be for this form of limit expression in the case of wine, it has many serious drawbacks, some of which are detailed below:

4.1 It is a Very Uncommon Practice in Wine Regulations Around the World

FIVS-Abridge is a comprehensive online database of regulations for wine, containing data from over 75 countries (including the 28 Member States of the European Union), from among which more than 95% of global wine production originates. The tool covers production, composition, labelling, definitions, certification, methods of analysis, tariffs, and taxation.

An analysis of the data on wine composition in FIVS-Abridge (as at the end of November 2021) revealed the following:

- In total, there are forty-nine (49) compositional parameters for which limits have been established in one or more of the 75+ countries whose regulations are reflected in FIVS-Abridge.

⁵ This document may be downloaded from the OIV website at this address:

<http://www.oiv.int/public/medias/2492/oiv-ma-as312-03a-en.pdf>

⁶ This document may be downloaded from the OIV website at this address:

<http://www.oiv.int/public/medias/3741/e-code-annex-maximum-acceptable-limits.pdf>

- The PUVOE approach has only been used for 3 of these parameters (aldehydes, cyanides and methanol), and even then, only by a total of 8 countries:
 - For aldehydes, only one country established a numerical limit using the PUVOE approach.
 - For cyanides, of 7 countries that have established a numerical limit, only 4 have expressed the limit using the PUVOE approach.
 - For methanol, of 30 countries that have established a numerical limit, only 6 have expressed the limit using the PUVOE approach.
- Thus, of the hundreds of compositional limits that have been established for wine in over 75 countries around the world, only 10 (relating to 3 parameters in a total of 8 countries) are expressed using the PUVOE approach.

It is clear from this analysis that the PUVOW approach to expressing limits has been used for the vast majority of regulatory provisions around the world relating to the composition of wine. Accordingly, the PUVOE approach for expressing limits in the case of wine composition is highly unusual.

4.2 It Disregards International, Intergovernmental and Industry Agreements

In Section 2, the existing international agreements adopted by intergovernmental organizations on the one hand and by the international industry on the other were reviewed. These demonstrate a firm consensus that regulatory limits relating to wine should be expressed using the PUVOW, rather than the PUVOE, approach. To establish regulatory limits using the PUVOE approach is thus to disregard this clear accord.

4.3 It Renders Some Limits Ineffective and Creates Opportunity for Accidental Regulatory Non-compliance

As the ethanol content of a wine decreases, the content of other substances in the wine, in relation to that ethanol content, will usually increase. In the following table, the example is given of several wines that all contain 9.6 g/L of volatile acidity (VA) expressed using the PUVOE approach. If 9.6 g/L ethanol were to be imposed as a regulatory limit for VA, many red wines with lower ethanol content (that would be perfectly acceptable from a sensory perspective) could not comply, and thus would not be able to enter the market. Conversely, wines with a higher ethanol content could be essentially unpalatable (still safe to consume, but with strong characteristics of vinegar) and yet comply perfectly well with the limit. Use of the PUVOE approach would mean that some perfectly good wines are excluded from the market and some wines that are well on the way to being wine vinegar would comply. It cannot have been the intent of a limitation on volatile acidity to permit such an outcome!

Of course, there will be similar problems for other substances whose limits are expressed using the PUVOE approach. Wines with lower ethanol content (or from which ethanol is removed by approved processes, and where there is no corresponding reduction in the concentration of the substance being limited) can approach and even exceed a regulatory limit simply because the ethanol content is naturally low or has been reduced using good oenological practices.

Alcohol (Ethanol) by Volume in Wine (ABV, %)	VA (g/L) PUVOE approach	Effective VA (g/L) PUVOW approach
16.0	9.6	1.54 *
15.0	9.6	1.44 *
14.0	9.6	1.34
13.0	9.6	1.25
12.0	9.6	1.15
11.0	9.6	1.06
10.0	9.6	0.96
9.0	9.6	0.86
8.0	9.6	0.77 †
7.0	9.6	0.67 †
6.0	9.6	0.58 †

** Wines with noticeable Volatile Acidity - likely to be unpleasant, and to exceed applicable regulatory limits expressed using the PUVOW approach (typically 1.2 – 1.4 g/L).*

† Very restrictive limit - many lower alcohol (ethanol) content red wines likely to be non-compliant and yet be sensorially acceptable and within applicable regulatory limits expressed using the PUVOW approach (the average VA content for red wines is reported to be about 0.6 g/L, but the sensory threshold for perception of VA in red wine is about 0.7 g/L)⁷

4.4 It Creates the Opportunity for Inadvertent Technical Trade Barriers

Some regulatory authorities that are less familiar with wine as a product have occasionally proposed regulatory limits with numerical values that would have been quite appropriate if expressed using a PUVOW approach, but which were instead expressed using the PUVOE approach. Often, they have been dissuaded from doing so by being made aware of information similar to that contained in this paper. Had these PUVOE limits been implemented, they would effectively have prevented any wine from entering the market, because none could have complied with them.

4.5 It Could Result in Discrimination Against Certain Winegrowing Regions

Limits expressed using the PUVOE approach are likely to discriminate against products from cooler growing regions. The ethanol content of wine is directly related to the sugar content of the grapes from which the wine is produced. In cooler growing regions, the grapes typically contain less sugar at harvest than those from warmer growing regions. This means that the resulting wines typically contain less ethanol. It follows that wine producers from cooler regions would be placed at a competitive

⁷ Ask the AWRI – “Volatile Acidity” Grapegrower and Winemaker Issue 648, 2018, Page 16.
<https://www.awri.com.au/wp-content/uploads/2018/03/s1982.pdf>

disadvantage in attempting to enter markets where limits are expressed using a PUVOE approach, because their products will be more likely to approach or exceed such limits than those produced in warmer regions. For the same reason, winemakers in areas where there is a particularly cool growing season may also need to take special precautions not to exceed limits expressed using the PUVOE approach.

4.6 It Could Result in Discrimination Against Certain Traditional Wine Styles

In some winegrowing regions throughout the world, wines are made in traditional styles where the products have a low ethanol content relative to other wines. For example, the popular Italian wine, Moscato D'Asti is typically quite sweet, and has an ethanol content of approximately 5.5% by volume. In contrast, Amarone della Valpolicella, a wine which is produced only 250 kilometres away from Asti, typically has an ethanol content above 15% by volume. To apply the same limit for a substance to both wines and require that it be expressed using the PUVOE approach, would almost certainly lead to distortions of trade in which well-regarded, traditional wines are denied access to markets based on the reasons given above.

4.7 It Becomes More Difficult for Producers to Respond to Demands for Lower Ethanol (Lower Alcohol) Products

There are growing concerns around the world about the harmful use of alcohol, and this has led producers to examine ways in which the ethanol content of their products may be reduced. Consumers and governments have welcomed and encouraged such developments. From the information presented in this paper, however, it is clear that the expression of limits for wine using the PUVOE approach makes it much harder for producers to reduce the ethanol content of wines without running the significant risk that their lower alcohol products will no longer be compliant with regulations in the destination market. For example, as noted earlier, the chemical components that together comprise VA will increase in concentration in relation to ethanol in the wine as the ethanol content is reduced. If a VA limit is expressed using a PUVOE approach, the mere act of reducing the ethanol content may cause a wine to be non-compliant with a VA limit expressed in this way. Thus, limits expressed using the PUVOE approach may effectively discourage producers from reducing the ethanol content of their products in an attempt to meet a growing and desirable market demand. In fact, it could be to a producer's advantage to produce or maintain a product higher in ethanol, in order to alleviate concerns of non-compliance with limits expressed using the PUVOE approach.

4.8 It Introduces Confusion in the Market

Given that the PUVOW approach has been almost universally adopted, those instances in which authorities opt for the PUVOE approach will inevitably introduce confusion and complication, which increases the likelihood of inadvertent non-compliance. In addition, the need to monitor compliance with limits that are expressed in such a different way adds unnecessary cost to the production process and therefore serves as a form of trade barrier.

5 Conclusions

Based on the numerous reasons presented in this paper, it can be seen that regulatory limits for wine that are expressed using the PUVOE approach would seem not to be in the best interests of consumers, producers, or regulators. That is the most likely reason why so few limits for wine have been established on this basis in global regulations. It may also explain why some wine-producing countries adopted a regulatory principle that recognizes the establishment of limits using the PUVOW approach (rather than the PUVOE approach) as good regulatory practice for wine. The members of FIVS had earlier recognized the same problems with limits expressed using the PUVOE approach and endorsed an almost identical principle.

In the light of the considerations presented in this paper, governments are invited to agree that the PUVOE approach to expressing limits is unsuitable in the case of wine. Further, they are urged not to create any new limits in future that are expressed using the PUVOE approach, and to revise any current limits that are expressed in this way to adopt the PUVOW approach instead (if those limits are still judged to be necessary).