



DEPARTMENT OF ADMINISTRATIVE SERVICES

PROPOSED CHANGE OF THE CONNECTICUT STATE BUILDING CODE AND FIRE SAFETY CODE

DATE SUBMITTED: 15 April 2024

CODE INFORMATION

Proposed change to: [ ] Building Code [x] Fire Safety Code
Code section(s): CT State Fire Safety Code(2022) Chapter 40 Title Page and sections 4001.1, 4001.1.1, 4003.2, 4005.1

PROPONENT INFORMATION

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PROPOSAL INFORMATION

Description of change and reason for change (attach additional information as needed): wine barrel and cask regulations in CSFSC(2022) Chapter 40 is not supported by data
Proposed text change, addition or deletion (attach additional information as needed): CSFSC Chapter 40 should eliminate wine barrel and cask entries
Supporting data and documents (attach additional information as needed) FM Global Data Sheet DS 7-29 "Ignitable Liquid Storage" and others(see additional info sheet)

- [x] This Proposal is original material. (Note: Original material is considered to be the submitter's own idea based on or as a result of his/her own experience, thought or research and, to the best of his/her knowledge, is not copied from another source.)
[ ] This Comment is not original material, its source (if known) is as follows: (such as material / code development proposal from a prior development cycle or proposal submitted to model code committee etc.)
[x] I would like to make an in-person presentation of my proposal.

Release

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Proponent's Signature (Handwritten signature of Gary N. Schulte)

Gary Schulte
Printed Name

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## **Additional Information**

### **INTRODUCTION**

The introduction of Chapter 40 “ Storage of Distilled Spirits and Wine” in the 2022 Connecticut State Fire Safety Code(CSFSC) places a regulation on the winery industry that is not underpinned with existing fire safety data. This document provides additional information and arguments supporting the proposed changes or elimination of entries to the Connecticut State Fire Safety Codes pertaining to wine barrel and cask regulations found in Chapter 40.

The proposed changes we suggest recognize that wine storage is not equivalent to distilled spirits in fire risk. Wine at 0-20% alcohol level is not ignitable and is considered combustible with a low fire risk. To date all of the data published that we have seen has focused on distilled spirits beverage production and storage with primarily 40-90% alcohol by volume. Catastrophic distillery storage warehouse fires is one of the drivers for the increased awareness and studies in recent years around the fire risk on high alcohol(>40%) beverages. In fact most of those fires are of 60-75% alcohol barrel stored distilled spirits. In contrast winery storage fires are often structural fires engulfed by large brush and forest fires in the western USA. There is no indication in the literature, or through reporting, that those winery structure fires are enhanced by wine barrel contents at the 10-20% alcohol level.

### **PROPOSAL INFORMATION**

#### Description of change and reason for change:

Regulations around wine storage in barrels and casks within 2022 CSFSC and newer 2024 IFC Chapter 40 “ Storage of Distilled Spirits and Wine” does not reflect the existing research and published experience. For the 2024 IFC Chapter 40 FM Global Data Sheet DS 7-29(rev Jan 2024) “Ignitable Liquid Storage” report is cited as a resource by the IFC. In fact near the beginning on page 7 of DS 7-29 the report states: **“2.1.2 Liquid Evaluation .... 2.1.2.1.2 Treat aqueous mixtures having up to 20% ignitable liquid or emulsions with up to 20% ignitable liquid as a liquid that will not create a pool fire regardless of flash or fire point. These liquids are not covered by this data sheet.”** Thus wine beverages at or below 20% alcohol are excluded in this cited report. A previous FM Global Data Sheet DS 7-74 “Distilleries” *Section 3.1 General* shows on page 6 a graph depicting low alcohol (10-20%) mixtures having open flash points above 120F in this range and fire points higher or not predicted(10-15% alcohol). They also provide an assumption on page 6 that *“ Assume that a solution will be extinguished when the alcohol concentration is reduced to 20%. “* This statement is

also mirrored in the 2020 Distilled Spirits Council of the US guide “Recommended Fire Protection Practices for Distilled Spirits Beverage Facilities” where on page 26 under “**2-1 Physical Properties of Alcohol-Water Solutions**” section 2-1.3a “*The solubility of the alcohol in water is complete. The theoretical amount of water needed for extinguishment of an alcohol-water solution can be determined by the following formula: Water Needed = [ (%alcohol before fire / 20%) - 1] x volume of alcohol . Since this formula depends on complete mixing, a greater quantity of water from sprinklers or hose streams may be necessary for complete extinguishment.*” Clearly a winery fire with low alcohol wines in barrel does not carry an increased risk during a fire based on just alcohol alone. The fact is that almost all wines are between 11-15 % alcohol. The wines we produce from Connecticut grown grapes are 11.5-14.5% alcohol by volume. With respect to barrel storing wines, wineries aim to keep the wines in a cool conditioned space(<65F), completely full with low surface area, and any headspace within the barrel is covered with an inert gas(nitrogen, argon, or carbon dioxide).

Proposed text change, addition or deletion:

For the current 2022 CSFSC Chapter 40 we would propose to change the existing:

**Chapter 40** Title “*Storage of Distilled Spirits and Wines*” to “*Storage of Distilled Spirits*”

**4001.1 Scope**..... Eliminate “*and wines*”

**4001.1.1 Nonapplicability**..... Eliminate “*and wines*”

**4003.2 Ventilation**..... Eliminate “*and wines*”

**4005.1 Automatic sprinkler system**..... Eliminate “*and wines*”

*\* Note that the newer 2024 IFC has section 4005.3 Wine with 20 percent or less alcohol content regulation. Based on the discussion above I would also not endorse using this regulation in the upcoming 2025 CSFSC.*

Supporting data and documents:

- FM Global Data Sheet DS 7-29(rev Jan 2024) “Ignitable Liquid Storage”
- FM Global Data Sheet DS 7-74(rev 2020) “Distilleries”
- Distilled Spirits Council of the US 2020 guide “Recommended Fire Protection Practices for Distilled Spirits Beverage Facilities”
- “Heat Release Characteristics of Ethanol-Water Mixtures: Small Scale Experiments”; T. Hakkarainen et al.; Fire Safety Journal 2017(91), pp174-181.
- Craig Hodge 2015 Dissertation, The University of Edinburgh, “Fire Safety of Whisky Production and Storage

## **SUMMARY**

In closing and to summarize. Connecticut wineries support sensible fire safety regulation that is considered essential for moderate to high risk conditions. The International Code Council's IFC provides fire safety guidelines to the US state codes including Connecticut State Fire Safety Code. The fire safety codes instituted through the IFC in chapter 40 have been squarely aimed at the distilled spirits industry. This makes sense since stored distilled spirits are considered flammable, of high alcohol content(>40%), and medium to high risk. Several studies and actual fire emergencies support these fire safety regulations for distilled spirits. With that said we believe that non-flammable wine was swept up in the regulations for distilled spirits and thus should be changed to reflect the actual low fire risk for wines(0-20% alcohol). We know of no data that exists that demonstrates that wine in barrels or casks provides an enhanced fire risk beyond a low status. Even with the small number of winery fires in the US none of those show any evidence of an increased fire risk from wine barrel or cask storage. This position is shared by other Connecticut State wineries. If necessary we are willing to make an in-person presentation.

Thank you, Gary & Gayle Schulte (Passionfruit Estate, LLC; Stonington, CT)