

# NONBEVERAGE PRODUCTS...

## TASTING, CERTIFICATION, AND COMMON MISTAKES (OH MY!)

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Chemist

Nonbeverage Products Laboratory

# OVERVIEW

- Organoleptic Evaluation
- How Would You Certify This?
- Let's Play... You Find the Mistakes!

# ORGANOLEPTIC EVALUATION

# ORGANOLEPTIC EVALUATION

- Fit vs. Unfit
- A few things to think about when tasting a sample...
  - ↳ Could the average person mistake this sample for an alcoholic beverage?
    - Not whether you like it!
  - ↳ Do not try find flavor characteristics or identify the flavor!
    - Simply... is it fit or unfit?

# TASTING PROTOCOL

- Samples with more than 15% alcohol (v/v) are diluted to that level with water.
  - ↳ Dilution is based on the upper end of the range for alcohol content in box #10 on the TTB Form 5154.1.
- Samples that contain 15% alcohol (v/v) or less are tasted without dilution
- Need six or more panelists

# TASTING PROTOCOL

- Two-thirds of the panelists must agree
- Record taste panel results in box #13 of TTB Form 5154.1.

“This product was found to be unfit for beverage purposes. It was subjected to organoleptic analysis by a taste panel of \_\_\_ panelists, \_\_\_ of whom agreed on the determination.”

*\*\* This statement will be entered in box #18 when certifying. \*\**

# EXAMPLE

# # 1

The NPL  
determined this  
product to be  
*fit.*

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 25
3. NAME OF PRODUCT.  Propylene Glycol Blender	4. CHECK IF SAMPLE WILL BE SUBMITTED  <input checked="" type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS  1	2. KIND (e.g. Alcohol, Rum)  PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED.  Alcohol 190 proof
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i>  14.6%	8. FORMULAS SUPERSEDED.  10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.  14.6 +/- 1
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i>	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? <i>(excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)</i> <i>(Yes or No)</i> No C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN      ETHYL VANILLIN SYNTHETIC MALTOL      ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)		
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i> .			
Ethanol (190 proof)		12.50 lbs (1.84 gal)	
Propylene glycol		19.00 lbs	
Granulated sugar		1.00 lbs	
Water		67.5 lbs	
Total		100 lbs (11.99 gal)	
Mix well			
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i>	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.	16. DATE.	
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>			
17. LABORATORY SAMPLE NUMBER.	18. ACTION.		

**DEPARTMENT OF THE TREASURY  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS  
FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT**

*(See instructions attached-Prepare in triplicate, except if manufactured abroad)*

3. NAME OF PRODUCT.  Ethyl Butyrate Blender			4. CHECK IF SAMPLE WILL BE SUBMITTED  <input checked="" type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS  1	1. FORMULA NUMBER 26
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED (if multiple production sites, list other addresses on reverse).  We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705			7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME		2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. Alcohol 190 proof
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i>			9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i>  14.6%		8. FORMULAS SUPERSEDED.
12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)? (Yes or No) No C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN      ETHYL VANILLIN SYNTHETIC MALTOL      ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)			10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.  14.6 +/- 1		
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i> .					
Ethanol (190 proof)      12.50 lbs (1.84 gal)					
Ethyl Butyrate      0.50 lbs					
Granulated sugar      5.00 lbs					
Water      82.00 lbs					
Total      100 lbs (12.00 gal)					
Mix well					
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i>			15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.		16. DATE.
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>					
17. LABORATORY SAMPLE NUMBER.			18. ACTION.		

# EXAMPLE

## #2

The NPL  
determined this  
product to be  
unfit.



# EXAMPLE

# #3

The NPL  
determined this  
product to be  
unfit.

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 112
3. NAME OF PRODUCT. N & A Pomegranate Flavor	4. CHECK IF SAMPLE WILL BE SUBMITTED <input checked="" type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1	2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. <b>Alcohol 190 Proof</b>
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  Company Inc. 1111 Road Way City, State 11111	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. 74.35 ± 3.0
9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i> 74.35	11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i>	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)? (Yes or No) C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN SYNTHETIC MALTOL ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)	
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i>			
Alcohol 190 Proof 74.87 g (91.97 mL) Pomegranate Juice 23.25 g N Benzaldehyde 0.28 g A Ethyl Butyrate 0.23 g N Benzyl Alcohol 0.23 g N Cinnamaldehyde 0.09 g N Allyl Butyrate 1.05 g  Yield 100 g 117.51 mL  SIMPLE MIXTURE  <i>This product was found to be fit for beverage purposes. It was subjected to organoleptic analysis by a taste panel of 6 panelists, 4 of whom agreed on the determination.</i>			
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i> A. Discount III (123)456-7890	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT. <i>A. Discount III</i>	16. DATE. 6/21/2004	

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.

18. ACTION.

# ORGANOLEPTIC EVALUATION

- Things to Remember...
  - ↳ Could the average person mistake the sample for an alcoholic beverage?
  - ↳ Not whether you like it or not!

Even if you conduct your own taste panel and include the statement in box #13...

**STILL SEND US A SAMPLE!!**

HOW WOULD YOU  
CERTIFY THIS?

# HOW WOULD YOU CERTIFY THIS?

- Certification Options
  - ↳ General Use
  - ↳ Unfit without a taste panel
    - Based on guidelines
  - ↳ Unfit with a taste panel
  - ↳ Fit



**DEPARTMENT OF THE TREASURY  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS  
FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT**

*(See instructions attached-Prepare in triplicate, except if manufactured abroad)*

1. FORMULA NUMBER  
**333**

2. KIND (e.g. Alcohol, Rum)  
PROOF OF SPIRITS ON WHICH  
DRAWBACK WILL BE CLAIMED.

**190 Proof Alcohol**

3. NAME OF PRODUCT.  
**1% Solution, artificial**

4. CHECK IF SAMPLE  
WILL BE SUBMITTED

5. NUMBER OF DAYS TO  
COMPLETE PROCESS  
**1**

6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL  
BE PRODUCED ( if multiple production sites, list other addresses on reverse).  
  
**Company Inc.  
1111 Road Way  
City, State 11111**

7. CHECK KIND OF PRODUCT:  
 MEDICINE/ MEDICINAL PREPARATION  
 FLAVOR/ FLAVORING EXTRACT  
 FOOD PRODUCT       PERFUME

8. FORMULAS SUPERSEDED.

9. ELIGIBLE ABSOLUTE ALCOHOL  
VOLUME USED. *(See instructions)*  
**94.1%**

10. ALCOHOL CONTENT BY VOLUME  
OF FINISHED PRODUCT.  
**88 - 95%**

11. IF MADE WITH RECOVERED SPIRITS:  
ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL  
BY VOLUME USED. *(See instructions)*

12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES.  
A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)  
B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin,Maltol, Ethyl Maltol)?  
*(Yes or No)*  
C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN      ETHYL VANILLIN  
**SYNTHETIC MALTOL**      ETHYL MALTOL  
D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      IF YES, WHICH?  
E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)

13. FORMULA AND PROCESS *(Use Additional Space on Reverse if Necessary)*.

**Alcohol 190 Proof      99.0 lbs (14.57 gal)**  
**trans-2-heptenal      1.0 lbs**

**Initial yield      100 lbs (14.71 gal)**

**Process: Simple Mixture**

14. CONTACT PERSON *(Include Area Code & Phone No.)*  
**Dr. Incorp  
(123)456-7890**

15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.  
**Dr. Incorp**

16. DATE.  
**6/21/2004**

**APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.**

17. LABORATORY SAMPLE NUMBER.

18. ACTION.

**1% Solution -  
General Use  
Formula**

# HOW WOULD YOU CERTIFY THIS?

**DEPARTMENT OF THE TREASURY  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS  
FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT**

*(See instructions attached-Prepare in triplicate, except if manufactured abroad)*

1. FORMULA NUMBER <b>26</b>																		
2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. <b>Alcohol 190 proof</b>																		
3. NAME OF PRODUCT. <b>Nat Flavor for Lemonade</b>	4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS <b>1</b>																
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse). Company B 6000 Ammendale Rd Beltsville, MD 20705	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.																
	9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i> <b>57.8%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>55.8 - 59.8%</b>																
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i> .	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? <i>(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)?</i> (Yes or No)      No C. STATE PARTS PER MILLION IN PRODUCT OF:      VANILLIN                      0      ETHYL VANILLIN <b>SYNTHETIC MALTOL</b> 0                      ETHYL MALTOL                      0 D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      Yes                      IF YES, WHICH?      Red #40 E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)      No																	
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i> .																		
<table border="0"> <tr> <td><b>Ethanol 190 proof</b></td> <td><b>54.2 lbs (7.98 gal)</b></td> </tr> <tr> <td><b>Citric Acid</b></td> <td><b>6.9 lbs</b></td> </tr> <tr> <td><b>Propylene Glycol</b></td> <td><b>21.9 lbs</b></td> </tr> <tr> <td><b>Citral</b></td> <td><b>0.6 lbs</b></td> </tr> <tr> <td><b>Water</b></td> <td><b>16.4 lbs</b></td> </tr> <tr> <td colspan="2"><hr/></td> </tr> <tr> <td><b>Yield</b></td> <td><b>100.0 lbs (13.12 gal)</b></td> </tr> <tr> <td colspan="2"><b>Simple Mixture</b></td> </tr> </table>			<b>Ethanol 190 proof</b>	<b>54.2 lbs (7.98 gal)</b>	<b>Citric Acid</b>	<b>6.9 lbs</b>	<b>Propylene Glycol</b>	<b>21.9 lbs</b>	<b>Citral</b>	<b>0.6 lbs</b>	<b>Water</b>	<b>16.4 lbs</b>	<hr/>		<b>Yield</b>	<b>100.0 lbs (13.12 gal)</b>	<b>Simple Mixture</b>	
<b>Ethanol 190 proof</b>	<b>54.2 lbs (7.98 gal)</b>																	
<b>Citric Acid</b>	<b>6.9 lbs</b>																	
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<b>Yield</b>	<b>100.0 lbs (13.12 gal)</b>																	
<b>Simple Mixture</b>																		
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i>	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.	16. DATE.																
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>																		
17. LABORATORY SAMPLE NUMBER.	18. ACTION.																	

## Example #2



# As Unfit Based on Guidelines...

This product is unfit based on the level of Citric Acid

3. NAME OF PRODUCT: <b>Nat Flavor for Lemonade</b>		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1	DRAWBACK WILL BE CLAIMED. Alcohol 190 proof
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED (if multiple production sites, list other addresses on reverse). Company B 6000 Ammendale Rd Beltsville, MD 20705		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME		8. FORMULAS SUPERSEDED.
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).		9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. (See instructions) <b>57.8%</b>		10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>55.8 - 59.8%</b>
12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? (Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)? (Yes or No)      No C. STATE PARTS PER MILLION IN PRODUCT OF:      VANILLIN      0      ETHYL VANILLIN <b>SYNTHETIC MALTOL</b> 0      ETHYL MALTOL      0 D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      Yes      IF YES, WHICH?      Red #40 E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)      No		13. FORMULA AND PROCESS (Use Additional Space on Reverse if Necessary).		
<b>Ethanol 190 proof</b>		<b>54.2 lbs (7.98 gal)</b>		
<b>Citric Acid</b>		<b>6.9 lbs</b>		
<b>Propylene Glycol</b>		<b>21.9 lbs</b>		
<b>Citral</b>		<b>0.6 lbs</b>		
<b>Water</b>		<b>16.4 lbs</b>		
<b>Yield</b>		<b>100.0 lbs (13.12 gal)</b>		

**Citric Acid**      Ethanol ≤ 30% v/v – acid must be ≥ [(0.1 × ethanol %) + 0.5] (g/100 mL)

Ethanol > 30% v/v – acid must be ≥ [0.1 × ethanol %] (g/100 mL)

Ethanol ≤ 30% v/v	Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
		0.50

Amount of Citric Acid (pounds)	Volume of Final Product (gallons)	g / 100 mL of Citric Acid
		-

LOCATION OR AUTHORIZED AGENT.	16. DATE.
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Ethanol > 30% v/v	Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	<b>59.8</b>	<b>5.98</b>

Amount of Citric Acid (pounds)	Volume of Final Product (gallons)	g / 100 mL of Citric Acid
<b>6.8</b>	<b>13.12</b>	<b>6.21</b>

**BELOW THIS LINE.**









As Fit...

Results  
statement must  
be included.

BE PRODUCED ( if multiple production sites, list other addresses on reverse).

Company Inc.  
1111 Road Way  
City, State 11111

MEDICINE/MEDICINAL PREPARATION

FLAVOR/ FLAVORING EXTRACT

FOOD PRODUCT       PERFUME

9. ELIGIBLE ABSOLUTE ALCOHOL

VOLUME USED. (See instructions)

29.45

10. ALCOHOL CONTENT BY VOLUME

OF FINISHED PRODUCT.

29.45 ± 1.5

11. IF MADE WITH RECOVERED SPIRITS:  
ELIGIBLE PLUS RECOVERED ABSOLUTE  
ALCOHOL BY VOLUME USED. (See instructions)

12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES:

A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)

B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin,Maltol, Ethyl Maltol)?  
(Yes or No)

C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN      ETHYL VANILLIN

SYNTHETIC MALTOL

ETHYL MALTOL

D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?

IF YES, WHICH?

E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)

13. FORMULA AND PROCESS (Use Additional Space on Reverse if Necessary) .

Alcohol 190 Proof	25.4 g (31.2 mL)
Pomegranate Juice	10.4 g
Grape Juice	26.3 g
N Ethyl Propionate	0.6 g
N Trans 2-hexenal	0.6 g
Water	31.5 g
Sugar	5.2 g
Yield	100 g
	100.63 mL

SIMPLE MIXTURE

14. CONTACT PERSON (Include Area Code & Phone No.)

A. Discount III  
(123)456-7890

15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.

*A. Discount III*

16. DATE.

6/21/2004

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.

18. ACTION.

19. ALCOHOL BY VOLUME.

%

20. ANALYST.

21. DATE

This product was found to be fit for beverage purposes. It was subjected to organoleptic analysis by a taste panel of 6 panelists, 6 of whom agreed on the determination.

ITS TIME TO PLAY...

YOU FIND THE MISTAKES!

# COMMON ERRORS

- Units
  - ↳ No units or mixed / improper units
- Yield
  - ↳ Not enough yield information
- Improper grouping of flavor chemicals
  - ↳ 1-10% of total formula → *at least* 20% must be disclosed
  - ↳ > 10% of total formula → *at least* 50% must be disclosed
- Calculations of box #9 and #10
- Range in box #10

# COMMON ERRORS

- Not enough information on purchased flavor intermediates
  - ↳ TTB #, solvents, colors, limited ingredients, etc...
- Ingredients not classified as natural or artificial
  - *Anything NOT classified is considered artificial*
- Name
- Source of natural vanillin not provided
- Volume of alcohol-containing ingredients not provided





# Formula #1

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS <b>FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT</b> <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER <b>6</b>
3. NAME OF PRODUCT. <b>Nat. Orange Extract</b>			2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. <b>Alcohol 190 proof</b>
4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>		5. NUMBER OF DAYS TO COMPLETE PROCESS <b>1</b>	8. FORMULAS SUPERSEDED.
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse). <b>Company A 6000 Ammendale Rd Beltsville, MD 20705</b>		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>49.44%</b>
9. ELIGIBLE ADDED ETHYL ALCOHOL VOLUME USED. (See instructions) <b>47.50%</b>		11. BEVERAGE TYPE (e.g. BEVERAGES, LIQUOR, WINE, etc.) <b>LIQUOR</b>	

**10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.**

**49.44%**

12. ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin, Maltol, or Maltol)? IF YES, WHICH? WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)	
VANILLIN	ETHYL VANILLIN
ETHYL MALTOL	
13. INITIAL YIELD AND FINAL YIELD <b>100 lbs (12.2 gal) 78 - 83 lbs (9.52 - 10.13 gal)</b>	

Initial Yield	<b>100 lbs (12.2 gal)</b>	
Final Yield	<b>78 - 83 lbs (9.52 - 10.13 gal)</b>	
Washed Extract		
14. CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.	16. DATE.

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.	18. ACTION.
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# Formula #2

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <small>(See instructions attached - Prepare in triplicate)</small>			1. FORMULA NUMBER 140
3. NAME OF PRODUCT. <b>N &amp; A Strawberry Flavor WONF</b>		4. CHECK IF SAMPLE WILL BE SUBMITTED <input checked="" type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCT WILL BE PRODUCED (if multiple production sites, list other addresses on reverse). We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/PHARMACEUTICAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.
		9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. (See instructions) 31.2%	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. 31.2 +/- 1.5%

3. NAME OF PRODUCT. <b>N &amp; A Strawberry Flavor WONF</b>	
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCT WILL BE PRODUCED (if multiple production sites, list other addresses on reverse).	

Water	q.s.
Yield 100 lbs (11.76 gal)	
Process: Simple mixture	
14. CONTACT PERSON (Include Area Code & Phone No.) Martha Washington 240-264-1111	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.
16. DATE 6/21/2004	

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.	
17. LABORATORY SAMPLE NUMBER.	18. ACTION.



# Formula #3

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 333
3. NAME OF PRODUCT. <b>1% Solution, natural</b>		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  Company Inc. 1111 Road Way City, State 11111		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.  190 Proof Alcohol
		9. ELIGIBLE TO BEETLE ALCOHOL VOLUME USED. (See instructions) <b>94.8%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>94.8 +/- 4.5%</b>

**10. ALCOHOL CONTENT BY VOLUME  
 OF FINISHED PRODUCT.**  
  
**94.8 +/- 4.5%**

(14.57 gal)  
  
 (14.6 gal)

Process: Simple Mixture

14. CONTACT PERSON (Include Area Code & Phone No.) Dr. Incorp (123)456-7890	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT. <i>Dr. Incorp</i>	16. DATE. 6/21/2004
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APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.	18. ACTION.
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# Formula #4

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 137
3. NAME OF PRODUCT.  <b>N &amp; A Peach</b>	4. CHECK IF SAMPLE WILL BE SUBMITTED  <input checked="" type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS  1	2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. <b>Alcohol 190 proof</b>
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  <b>We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705</b>	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT      PERFUME	8. FORMULAS SUPERSEDED.	
	9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i>  <b>24.0%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.  <b>24.0 +/- 1.5%</b>	
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i>	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? <i>(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)?</i> (Yes or No)      No C. STATE PARTS PER MILLION IN PRODUCT OF:    VANILLIN 4000 ppm      ETHYL VANILLIN <b>SYNTHETIC MALTOL</b> ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      No      IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)      No pg		
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i>			
<b>Alcohol 190 proof</b>		<b>20.5 lbs (3.02 gal)</b>	
<b>Essential oils (Buchu 1.3 lb, Davana 0.2 lb)</b>		<b>2.0 lbs</b>	
<b>Ethyl acetate (5.5 lb), ethyl butyrate (2.4 lbs) and other artificial esters</b>		<b>20.1 lb</b>	
<b>Peach essence (nonalcoholic, no limited ingredients)</b>		<b>3.5 lbs</b>	
<b>Peach juice</b>		<b>20.0 lbs</b>	
<b>Propylene glycol</b>		<b>33.5 lbs</b>	
<b>Vanillin</b>		<b>0.4 lb</b>	
<b>Final Yield</b>		<b>100 lbs (11.96 gal)</b>	
<b>Process: Simple mixture</b>			
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i>  <b>Martha Washington 240-264-1111</b>	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.		16. DATE.  <b>10/21/2007</b>
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>			
17. LABORATORY SAMPLE NUMBER.	18. ACTION.		

DEPARTMENT OF THE TREASURY  
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS  
FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT

(See instructions attached-Prepare in triplicate, except if manufactured abroad)

3. NAME OF PRODUCT.

N &amp; A Peach

4. CHECK IF SAMPLE  
WILL BE SUBMITTED5. NUMBER OF DAYS TO  
COMPLETE PROCESS

1

1. FORMULA NUMBER

137

2. KIND (e.g. Alcohol, Rum)

PROOF OF SPIRITS ON WHICH  
DRAWBACK WILL BE CLAIMED  
Alcohol 190 proof

Alcohol 190 proof	20.5 lbs (3.02 gal)
Essential oils (Buchu 1.3 lb, Davana 0.2 lb)	2.0 lbs
Ethyl acetate (5.5 lb), ethyl butyrate (2.4 lbs) and other artificial esters	20.1 lb
Peach essence (nonalcoholic, no limited ingredients)	3.5 lbs
Peach juice	20.0 lbs
Propylene glycol	33.5 lbs
Vanillin	0.4 lb
	<hr/>
Final Yield	100 lbs (11.96 gal)
Process: Simple mixture	

Final Yield

100 lbs (11.96 gal)

Process: Simple mixture

14. CONTACT PERSON (Include Area Code &amp; Phone No.)

Martha Washington  
240-264-1111

15. SIGNATURE &amp; TITLE OF APPLICATION OR AUTHORIZED AGENT.

16. DATE.

10/21/2007

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.

18. ACTION.







# Formula #5

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 15
3. NAME OF PRODUCT. <b>Nat Cranberry Orange</b>			2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. Alcohol 190 proof
4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>		5. NUMBER OF DAYS TO COMPLETE PROCESS 1	

13. FORMULA AND PROCESS *(Use Additional Space on Reverse if Necessary)*.

<b>Ethanol 190 proof</b>	<b>17.2 lbs (2.53 gal)</b>
<b>Nat. Orange Extract (purchased)</b>	<b>5.0 lbs (0.6 gal)</b>
<b>Cis-3-hexenol</b>	<b>0.1lb</b>
<b>Propylene Glycol</b>	<b>52.0 lbs</b>
<b>Natural Vanillin</b>	<b>0.5 lb</b>
<b>Cranberry Juice</b>	<b>3.5 lb</b>
<b>Water</b>	<b>21.7 lbs</b>
<b>Final Yield</b>	<b>100 lbs ( 12.06 gal)</b>
<b>Simple mixture</b>	

Final Yield	100 lbs ( 12.06 gal)
Simple mixture	

14. CONTACT PERSON (Include Area Code & Phone No )	15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.	16. DATE.
--	---	-----------

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.	18. ACTION.
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3. NAME OF PRODUCT.  <b>Nat Cranberry Flavor</b>	4. CHECK IF SAMPLE WILL BE SUBMITTED  <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS  1	DRAWBACK WILL BE CLAIMED.  190 Proof Alcohol
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  <b>We Love Flavors</b> <b>6000 Ammendale Rd</b> <b>Beltsville, MD 20705</b>	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT                      PERFUME	8. FORMULAS SUPERSEDED.	
	9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i>  <b>36.1%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.  <b>36.3%</b>	

11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i> .	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)                      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING <i>(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)</i> ? (Yes or No)    No C. STATE PARTS PER MILLION IN PRODUCT OF:    VANILLIN                      0    ETHYL VANILLIN                      0 SYNTHETIC MALTOL                      0                      ETHYL MALTOL                      0 D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?    No                      IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)                      No, limited ingredients
--	---

13. FORMULA AND PROCESS *(Use Additional Space on Reverse if Necessary)*.

<b>190 Proof Alcohol</b>	<b>27.9 lbs (4.1 gal)</b>
<b>Nat Cranberry Type (3.5% alcohol)</b>	<b>7.5 lbs</b>
<b>Acetic Acid</b>	<b>1.5 lbs</b>
<b>Propylene Glycol</b>	<b>43.6 lbs</b>
<b>Natural ketones</b>	<b>1.9 lbs</b>
<b>Water</b>	<b>q.s.</b>
<b>Total</b>	<hr/> <b>100.00 lbs (10.8 gal)</b>
<b>Mix all ingredients</b>	

# Formula #7

There are multiple errors in this formula. How many can you find????

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 84
3. NAME OF PRODUCT. <b>Peach Flavor</b>		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse). <b>We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705</b>		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.
		9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i> <b>23.9%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>22.0 - 24.5%</b>
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i>		12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? <i>(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)?</i> (Yes or No)      No C. STATE PARTS PER MILLION IN PRODUCT OF:      VANILLIN      0      ETHYL VANILLIN      0 SYNTHETIC MALTOL      0      ETHYL MALTOL      0 D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?      No      IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)      No, limited ingredients	
13. FORMULA AND PROCESS <i>(Use Additional Space on Reverse if Necessary)</i>			
<b>Peach Essence</b> <b>Vanillin and Ethyl Vanillin</b> <b>Sodium Benzoate</b> <b>Natural Esters</b> <b>N &amp; A Peach Fortifier</b> <b>Concentrated Fruit Juices</b> <b>190 Proof Alcohol</b> <b>Propylene Glycol</b> <b>Water</b>		<b>3.5 lbs</b> <b>0.4 lbs</b> <b>0.1 lbs</b> <b>0.095 lbs</b> <b>1.905 lbs</b> <b>40.0 lbs</b> <b>20.5 lbs</b> <b>33. lbs</b> <b>q.s.</b>	
<b>Final Yield</b>		<b>100.00 lbs</b>	
14. CONTACT PERSON <i>(Include Area Code &amp; Phone No.)</i> Martha Washington 240-264-1111		15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT.	
		16. DATE.	

APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.

17. LABORATORY SAMPLE NUMBER.	18. ACTION.
-------------------------------	-------------

3. NAME OF PRODUCT.  <b>Peach Flavor</b>	4. CHECK IF SAMPLE WILL BE SUBMITTED  <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS  1	DRAWBACK WILL BE CLAIMED.  190 Proof Alcohol
--	--	--	--

6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse).  <b>We Love Flavors 6000 Ammendale Rd Beltsville, MD 20705</b>	7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT                      PERFUME	8. FORMULAS SUPERSEDED.
	9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. <i>(See instructions)</i>  <b>23.9%</b>	10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT.  <b>22.0 - 24.5%</b>

11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. <i>(See instructions)</i> .	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)                      Yes B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING <i>(Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)</i> ? (Yes or No)                      No C. STATE PARTS PER MILLION IN PRODUCT OF:    VANILLIN                      0    ETHYL VANILLIN                      0 <b>SYNTHETIC MALTOL</b> 0                      ETHYL MALTOL                      0 D. DOES PRODUCT CONTAIN A COLOR ADDITIVE?                      No                      IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)                      No, limited ingredients
--	---

13. FORMULA AND PROCESS *(Use Additional Space on Reverse if Necessary)*.

<b>Peach Essence</b>	<b>3.5 lbs</b>
<b>Vanillin and Ethyl Vanillin</b>	<b>0.4 lbs</b>
<b>Sodium Benzoate</b>	<b>0.1 lbs</b>
<b>Natural Esters</b>	<b>0.095 lbs</b>
<b>N &amp; A Peach Fortifier</b>	<b>1.905 lbs</b>
<b>Concentrated Fruit Juices</b>	<b>40.0 lbs</b>
<b>190 Proof Alcohol</b>	<b>20.5 lbs</b>
<b>Propylene Glycol</b>	<b>33. lbs</b>
<b>Water</b>	<b>q.s.</b>
 	<hr/>
<b>Final Yield</b>	<b>100.00 lbs</b>

# IN CONCLUSION...

- Organoleptic Evaluation
  - ↳ Could the average person mistake the sample for an alcoholic beverage?
- Certification
  - ↳ Many ways to certify
- Can you find the mistakes?
  - ↳ How did you do?
  - ↳ Use the many resources available to help!



# 5154.1 RESOURCES

- Drawback Tutorial
- Calculation Worksheets
  - ↳ Box #9 and #10
  - ↳ Unfit Guidelines
- Pay.gov
- FONL (Fall 2009)

**TTB.gov**  
ALCOHOL AND TOBACCO TAX AND TRADE BUREAU  
U.S. Department of the Treasury

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HOME BEER WINE DISTILLED SPIRITS OTHER ALCOHOL TOBACCO FIREARMS & AMMUNITION

E-mail Updates

**Drawback Tutorial** [Back to Nonbeverage Products Laboratory page](#)

We are providing you with this tutorial to show a more effective way to fill out [TTB Form 5154.1](#). Guidelines for submissions of nonbeverage product formulas to the Nonbeverage Products Laboratory and sample calculations for items 9 & 10 are provided for the most common types of submissions. We have found that roughly 80 to 90% of the submissions fall under two categories:

1. Simple mixtures (with and without filtration)
2. Washed extracts of essential oils

Compounded flavors are the most frequently encountered by the Laboratory and will serve as examples for simple mixtures. Sample calculations for washed extracts are also included. Even if your product does not strictly adhere to these formats, please review the calculations because much of the information can be applied to other types of products.

The first twelve topics cover an array of issues that should help you better understand the requirements for approval of a nonbeverage product formula. The rest of the topics include example calculations for the scenarios discussed above.

Questions and comments regarding this tutorial can be sent to the laboratory staff at the following e-mail address [drawback@ttb.gov](mailto:drawback@ttb.gov). Please do not send status requests to this e-mail.

[TTB F 5154.1](#)  
[Important definitions](#)  
[TTB actions on formulas](#)  
[Naming nonbeverage products](#)  
[Format of submissions \(entries in item 13\)](#)  
[TTB Form 5154.1 - common mistakes](#)  
[Classes of ingredients](#)  
[Identifying all sources of ethanol](#)  
[Limited ingredients](#)

3) Calculation of item 9 (eligible alcohol)

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)
Actual Yield			-

→

Sum # 1	0.000
actual yield (gallons)	-
Item 9	-

$[(\text{sum \#1} + \text{actual yield}) \times 100]$

4) Calculation of item 10 (total alcohol)

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)
Theoretical Yield			-

→

Sum # 1 + Sum # 2	0.000
theoretical yield (gallons)	-
Item 10	-

$[(\text{Sum \#1} + \text{Sum \#2}) + \text{theoretical yield}] \times 100]$

Tolerances for:  
 simple mixture | other process  
 see tutorial | see tutorial

# 5154.1 RESOURCES

## Drawback Tutorial

### What Makes a Product Unfit?

In the absence of materials that will make the product more palatable (sugar, glycerin, high fructose corn syrup, etc.), the following commonly used ingredients when present in the stated amounts will, in most instances, make a product unfit for beverage purposes. This list is intended only as a guide and is not applicable to all products.

Ingredient	Amount
Black pepper powder	3.6 g/100 ml @ 95% v/v ethanol
Citric acid	If the ethanol content is $\leq 30\%$ v/v, citric acid should be at least $[(0.1 \times \text{the ethanol content}) + 0.5]$ g/100 mL. If ethanol content is $> 30\%$ v/v, citric acid should be at least $[0.1 \times \text{the ethanol content}]$ g/100 mL. <i>(The ethanol content is defined as the upper end of the range in item 10 on TTB Form 5154.1)</i>
Cocoa nibs	10.6 lbs/gal @ 95% v/v ethanol
Essential oils	Most essential oils are unfit at 3% <b>wt/wt</b> in 90% v/v ethanol for simple mixtures. <b>Many 1% solutions of essential oils are unfit.</b> An exception is anise oil.



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E-mail Updates

### Drawback Tutorial

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1. Simple mixtures (with and without filtration)
2. Washed extracts of essential oils

Compounded flavors are the most frequently encountered by the Laboratory and will serve as examples for simple mixture calculations for washed extracts are also included. Even if your product does not strictly adhere to these formats, please calculate because much of the information can be applied to other types of products.

The first twelve topics cover an array of issues that should help you better understand the requirements for approval of a product formula. The rest of the topics include example calculations for the scenarios discussed above.

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[TTB Form 5154.1](#)

[Important definitions](#)

[TTB actions on formulas](#)

[Naming nonbeverage products](#)

[Format of submissions \(entries in item 13\)](#)

[TTB Form 5154.1 - common mistakes](#)

[Classes of ingredients](#)

### Naming nonbeverage products

In general, products are named based on the U.S. Food and Drug Administration's (FDA) regulations. Those guidelines are listed first. If flavors are used in alcoholic beverages, TTB has slightly more liberal guidelines for labeling of flavors used in alcoholic beverages. Those are listed second.

#### FDA Guidelines

- **Natural Flavors:** must contain a natural source of the named material and must be an all-natural product. Any flavor materials present must be derived from the named ingredient. For example, a natural strawberry flavor must contain a natural source of strawberry and all flavor materials must be derived from strawberry.
- **Natural Flavors WONF:** must contain a natural source of the named material but may also contain other natural flavor materials. These other natural flavors do not need to be derived from the named material. For example, a natural strawberry flavor WONF must contain a natural source of strawberry but may also contain natural flavor chemicals not necessarily derived from strawberry (e.g. natural ethyl butyrate).
- **Natural & Artificial Flavors:** must contain a natural source of the named material but may also contain artificial flavor materials.
- **Natural Type Flavors, Natural Bases and Natural Keys:** natural flavors that do not contain the named ingredient. For example, natural strawberry type flavor contains all natural ingredients but does not contain a natural source of strawberry.
- **Artificial Flavors:** predominant flavor is from artificial ingredients.



# 5154.1 RESOURCES

## ■ Calculation Worksheets

↳ Box #9 and #10

↳ Unfit Guidelines

### Calculation of items 9 & 10

[Simple mixture 1](#)

[Simple mixture 2 \(including discussion about yield\)](#)

[Simple mixture 3 \(includes a disapproved intermediate formula\)](#)

[Simple extract](#)

[Washed extract \(with multiple sources of ethanol\)](#)

[Dietary Supplements 1](#)

[Dietary Supplement 2](#)

[Calculation Worksheets](#)

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[TTB Form 5154.1 - common mistakes](#)

[Classes of ingredients](#)

[Identifying all sources of ethanol](#)

[Limited ingredients](#)

[Prohibited ingredients](#)

[Important information about solid extracts](#)

[Artificial versus natural vanilla](#)

[Flavors purchased from another manufacturer \(purchased intermediates\)](#)

[Intermediate ingredients manufactured in-house](#)

[What makes a product unfit?](#)

[Important information about 13 resolutions](#)

[MNRP Protocol for Organoleptic Analysis](#)

[Submitting samples with TTB Form 5154.1](#)

[Revisions to Approved Formulas](#)

[Acids as flavoring chemicals](#)

[Food products containing ethanol](#)

[Vanilla Extracts and Vanilla Flavors](#)

[Botanicals allowed in flavors](#)

[What is density?](#)

[What is specific gravity?](#)

[Important unit conversions](#)

[Calculation of items 9 & 10](#)

[Simple mixture 1](#)

[Simple mixture 2 \(including discussion about yield\)](#)

[Simple mixture 3 \(includes a disapproved intermediate formula\)](#)

[Simple extract](#)

[Washed extract \(with multiple sources of ethanol\)](#)

[Dietary Supplements 1](#)

[Dietary Supplement 2](#)

[Calculation Worksheets](#)

## Worksheets for calculating items 9 and 10:

[Simple Mixtures and Filtrations](#) / [Simple Mixture 1](#) / [Simple Mixture 2](#) / [Simple Mixture 3](#) / [Extracts](#) / [Extracts 1](#) / [Extracts 2](#) / [Dietary Supplements](#) / [Dietary Supplements 1](#) / [Dietary Supplements 2](#) / [Return to Tutorial](#)

[Click here](#) to download the instructions to use the worksheets.

**Simple Mixture 1**

[Example worksheet](#) Formula information on this example can be found [here](#).

**Simple Mix with Yields**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* Notice that this formula has a disapproved intermediate, and an actual and theoretical yield.

**1% Solution Example**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* You will see "see tutorial" in the tolerance for box #10. The value is out of the range the worksheet will calculate. This occurs with alcohol values  $\geq 90\%$  or  $\leq 0.5\%$ . [Click here](#) to open the tolerance table from the tutorial and find out the appropriate range for box #10.

[Return to Top](#)

**Extracts:**

Worksheets have been created using 2 sets of units. Click on the appropriate set of units below to download the calculation worksheet.

[pounds / gallons](#)

[kilograms / liters](#)

[Click here](#) to download the instructions to use the worksheets.

**Extract 1**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* The starting menstruum for this is only alcohol and water.

**Extract 2**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* The starting menstruum for this is alcohol, water, an intermediate solvent, and a preservative.

[Return to Top](#)

**Dietary Supplements:**

Worksheets have been created using 2 sets of units. Click on the appropriate set of units below to download the calculation worksheet.

[pounds / gallons](#)

[wt. ounces / fluid ounces](#)

[Click here](#) to download the instructions to use the worksheets.

**Dietary Supplements 1**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* This is for a dry herb.

**Dietary Supplements 2**

[Example worksheet](#) Formula information on this example can be found [here](#).  
 \* This is for a wet herb with a known moisture content. If there is a range in the moisture content, the average value should be used.

[Return to Top](#)

### Simple Mixtures and Filtrations:

Worksheets have been created using 2 sets of units. Click on the appropriate set of units below to download the calculation worksheet.

[pounds / gallons](#)

[kilograms / liters](#)

[Click here](#) to download the instructions to use the worksheets.

### Simple Mixture 1

[Example worksheet](#). Formula information on this example can be found [here](#) in the tutorial.

### Simple Mix with Yields

[Example worksheet](#). Formula information on this example can be found [here](#).

\* Notice that this formula has a disapproved intermediate, and an actual and theoretical yield.

### 1% Solution Example

[Example worksheet](#). Formula information on this example can be found [here](#).

\* You will see "see tutorial" in the tolerance for box #10. The value is out of the range the worksheet will calculate. This occurs with alcohol values  $\geq 90\%$  or  $\leq 0.5\%$ . [Click here](#) to open the tolerance table from the tutorial and find out the appropriate range for box #10.

[Return to Top](#)

1) For sources of **ELIGIBLE** alcohol in your formula:

Formula Component	Col 2 Weight (pounds)	Col 3 Density (lbs/gal)	Col 4 Volume (Gallons)	Col 5 Alcohol Content	Col 6 Absolute Gallons of Ethanol
Eligible Alcohol Sources			Col 2 + Col 3	as decimal	Col 4 × Col 5
190 Proof Alcohol	25	6.79434	<b>3.680</b>	0.95	<b>3.496</b>
Raspberry Fl. #12 (disapproved)	4.1	8.039	<b>0.510</b>	0.05	<b>0.026</b>
Source 3			-		-
Source 4			-		-
Source 5			-		-
Sum of Absolute Gallons of Ethanol for Eligible Alcohol (Sum #1)					<b>3.521</b>

2) For sources of other **(INELIGIBLE)** alcohol:

Formula Component	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)	Alcohol Content	Absolute Gallons of Ethanol
Other Alcohol Sources			Col 2 + Col 3	as decimal	Col 4 × Col 5
Source 1			-		-
Source 2			-		-
Source 3			-		-
Source 4			-		-
Source 5			-		-
Sum of Absolute Gallons of Ethanol for other sources of alcohol (Sum # 2)					<b>0.000</b>

3) Calculation of item 9 (eligible alcohol)

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)	
Actual Yield	97	8.7	11.149	

  

Sum # 1	3.521
actual yield (gallons)	11.149
Item 9	31.581

$[(\text{sum \#1} + \text{actual yield}) \times 100]$

4) Calculation of item 10 (total alcohol)

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)	
Theoretical Yield	100	8.7	11.494	

  

Sum # 1 + Sum # 2	3.521	
theoretical yield (gallons)	11.494	
Item 10	30.633	

Tolerances for item #10

simple mixture	± 1.5
other process	± 2.5

$[(\text{Sum \#1} + \text{Sum \#2}) \div \text{theoretical yield}] \times 100$

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <small>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</small>					1. FORMULA NUMBER 140
3. NAME OF PRODUCT. Natural Raspberry Flavor WONF		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS	2. KIND (e.g. Alcohol, Rum) PROOF OF SPIRITS ON WHICH DRAWBACK WILL BE CLAIMED. <b>Alcohol 190 Proof Disapproved # 12</b>	
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED (if multiple production sites, list other addresses on reverse). Company Inc. 1111 Road Way City, State 11111		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICINAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME		8. FORMULAS SUPERSEDED.	
9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. (See instructions) <b>31.44</b>		10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>30.6 ± 2.5</b>		11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions)	
12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING? (Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol) (Yes or No) C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN ETHYL VANILLIN SYNTHETIC MALTOL ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)		13. FORMULA AND PROCESS (Use Additional Space on Reverse if Necessary). Alcohol 190 Proof 25.0 lbs (3.68 gal) Propylene glycol 55.8 lbs Citric acid, anhydrous 8.7 lbs Tannic acid 6.3 lbs Raspberry Flavor (5% alcohol, disapproved # 12) 4.1 lbs (0.51 gal) Ethyl Butyrate (0.05 lbs) and other natural esters 0.09 lbs Trans-2-Hexenal 0.01 lbs  theoretical yield 100 lbs (11.5 gal) actual yield 97 lbs (11.2 gal)  FILTRATION			
14. CONTACT PERSON (Include Area Code & Phone No.) A. Discount III (123)456-7890		15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT. <i>A. Discount III</i>		16. DATE. 6/21/2004	
APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.					
17. LABORATORY SAMPLE NUMBER.		18. ACTION.			
19. ALCOHOL BY VOLUME. %					
20. ANALYST.					
21. DATE					

# Simple Mixtures and Filtrations



1) For sources of ELIGIBLE alcohol in your formula

Formula Component	Col 2 Weight (pounds)	Col 3 Density (lbs/gal)	Col 4 Volume (Gallons)	Col 5 Alcohol Content	Col 6 Absolute Gallons of Ethanol
<b>Eligible Alcohol Sources</b>			Col 2 ÷ Col 3	as decimal	Col 4 × Col 5
190 Proof Alcohol	55	6.79434	<b>8.095</b>	0.95	<b>7.690</b>
Source 2			-		-
Source 3			-		-
Source 4			-		-
<b>Sum of Absolute Gallons of Ethanol for Eligible Alcohol (Sum #1)</b>					<b>7.690</b>

2) For sources of other (INELIGIBLE) alcohol

Formula Component	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)	Alcohol Content	Absolute Gallons of Ethanol
<b>Ineligible Alcohol Sources</b>			Col 2 ÷ Col 3	as decimal	Col 4 × Col 5
Lemon Extract TTB#8180	1	7.143	<b>0.140</b>	0.671	<b>0.094</b>
Source 2			-		-
Source 3			-		-
Source 4			-		-
<b>Sum of Absolute Gallons of Ethanol for other sources of alcohol (Sum #2)</b>					<b>0.094</b>

3) Calculation of item 9

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)
low end of yield range	88	7.8	<b>11.282</b>
high end of yield range	94	7.8	<b>12.051</b>

Sum # 1	7.690
low yield (gallons)	11.282
low Item 9	<b>68.163</b>
high yield (gallons)	12.051
high Item 9	<b>63.813</b>

$[\text{sum \#1} + \text{low yield}] \times 100$   
 $[\text{sum \#1} + \text{high yield}] \times 100$

4) Calculation of item 10

	Weight (pounds)	Density (lbs/gal)	Volume (Gallons)
190 Proof Alcohol	55	6.79434	<b>8.095</b>
Water	15	8.33	<b>1.801</b>
Lemon Extract	1	7.143	<b>0.140</b>
Glycerin	23	9.79	<b>2.349</b>
<b>Volume of starting menstruum</b>			<b>12.385</b>

Sum # 1 + Sum # 2	7.784	Tolerance for item #10
volume of starting menstruum (gallons)	12.385	
<b>Item 10</b>	<b>62.851</b>	<b>± 3.5</b>

$\text{Item 10} = [(\text{Sum \#1} + \text{Sum \#2}) + \text{volume of starting menstruum}] \times 100$

volume of starting menstruum = sum of volumes of soluble components

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <i>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</i>			1. FORMULA NUMBER 334
3. NAME OF PRODUCT. Lemon Flavor		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse). Company Inc. 1111 Road Way City, State 11111		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/MEDICAL PREPARATION <input checked="" type="checkbox"/> FLAVOR/FLAVORING EXTRACT <input type="checkbox"/> FOOD PRODUCT <input type="checkbox"/> PERFUME	8. FORMULAS SUPERSEDED.
9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. (See instructions) <b>64.2 - 68.1</b>		10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. <b>62.9 ± 3.5</b>	
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).		12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin,Maltol, Ethyl Maltol)? (Yes or No) C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN ETHYL VANILLIN SYNTHETIC MALTOL ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)	
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Necessary).			
<b>Alcohol 190 Proof</b>		<b>55.0 lbs (8.10 gal)</b>	
<b>Lemon oil</b>		<b>6.0 lbs</b>	
<b>Lemon Extract (67.1% alcohol, TTB# 8180)</b>		<b>1.0 lbs (0.14 gal)</b>	
<b>Water</b>		<b>15.0 lbs</b>	
<b>Glycerin</b>		<b>23.0 lbs</b>	
<b>Initial yield</b>		<b>100 lbs</b>	
<b>Actual yield (range)</b>		<b>88 - 94 lbs (11.3 - 12.0 gal)</b>	
<b>Process: Combine ingredients while mixing. Allow oil to separate. Discard top layer. Filter bottom layer with magnesium carbonate.</b>			
14. CONTACT PERSON (Include Area Code & Phone No.) Dr. Incrop (123)456-7890		15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT. <i>Dr. Incrop</i>	16. DATE. 6/21/2004
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>			
17. LABORATORY SAMPLE NUMBER.		18. ACTION.	
19. ALCOHOL BY VOLUME. %			
20. ANALYST.			
21. DATE			

Washed Extracts

1) For sources of **ELIGIBLE** alcohol in your formula:

Formula Component	Col 4 Volume (fl oz)	Col 5 Alcohol Content as decimal	Col 6 Absolute fl oz of Ethanol Col 4 x Col 5
Eligible Alcohol Sources			
Source 1	80.000	0.95	76.000
Source 2			0.000
Source 3			0.000
Source 4			0.000
<b>Sum of Absolute fl oz of Ethanol for Eligible Alcohol (Sum #1)</b>			<b>76.000</b>

2) Calculation of item 9

	Volume (fl oz)
high end of yield range	108.790
low end of yield range	95.168

[ sum #1 + low yield ] × 100

Sum # 1	76.000
low Item 9	69.859
high Item 9	79.859

[ sum #1 + high yield ] × 100

3) Calculation of item 10

	Volume (fl oz)
Alcohol	80.000
Water	30.000
<b>Total Volume</b>	<b>116.555</b>

Sum # 1	76.000	
volume (fl oz)	116.555	Tolerance for item #10
Item 10	65.205	+/- 5

Item 10 = [ (Sum #1) + volume of liquid components ] × 100

**\*\* If your herb has a known moisture content, make sure to use the moisture content calculator below. The volume calculated will be automatically added to the total volume.\*\***

	Col 4 Weight of Herb (wt oz)	Col 5 Moisture % of Herb (as decimal)	Col 6 fl oz of Water from Moisture Content of Herb
Moisture Content of Herb	35.000	0.195	6.555

col 4 × col 5 = wt oz H<sub>2</sub>O from herb  
wt oz H<sub>2</sub>O / 1.04125 wt oz/fl oz = col 6

DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT <small>(See instructions attached-Prepare in triplicate, except if manufactured abroad)</small>			1. FORMULA NUMBER 85
3. NAME OF PRODUCT. Herbal Extract		4. CHECK IF SAMPLE WILL BE SUBMITTED <input type="checkbox"/>	5. NUMBER OF DAYS TO COMPLETE PROCESS 1
6. NAME OF THE MANUFACTURER & ADDRESS WHERE PRODUCTS WILL BE PRODUCED ( if multiple production sites, list other addresses on reverse). Company Inc. 1111 Road Way City, State 11111		7. CHECK KIND OF PRODUCT: <input type="checkbox"/> MEDICINE/ MEDICAL PREPARATION <input type="checkbox"/> FLAVOR/ FLAVORING EXTRACT <input checked="" type="checkbox"/> FOOD PRODUCT PERFUME	8. FORMULAS SUPERSEDED.
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).		9. ELIGIBLE ABSOLUTE ALCOHOL VOLUME USED. (See instructions) 69.86 - 79.86	
12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES: A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING(Excluding Vanillin, Ethyl Vanillin,Maltol, Ethyl Maltol)? (Yes or No) C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN ETHYL VANILLIN SYNTHETIC MALTOL ETHYL MALTOL D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION? (YES OR NO)		10. ALCOHOL CONTENT BY VOLUME OF FINISHED PRODUCT. 65.205 +/- 5	
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Necessary). Alcohol 190 proof 80 fl. oz. Herb 35 oz. Moisture Content of Herb 19.5 +/- 2% Water 30 fl. oz.  Yield 95.168 - 108.79 fl. oz.			
14. CONTACT PERSON (Include Area Code & Phone No.) Mr. Taxtrade (123)456-7890		15. SIGNATURE & TITLE OF APPLICATION OR AUTHORIZED AGENT. <i>Mr. Taxtrade</i>	16. DATE. 9/6/2002
<b>APPLICANT: PLEASE MAKE NO ENTRY BELOW THIS LINE.</b>			
17. LABORATORY SAMPLE NUMBER.		18. ACTION.	
19. ALCOHOL BY VOLUME. %			
20. ANALYST.			
21. DATE			

# Dietary Supplements

# 5154.1 RESOURCES

## ■ Calculation Worksheets

↳ Box #9 and #10

↳ Unfit Guidelines

[Important information about solid extracts](#)

[Artificial versus natural vanillin](#)

[Flavors purchased from another manufacturer \(purchased intermediates\)](#)

[Intermediate ingredients manufactured in-house](#)

[What makes a product unfit?](#)

[Important information about 1% solutions](#)

[MNBP Protocol for Organoleptic Analysis](#)

[Submitting samples with TTB Form 5154.1](#)

[Revisions to Approved Formulas](#)

[Acids as flavoring chemicals](#)

[Food products containing ethanol](#)

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HOME NEWS WINE DISTILLED SPIRITS OTHER ALCOHOL TOBACCO FIREARMS & AMMUNITION

Email Updates

**Drawback Tutorial** [Back to Nonbeverage Products Laboratory page](#)

We are providing you with this tutorial to show a more effective way to fill out [TTB Form 5154.1](#). Guidelines for submissions of nonbeverage product formulas to the Nonbeverage Products Laboratory and sample calculations for items 9 & 10 are provided for the most common types of submissions. We have found that roughly 80 to 90% of the submissions fall under two categories:

1. Simple mixtures (with and without filtration)
2. Washed extracts of essential oils

Compounded flavors are the most frequently encountered by the Laboratory and will serve as examples for simple mixtures. Sample calculations for washed extracts are also included. Even if your product does not strictly adhere to these formats, please review the calculations because much of the information can be applied to other types of products.

The first twelve topics cover an array of issues that should help you better understand the requirements for approval of a nonbeverage product formula. The rest of the topics include example calculations for the scenarios discussed above.

Questions and comments regarding this tutorial can be sent to the laboratory staff at the following e-mail address: [drawback@ttb.gov](mailto:drawback@ttb.gov). Please do not send status requests to this e-mail.

[TTB Form 5154.1](#)

[Important definitions](#)

[TTB actions on formulas](#)

[Naming nonbeverage products](#)

[Format of submissions \(entries in item 13\)](#)

[TTB Form 5154.1 - common mistakes](#)

[Classes of ingredients](#)

[Identifying all sources of ethanol](#)

[Limited ingredients](#)

[Prohibited ingredients](#)

[Important information about solid extracts](#)

[Artificial versus natural vanillin](#)

[Flavors purchased from another manufacturer \(purchased intermediates\)](#)

[Intermediate ingredients manufactured in-house](#)

[What makes a product unfit?](#)

[Important information about 1% solutions](#)

[MNBP Protocol for Organoleptic Analysis](#)

[Submitting samples with TTB Form 5154.1](#)

[Revisions to Approved Formulas](#)

[Acids as flavoring chemicals](#)

[Food products containing ethanol](#)

[Botanicals allowed in flavors](#)

[What is density?](#)

[What is specific gravity?](#)

[Important unit conversions](#)

[Calculation of items 9 & 10](#)

[Simple mixture 1](#)

[Simple mixture 2 \(including discussion about yield\)](#)

[Simple mixture 3 \(includes a disapproved intermediate formula\)](#)

[Simple extract](#)

[Washed extract \(with multiple sources of ethanol\)](#)

[Dietary Supplements 1](#)

[Dietary Supplement 2](#)

[Calculation Worksheets](#)

### What Makes a Product Unfit?

In the absence of materials that will make the product more palatable (sugar, glycerin, high fructose corn syrup, etc.), the following commonly used ingredients when present in the stated amounts will, in most instances, make a product unfit for beverage purposes. This list is intended only as a guide and is not applicable to all products.

Ingredient	Amount
Black pepper powder	3.6 g/100 ml @ 95% v/v ethanol
Citric acid	If ethanol $\leq$ 30% v/v – acid must be $\geq$ $[0.1 \times \text{ethanol } \% + 0.5]$ (g/100mL)

Quassia powder	20.8 ppm @ 95% v/v ethanol
Quinine	950 ppm @ 95% v/v ethanol
Salt (sodium chloride)	6.8 g /100 ml @ 95% v/v ethanol <i>** exception for salted wines (1.5 g/100mL) – refer to 21 CFR 24.215(b) **</i>
Tannic acid	1.6% by weight @ 95% v/v ethanol
Triethyl citrate	2.5% by weight @ 95% v/v ethanol
Vanillin	3.2 av. oz./gal @ 95% v/v ethanol

Maltol

Propylene glycol

Expansive lists of flavor chemicals that make a formula unfit at 1% by weight are presented on the lists for [artificial](#) and [natural](#) flavors. Please note that the chemicals on these lists will make a product unfit (at the prescribed levels) in the absence of masking agents such as sweeteners.

Quassia powder

Quinine

Salt (sodium chloride)

A calculation worksheet based on the above guidelines is available for download. This worksheet will calculate the amount needed of an ingredient to make your product unfit based on the ethanol content and the amount of that ingredient, in the units used in the table, that is in the product.

Tannic acid

Triethyl citrate

Vanillin

[Download Calculation Worksheet](#)  
[pounds / gallons](#)  
[grams / milliliters](#)

2.5% by weight @ 95% v/v ethanol

3.2 av. oz./gal @ 95% v/v ethanol

Expansive lists of flavor chemicals that make a formula unfit at 1% by weight are presented on the lists for [artificial](#) and [natural](#) flavors. Please note that the chemicals on these lists will make a product unfit (at the prescribed levels) in the absence of masking agents such as sweeteners.

A calculation worksheet based on the above guidelines is available for download. This worksheet will calculate the amount needed of an ingredient to make your product unfit based on the ethanol content and the amount of that ingredient, in the units used in the table, that is in the product.

[Download Calculation Worksheet](#)  
[pounds / gallons](#)  
[grams / milliliters](#)



# Calculation Worksheets for Guidelines

Units: pounds and gallons

## What Makes a Product Unfit?

In the absence of materials that will make the product more palatable (sugar, glycerin, high fructose corn syrup, etc.), the following commonly used ingredients when present in the stated amounts will, in most instances, make a product unfit for beverage purposes. This list is intended only as a guide and is not applicable to all products.

Ingredient	Amount
Black pepper powder	3.6 g/100 ml @ 95% v/v ethanol
Citric acid	If ethanol $\leq$ 30% v/v – acid must be $\geq$ $[0.1 \times \text{ethanol \%} + 0.5]$ (g/100mL) If ethanol $>$ 30% v/v – acid must be $\geq$ $[0.1 \times \text{ethanol \%}]$ (g/100mL) <i>(The ethanol content is defined as the upper end of the range in item 10 on TTB Form 5154.1)</i>
Cocoa nibs	10.6 lbs/gal @ 95% v/v ethanol
Essential oils	Most essential oils are unfit at 3% wt/wt in 90% v/v ethanol for simple mixtures. <b>Many 1% solutions of essential oils are unfit.</b> An exception is anise oil.
Ethyl acetate	2.1% by volume @ 95% v/v ethanol
Ethyl maltol	5.3% by weight @ 95% v/v ethanol
Ethyl vanillin	1.3 av. oz./gal @ 95% v/v ethanol
Fusel Oil	1.6 g/100 ml @ 95% v/v ethanol
Lactic acid	9.5% by volume @ 95% v/v ethanol
Malic acid	If ethanol $\leq$ 30% v/v – acid must be $\geq$ $[0.14 \times \text{ethanol \%} + 0.5]$ (g/100mL) If ethanol $>$ 30% v/v – acid must be $\geq$ $[0.14 \times \text{ethanol \%}]$ (g/100mL) <i>(The ethanol content is defined as the upper end of the range in item 10 on TTB Form 5154.1)</i>
Maltol	5.3% by weight @ 95% v/v ethanol
Propylene glycol	Equal amounts by volume of ethanol and propylene glycol <i>(the amount of ethanol is defined as the upper end of the range in item 10 on TTB Form 5154.1)</i>
Quassia powder	20.8 ppm @ 95% v/v ethanol
Quinine	950 ppm @ 95% v/v ethanol
Salt (sodium chloride)	6.8 g /100 ml @ 95% v/v ethanol ** exception for salted wines (1.5 g/100mL) – refer to 21 CFR 24.215(b) **
Tannic acid	1.6% by weight @ 95% v/v ethanol
Triethyl citrate	2.5% by weight @ 95% v/v ethanol
Vanillin	3.2 av. oz./gal @ 95% v/v ethanol

## Black Pepper Powder

3.6 g/100 mL at 95% ethanol v/v

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Black Pepper Powder (pounds)	Volume of Final Product (gallons)	g / 100 mL of Black Pepper Powder
		-

## Citric Acid

Ethanol  $\leq$  30% v/v – acid must be  $\geq$   $[0.1 \times \text{ethanol \%} + 0.5]$  (g/100 mL)

Ethanol  $>$  30% v/v – acid must be  $\geq$   $[0.1 \times \text{ethanol \%}]$  (g/100 mL)

Ethanol  $\leq$  30% v/v

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.50

Amount of Citric Acid (pounds)	Volume of Final Product (gallons)	g / 100 mL of Citric Acid
		-

Ethanol  $>$  30% v/v

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Citric Acid (pounds)	Volume of Final Product (gallons)	g / 100 mL of Citric Acid
		-

## Cocoa Nibs

10.6 lbs/gal at 95% ethanol v/v

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Cocoa Nibs (pounds)	Volume of Final Product (gallons)	lbs/gal Cocoa Nibs
		-

## Essential Oils

Most essential oils are unfit at 3%

See tutorial for more information on extracts

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Essential Oil (pounds)	Weight of Final Product (pounds)	% by weight of Essential Oil
		-

## Ethyl Acetate

2.1% by volume at 95% v/v ethanol

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Ethyl Acetate (pounds)	Volume of Final Product (gallons)	% by volume of Ethyl Acetate
		-



**Triethyl Citrate****2.5% by weight at 95% v/v ethanol**

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Triethyl Citrate (pounds)	Weight of Final Product (pounds)	% by weight of Triethyl Citrate
		-

**Vanillin****3.2 av.oz./gal at 95% v/v ethanol**

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
43.8	1.48

Amount of Vanillin (pounds)	Volume of Final Product (gallons)	av.oz. / gal of Vanillin
2.2	12.8	2.75

**Flavor Chemicals  
unfit at 1%****1% by weight at 95% v/v ethanol**

Alcohol Content (upper end of range in item 10)	Minimum Value Needed to Make Product Unfit
	0.00

Amount of Flavor Chemical (pounds)	Weight of Final Product (pounds)	% by weight of Flavor Chemical
		-



# 5154.1 RESOURCES

- Formulas Online (FONL)
  - ↳ Online submission
  - ↳ Automatic Calculations
  - ↳ And other exciting features!

Fall 2009!

# ANY QUESTIONS??

- For more information go to:  
[www.ttb.gov/ssd](http://www.ttb.gov/ssd)



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