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***Pride***

*Ethyl Alcohol*

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## *Table of Contents*

- 1.
3. Ethyl Alcohol Production
3. Uses
4. Specially Denatured Alcohol Formulations
7. Specially Denatured Alcohol Approved Applications
10. Proprietary Solvents
10. Completely Denatured Ethyl Alcohol
11. Special Industrial Solvents
12. Ink Solvents
12. Formula Cross References
13. Storage & Handling
14. Hazards
15. Summary
15. Health
15. Regulatory
16. Government Regulations
18. Glossary of Terms
18. Warranty

Authorized Distributors For:



## The Industrial Uses of Ethyl Alcohol

The U.S. production, sale and use of industrial ethyl alcohol is strictly regulated by the Alcohol and Tobacco Tax and Trade Bureau (TTB). Ethyl alcohol can be sold for industrial applications free of the alcoholic beverage tax. All such applications must have the TTB's prior approval. Industrial ethyl alcohol is used directly as a solvent or as a chemical intermediate. General descriptions of its varied uses are given below.

### Ethyl Alcohol Used as a Solvent

#### Coatings, Inks And Adhesives

Ethyl alcohol's largest solvent use is as a carrier solvent for coatings, inks and adhesives. It can be used either by itself or in combination with other solvents to carry the film forming components of these products to the site of application. For example, it is used as a latent solvent in nitrocellulose lacquers to aid solubility and to increase the amount of lower cost hydrocarbon solvent diluent that can be added to the formulation. Both specially denatured and proprietary alcohol formulations are used in these applications.

#### Toiletries And Cosmetics

Ethyl alcohol is also used extensively in the preparation of a wide variety of toiletry and cosmetic products. Hair sprays and preparations, hand, sun-tan, pre-electric shave and after-shave lotions, perfumes, and toilet waters all use significant amounts of ethyl alcohol. It also is used to produce mouthwash, deodorants, and shampoos.

#### Cleaning Products

A considerable amount of ethyl alcohol is used as a solvent for various household and industrial cleaning products. The largest end use has been liquid laundry, dishwashing detergents, and liquid hand soaps. It is also used as a solvent in insecticides and disinfectants.

#### Pharmaceuticals

Ethyl alcohol is the major ingredient in rubbing alcohol, liniment and antiseptic solution products for external use, and is present in medicinals such as cough syrup. It is also used as a processing solvent for drugs, pharmaceuticals, vitamins, blood products, and glandular products.

#### Process Solvents

In addition to its part as a solvent in drug manufacturing, ethyl alcohol is used in processing food, dyes, and petroleum products.

#### Other

The smaller, more diversified solvent applications for ethyl alcohol are in the manufacture of plastics, resins, and chemicals as well as photographic film and printing paper. Ethanol is also used as a solvent for various flavors, fragrances, and tobacco sprays.

## Pure Ethyl Alcohol

	Proof			Bulk	Packages	
	190	192	200		Drums	Totes
Grain	•		•	•	•	•
Grain - Gluten Free	•			•	•	•
Synthetic	•		•	•	•	•
QAI Certified Organic Wheat	•	•			•	
QAI Certified Organic Sugar Cane	•				•	
Sugar Cane Non GMO Project Certified	•				•	

Typical Properties	190 proof	200 proof	Test Method
Ethyl alcohol content, % volume, min.	95.0	99.9	(1)
Specific gravity @ 60/60 deg F (air) max.	0.8158	0.7936	ASTM D 4052
Color, Pt.-Co max	5	5	ASTM D 1209
Acidity, Calc. as acetic acid, % wt max.	0.0014	0.0014	ASTM D 1613
Non-volatile matter, % wt. max.	0.0025	0.0025	ASTM D 1353
Water, % wt.	7.58	0.13	ASTM D 1364
Permanganate fading time, minutes, min.	50	30	ASTM D 1363
Odor	Characteristic Non-Residual	Characteristic Non-Residual	(2)

Meets all specifications of USP Monograph, The Pharmacopeia of the United States of America, for ethyl alcohol.

(1) As specified in 27 CFR Part 30, or other TTB approved method.

(2) Samples are diluted with two volumes of odor-free distilled water and their odors evaluated with respect to a standard sample.

## Specially Denatured Ethyl Alcohol Formulations

Authorized Composition (gal.)	SDA-1 <sup>(1)</sup>	SDA-2B	SDA-3A	SDA-3C
Ethyl alcohol	100	100	100	100
Methyl alcohol	4		5	
Toluene, rubber hydrocarbon solvent, or heptane		0.5		
Methyl isobutyl ketone	1			
Isopropyl alcohol				5
Resultant volume	105.0	100.5	105.0	105.0

### Typical Properties

	SDA-1		SDA-2B		SDA-3A		SDA-3C	
	190 pf. formula	200 pf. formula	190 pf. formula	200 pf. formula	190 pf. formula	200 pf. formula	190 pf. formula	200 pf. formula
Ethyl alcohol content Absolute (200 pf.) basis % Vol.	90.5	95.2	94.5	99.5	90.5	95.2	90.5	95.2
Absolute (200 pf.) basis % wt.	88.1	95.2	91.9	99.5	88.1	95.3	88.1	95.3
Apparent proof at 60 deg F	190.4	199.7	190.0	199.7	190.6	199.9	190.5	199.9
Specific gravity, 60/60 deg F (air)	0.8151	0.7938	0.8159	0.7939	0.8149	0.7938	0.8146	0.7935
Weight per gallon at 60 deg F, lbs.	6.788	6.611	6.795	6.612	6.785	6.609	6.784	6.608

#### NOTES:

(1) Alternate formula, supplied only on specific request: 4 gals. methyl alcohol and 1/8 av. oz. denatonium benzoate NF Bitrex.

Authorized Composition (gal.)	SDA-23A		SDA-30	
Ethyl alcohol	100		100	
Vinegar, not less than 90 grain strength				
Acetone, USP	8			
Methyl alcohol	10		10	
Resultant volume	107.9		110	

### Typical Properties

	SDA-23A		SDA-30	
	190 pf. formula	200 pf. formula	190 pf. formula	200 pf. formula
Ethyl alcohol content Absolute (200 pf.) basis % vol.	86.4	91.0	86.4	90.9
Absolute (200 pf. ) basis % wt.	84.2	90.8	84.1	90.8
Apparent proof at 60 deg F	190.4	199.4	190.6	199.5
Specific gravity, 60/60 deg F (air)	0.8151	0.7948	0.8147	0.7945
Weight per gallon at 60 deg F, lbs	6.788	6.621	6.785	6.617

<b>Authorized Composition</b>	<b>SDA-35A</b>		<b>SDA-38B</b>	
Ethyl alcohol, gal.	100		100	
Ethyl acetate, gal.	4.25 (100% ester) or 5 (85% ester)			
Denaturant <sup>(1)</sup> lb.			10	
Resultant volume, gal.	105		101.3	

<b>Typical Properties</b>	<b>SDA-35A</b>		<b>SDA-38B</b>	
	<b>190 pf. formula</b>	<b>200 pf. formula</b>	<b>190 pf. formula</b>	<b>200 pf. formula</b>
Ethyl alcohol content				
Absolute (200 pf.) basis % vol.	90.5	95.2	93.8	98.7
Absolute (200 pf.) basis % wt.	87.7	94.8	91.1	98.5
Apparent proof at 60 deg F	188.6	198.6	189.4	199.4
Specific gravity, 60/60 deg F (air)	0.8185	0.7974	0.8170	0.7951
Weight per gallon at 60 deg F, lbs.	6.817	6.641	6.804	6.622

<b>Authorized Composition</b>	<b>SDA-40A</b>		<b>SDA-40B</b>	
Ethyl alcohol, gal.	100		100	
Tertiary butyl alcohol, gal.	1/8		1/8	
Sucrose octa acetate, lb.	1			
Denatonium benzoate, NF, (Bitrex) av. oz.			1/16	
Resultant volume, gal.	100.2		100.1	

<b>Typical Properties</b>	<b>SDA-40-A</b>		<b>SDA-40B</b>	
	<b>190 pf. formula</b>	<b>200 pf. formula</b>	<b>190 pf. formula</b>	<b>200 pf. formula</b>
Ethyl alcohol content				
Absolute (200 pf.) basis % vol.	94.8	99.8	94.9	99.9
Absolute (200 pf.) basis % wt.	92.0	99.6	92.2	99.9
Apparent proof at 60 deg F	189.7	199.7	189.9	199.9
Specific gravity, 60/60 deg F (air)	0.8163	0.7941	0.8158	0.7937
Weight per gallon at 60 deg F, lbs	6.798	6.613	6.794	6.610

Formulas Also Available: SDA-12A, 28A, 29, 37, 38F, 39B, 40-1, 44

**NOTES:**

(1) Can be any 1 or combination of the following totalling 10 lbs.

Alpha Terpineol, Anethole, NF, Anise oil, NF, Bay oil, NF XI, Benzaldehyde, NF Bergamot oil, NF XI, Bitter almond oil, NF X, Camphor, USP, Cedar leaf oil, USP XIII, Chlorothymol, NF XII, Cinnamic aldehyde, NF IX, Cinnamon oil, NF, Citronella oil, natural, Clove oil, NF, Coal tar, USP, Distilled Lime Oil, Eucalyptol, NF XII., Eucalyptus oil, NF, Eugenol, USP, Guaiacol, NF X, Lavender oil, NF, Lemon Oil, Menthol, USP, Methyl salicylate, NF, Mustard oil, volatile (allyl isothiocyanate), USP, XII, Peppermint oil, NF Phenol, USP, Phenyl salicylate (salol), NF XI, Pine oil, NFXII, Pine needle oil, dwarf, NF, Rosemary oil, NF Xii, Safrol, Sassafras oil, NF XI, Spearmint oil, NF, Spearmint oil, terpeneless, Spike lavender oil, natural, Storax, USP, Thyme oil, NF Xii, Thymol, NF Tolu balsam, USP, Turpentine oil, NF XI.

If it is shown that none of the above single denaturants or combinations can be used in the manufacture of a particular product, the user may submit an application to the TTB requesting permission to use another essential oil or substance having denaturing properties, satisfactory to the TTB. In such case the user shall furnish the TTB with specifications, the name and address of the manufacturer, assay methods, and an 8-ounce sample of the denaturant for examination.

## Approved Applications for Specially Denatured Alcohols

Code No.	Authorized Application	Specially Denatured Alcohol Number						
		1	2B	3A	3C	23A	30	35A
011	As a Solvent(s)-Cellulose Coatings	•		•		•	•	
012	S-Synthetic Resin Coatings	•		•	•	•	•	
013	S-Shellac Coatings	•				•		
014	S-Natural Resin Coatings	•				•		
015	Candy Glass							•
016	S-Other Coatings	•		•	•	•		
021	S-Cellulose Plastics	•	•	•	•		•	
022	S-Non-cellulose Plastics Inc Resins	•	•	•	•		•	
031	S-Photographic Film & Emulsions	•	•	•	•			
032	S-Transparent Sheeting	•	•	•	•	•		
033	S-Explosives	•	•	•	•			
034	S-Cellulose Intermediates and Industrial Collodions	•		•	•	•		
035	S-Soldering Flux	•		•	•	•	•	
036	S-Adhesives and Binders	•		•	•	•	•	
041	S-Proprietary Solvents	•		•				
042	S-Solvents and Thinners (other than proprietary solvents or special industrial solvents)	•		•	•	•	•	
043	S-Solvents, special (restricted sale)	•		•	•		•	
051	S-Polishes	•		•	•		•	
052	S-Inks (not including meat-branding inks)	•		•	•	•	•	
053	S-Stains (wood, etc.)	•		•	•	•	•	
311	S-Cellulose Compounds (dehydration)	•	•	•	•			
312	S-Sodium Hydrosulfite (dehydration)	•	•	•	•			
315	S-Other Dehydration Products	•	•	•	•			
810	General Laboratory and Experimental Use (own use only)	•			•			
811	Laboratory Reagents For Sale*			•	•		•	
900	Specialized Use (Require Form 5150.19)**	•		•	•			
910	Animal Feed Supplement							•

Notes: Other products or processes may be authorized by the TTB Director under paragraph 21.31

\* Formulas 3-A, 3-C and 30 are authorized for general laboratory and mechanical purposes under 27CFR part 20.94 (A)(2). Other formulas may be authorized for laboratory use in connection with specific product development.

\*\* Persons desiring other formulas for this use should indicate that fact in the space provided for this purpose on Form 5150.19





## Approved Applications for Specially Denatured Alcohols

Code No.	Authorized Application	Specially Denatured Alcohol Number								
		1	2B	3A	3C	23A	30	35A	38B	
320	As a Solvent(S)-Petroleum Products	•	•	•	•					
331	S-Processing Pectins	•	•	•	•	•	•	•	•	
332	S-Processing Other Food Products	•	•	•	•	•	•	•	•	
341	S-Processing Crude Drugs	•	•	•	•	•	•	•	•	
342	S-Processing Glandular Products, Vitamins, Hormones and Yeasts	•	•	•	•	•	•	•	•	
343	S-Processing Antibiotics & Vaccines	•	•	•	•	•	•	•	•	
344	S-Processing Medicinal Chemicals (including alkaloids)	•	•	•	•	•	•	•	•	
345	S-Processing Blood and Blood Products		•	•	•	•	•	•	•	
349	S-Miscellaneous Drug Processing (including manufacture of pills)	•	•	•	•	•	•	•	•	•
351	S-Processing Dyes and Intermediates	•	•	•	•					
352	S-Processing Perfume Materials and Fixatives		•	•	•	•			•	
353	S-Processing Photographic Chemicals	•	•	•	•			•		
354	S-Processing Rosin	•		•	•					
355	S-Processing Rubber (latex)	•		•	•					
358	S-Processing Other Chemicals	•	•	•	•	•	•	•	•	
359	'S-Processing Miscellaneous Products	•	•	•	•	•	•	•	•	
511	As a Raw Material (RM) - Vinegar									•
512	RMM-Acetic Acid									•
521	RM-Ethyl Acetate	•	•							•
522	RM-Ethyl Chloride	•	•							
523	RM-Other Ethyl Esters	•	•							•
524	RM-Sodium Ethylate Anhydrous		•							
530	RM-Ethylamines	•	•	•	•					
540	RM-Dyes and Intermediates	•	•	•	•					
551	RM-Acetaldehyde	•	•							
552	RM-Other Aldehydes	•	•							
561	RM-Ethyl Ether	•	•							
562	RM-Other Ethers	•	•							
571	RM-Ethylene Dibromide	•	•							
572	RM-Ethylene Gas	•	•							
573	RM-Xanthates	•	•							
574	RM-Fuminate of Mercury, and other Detonators	•								
575	RM-Drugs and Medicinal Chemicals	•	•	•	•			•		
576	RM-Organo-Silicone Products		•	•	•			•		
579	RM-Miscellaneous Other Chemicals	•	•	•	•			•		
580	RM-Synthetic Rubber									
590	RM-Synthetic Resins			•	•			•	•	

Note: Other approved formulas with limited usage include 2C, 6B, 12A, 13A, 17, 20, 29 and 32. Details may be obtained on request.

## Completely Denatured Ethyl Alcohol

Completely denatured ethyl alcohol is prepared from pure ethyl alcohol according to formulas approved by the TTB, and contained in Part 21 of Title 27 of the Code of Federal Regulations.

Completely denatured ethyl alcohol or C.D. alcohol, contains a concentration of denaturants that render the alcohol totally unfit for human consumption. As a result, C.D. alcohol may be used with minimum federal restrictions.

Authorized Composition (gal.)	CD-19
Ethyl alcohol	100
Methyl isobutyl ketone	4.0
Kerosene, deodorized kerosene, gasoline, unleaded gasoline, rubber hydrocarbon solvent, or heptane	1.0

Typical Properties	CD-19	
	190 pf formula	200 pf. formula
Specific gravity @ 60/60 deg F (air)	0.8134	0.7931
Pounds per gallon @ 60 deg F	6.774	6.605
Ethyl alcohol content Absolute basis, % vol.	90.5	95.2
Apparent proof	190	199.7

## Proprietary Solvents (27 CFR 20.113)

Proprietary Solvents are ethyl alcohol formulations approved by the TTB. Specially Denatured Alcohol No. 1 is used in the preparation of these proprietary solvents which possess excellent solvent characteristics and hence find use in a variety of solvent applications.

Among the many uses for Proprietary Solvents is that of a latent solvent for use with nitrocellulose resins. When incorporated into solvent systems containing active solvents such as acetone, methyl ethyl ketone, or methyl isobutyl ketone, targeted performance properties are achieved at minimum costs.

The same result can be expected when Proprietary Solvents are used in applications involving other cellulosic resins. Perhaps the broadest use for them is as a thinner for shellac. Proprietary Solvents work well when used to prepare spirit varnishes, and other coatings and inks, adhesives, ink and spot removers.

Authorized Composition (gal.)	PF-1-190 (PM 41) 190 pf.	PF-1-200 (PM 100) 200 pf.	PF-111-190 (PM 3224) 190 pf.	PF-111-200 (PM 509) 200 pf.
TTB Formula (1)				
SDA No. 1,190 pf. (2)	100		100	
SDA No. 1,200 pf. (2)		100		100
Ethyl acetate (85-88%)	5	5	1	1
Gasoline or rubber hydrocarbon solvent	1	1	1	1
Methyl isobutyl ketone			1	1

### Typical Properties

Specific gravity, 60/60 deg F (Air)	0.8172	0.7989	0.81	0.7953
Pounds per gallon @ 60 deg F	6.806	6.652	6.786	6.622
Color, Pt-Co.	5	5	5	5
Acidity, calc. as acetic acid, % wt.	0.0015	0.0015	0.0015	0.0015
Distillation range, deg C	74-79	75-79	73-79	75-79
Non-volatile matter, g/100 ml	0.001	0.001	0.001	0.001
Apparent proof	189.1	197.8	190.3	199.2

### NOTE:

(1) The following proprietary formulas are also authorized by the Federal Government but find little commercial use.

	IV	V
Ethyl alcohol	100 gals.	100 gals.
Gasoline or Rubber H.C. Sol	1 gal.	1 gal.
Methyl isobutyl ketone	1 gal.	1 gal.
Tertiary butyl alcohol	2 gal	
Secondary butyl alcohol		2 gal

### NOTE:

(2) Unless otherwise specifically requested, Proprietary Solvents are prepared with SDA No. 1 Formula containing 4 gals. methyl alcohol and 1 gal. of methyl isobutyl ketone in 100 gallons of pure ethyl alcohol.

## Special Industrial Solvents (27 CFR 20.112)

Special Industrial Solvents are a series of modified ethyl alcohol solvents based on Formula SDA 3A. They are available in the range of compositions shown in the following tables which list the typical physical properties of each formula. Since these Special Industrial Solvents are offered in a variety of compositions and do not contain hydrocarbons, they can be used in many applications where their effect on rubber is important, such as the printing industry where they contact rubber rolls or plates.

Special Industrial Solvents are a major component in the formulation of flexographic and other printing inks. These solvents are also used for cleanup and in other operations in printing plants.

Special Industrial Solvents are also used in coatings, particularly those using alcohol soluble resins, such as shellac in photographic film processing, and as a latex coagulant.

Authorized Composition (gal.)	SIS-A1-190 PM-4081 (A-2)	SIS-A2-190 PM-4079 (A-4)	SIS-B1-190 PM-4157 (B-2)	SIS-C1-190 PM-4085 (C-2)	SIS-D1-190 PM-4080 (D-2)	SIS-D2-190 PM-4078 (D-4)
SDA-3A (1) (190 proof formula)	100	100	100	100	100	100
Isopropyl alcohol (anhyd.)	10		5		15	
Methyl alcohol		10	5			15
Ethyl acetate (85%)				5		
Methyl isobutyl ketone	1	1	1	1	1	1
<b>Typical Properties</b>						
Pounds per gallon @ 60 deg F	6.676	6.769	6.768	6.814	6.757	6.761
Specific gravity, 60/60 deg F (Air)	0.8124	0.8128	0.8127	0.8184	0.8113	0.8120
Distillation range, deg C	76-80	74-80	75-80	75-80	76-81	74-80
Acidity, calc. as acetic acid, % wt.	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Non-volatile matter, g/100 mi.	0.001	0.001	0.001	0.001	0.001	0.001
Color, Pt-Co.	5	5	5	5	5	5

### NOTES:

(1) 100 gallons of 190 proof ethyl alcohol denatured with 5 gals. methyl alcohol.

Authorized Composition (gal.)	SIS-A1-200 PM-4082 (A-2)	SIS-A2-200 PM-4083 (A-4)	SIS-B1-200 PM-4135 (B-2)	SIS-C1-200 PM-4084 (C-2)	SIS-D1-200 PM-4176 (D-2)	SIS-D2-200 PM-4217 (D-4)
SDA-3A (1) (200 proof formula)	100	100	100	100	100	100
Isopropyl alcohol (anhyd.)	10		5		15	
Methyl alcohol		10	5			15
Ethyl acetate (85%)				5		
Methyl isobutyl ketone	1	1	1	1	1	1
<b>Typical Properties</b>						
Pounds per gallon @ 60 deg F	6.608	6.613	6.610	6.654	6.609	6.612
Specific gravity, 60/60 deg F (Air)	0.7936	0.7942	0.7939	0.7991	0.7936	0.7941
Distillation range, deg C	76-81	74-81	75-80	75-80	76-81	73-80
Acidity, calc. as acetic acid, % wt.	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Non-volatile matter, g/100 mi.	0.001	0.001	0.001	0.001	0.001	0.001
Color, Pt-Co.	5	5	5	5	5	5

### NOTES:

(1) 100 gallons of 200 proof ethyl alcohol denatured with 5 gals. methyl alcohol.

## Ink Solvents

Ink Solvents are a series of special industrial blends of denatured alcohol designed specifically for the ink and printing industry.

Authorized Composition (gal.)	PS-612-190 PM 6127 190 pf.	PS-612-200 PM 6129 200 pf.	PS-642-200 PM 6118 200 pf.	PS-663-200 PM 6193 200 pf.	PS-672-200 PM 6264 200 pf.	SIS-D4-200 PM 6288 200 pf.
SDA-3A (190 pf.)	85					
SDA-3A (200 pf.)		85	89			
SDA-3C (200 pf.)				89	95	90
Methyl Alcohol	14	14	10			
Isopropanol				10		9
n-Propyl Acetate	1	1	1	1	5	
MIBK						1
Resultant Volume	100	100	100	100	100	100

## TTB FORMULA CROSS-REFERENCES

### Special Industrial Solvents

### FORMER TRADE NAMES

TTB FORMULA	PRIDE	Shell	UCC/DOW	Lyondell/Basell (Equistar)	SASOL
A (SDA-1) 190 PR.	SIS-AI-2-190	A-1-190	PM 1473	Filmex 1	SIS-AI-2-190
200 PR	SIS-AI-2-200	A-1-200	PM 1474	Filmex 1 anhyd.	SIS-AI-2-200
A (SDA-3A) 190 PR	SIS-AI-190	A-2-190	PM 4081	Filmex A-1	SIS-AI-190
200 PR	SIS-AI-200	A-2-200	PM 4082	Filmex A-1 anhyd.	SIS-AI-200
A (SDA-3A) 190 PR	SIS-A2-190	A-4-190	PM 4079	Filmex A-2	SIS-A2-190
200 PR	SIS-A2-200	A-4-200	PM 4083	Filmex A-2 anhyd.	SIS-A2-200
B (SDA-3A) 190 PR	SIS-BI-190	B-2-190	PM 4157	Filmex B	SIS-BI-190
200 PR	SIS-BI-200	B-2-200	PM 4135	Filmex B anhyd.	SIS-BI-200
C (SDA-3A) 190 PR	SIS-CI-190	C-2-190	PM 4085	Filmex C	SIS-CI-190
200 PR	SIS-CI-200	C-2-200	PM 4086	Filmex C anhyd.	SIS-CI-200
D (SDA-3A) 190 PR	SIS-DI-190	D-2-190	PM 4080	Filmex D-1	SIS-DI-190
200 PR	SIS-DI-200	D-2-200	PM 4176	Filmex D	SIS-DI-200
D (SDA-3A) 190 PR	SIS-D2-190	D-4-190	PM 4078	Filmex D-2	SIS-D2-190
200 PR	SIS-D2-200	D-4-200	PM 4217	Filmex D-2	SIS-D2-200

### PROPRIETARY SOLVENTS

1 190 PR	PF-1-190	B-190	PM 41	Prop. Sol. 1-1	F-1-190
200 PR	PF-1-200	B-200	PM 100	Prop. Sol. 1-1 anhyd.	F-1-200
111 190 PR	111-190	Prop. Solvent 190	PM 3224	Prop. Sol. 111-1	F-3-190
200 PR.	111-200	Prop. Solvent 200	PM 509	Prop. Sol. 111-1 anhyd.	F-3-200

## Storage & Handling of Ethyl Alcohol

### General

Storage rooms or tanks for tax-free pure ethyl alcohol and specially denatured alcohol must meet the requirements of the TTB.

The facilities must also conform to local and state fire and safety regulations. It is advisable to follow the safe practices outlined in the National Fire Protection Association (NFPA) No. 30, "Flammable and Combustible Liquids Code" and No. 77, "Static Electricity". Denatured alcohols intended for drug or food use should be stored, processed or handled in stainless steel or nickel alloy equipment, in order to avoid possible odor, taste or other contamination problems.

If the storage tank is located in an area containing appreciable quantities of atmospheric contaminants, a nitrogen blanket in the vapor space of the tank is suggested to avoid absorption into and imparting of objectionable odor to the alcohol. A nitrogen blanket also will prevent absorption of atmospheric moisture by anhydrous products.

It is also suggested that a desiccant drier be mounted in the tank vent to further help prevent absorption of atmospheric moisture in anhydrous alcohol.

The PRIDE staff would be pleased to recommend an engineer to assist in the design of handling and storage facilities.

### Material Compatibility

Pure ethyl alcohol is considered one of the liquids least corrosive to most common construction metals at temperatures up to its boiling point. However, it can become corrosive if it becomes contaminated. Galvanic corrosion can occur between dissimilar metals in aqueous solutions of ethyl alcohol at elevated temperatures.

Many of the specially denatured alcohol formulas (those denatured with other alcohols and solvents) are considered non-corrosive. These are SDA Nos. 1, 2B, 3A, 3B, 12A, 13A, 19, 23A, 23H, 28A, 30, 32, 35, 35A, 39B, 39C and 44. Proprietary Solvents are also non-corrosive. For these formulations, steel and iron are normally satisfactory construction materials.

To avoid rust formation, steel tanks should be lined with a baked phenolic or a sprayed zinc silicate coating, and other equipment should be constructed of bronze, or galvanized iron as permitted by the denaturant being used. For maximum purity of product, the 300 series stainless steels or the nickel alloys are recommended.

Aluminum should be avoided in equipment intended for handling anhydrous ethyl alcohol. Aluminum will react with extremely dry alcohols to form a group of highly reactive compounds called alkoxides. The reaction between the alcohol and aluminum may start after extended contact at ordinary temperatures; however, the reaction can occur rapidly if the system is subjected to an elevated temperature. Additions of water to anhydrous alcohol makes initiation less likely.

### Tanks

Where permitted by local regulations and by non-hazardous surroundings, vertical, above-ground tanks are the least expensive to buy and the easiest to maintain. They also can be more accurately calibrated and gauged than horizontal tanks. However, underground tanks afford maximum fire protection. The exterior of underground steel tanks should be coated and cathodically protected against corrosion. Secondary Containment must also be provided. Where flooding conditions exist or in swampy areas, underground tanks must be suitably anchored to prevent possible flotation.

It is recommended that welded and flanged connections be used at least in the liquid zone of the tank in order to avoid the possibility of leakage at threaded joints. In order to secure maximum cleanliness, the tanks should be fabricated either by butt welding or by seal welding the interior seams to eliminate dirt collecting pockets.

The liquid fill lines to the tanks should come within a few inches of the bottom of the tanks in order to prevent a possible static electrical spark forming in the vapor space due to falling liquid and eliminate unnecessary generation of vapors. All alcohol storage tanks should be electrically bonded and grounded to prevent the accumulation of static electricity.

Where subject to TTB regulations, tanks should be properly calibrated after installation and equipped with an accurate liquid level gauging device. Provisions should be made to obtain an average temperature of 60 °F in the tanks in order to correctly measure the volume.

## Metals Recommended for use in Ethyl Alcohol Solvents

TYPE OF CONSTRUCTION	TANKS	PIPING	PUMPS, VALVES & FITTINGS	FILTERS	METERS
Standard (Economical)*	Steel	Steel	Nodular Iron or Steel	Galvanized Steel or Nickel Plated Bronze	Bronze or Aluminum**
Corrosion Resistant (Better Product Protection)	Steel (Phenolic or Zinc Silicate Lining) or Aluminum**	Galvanized Steel or Aluminum**	Bronze or Stainless Steel	Galvanized Steel or Nickel Plated Bronze	Bronze or Aluminum**

\*NOTE: If a filter is to be used in this least critical of the services listed, probably a higher quality material than plain steel should be used for the piping and equipment downstream of the filter.

\*\* NOTE: Use aluminum only with 190 proof ethyl alcohol and only at temperatures up to 120 °F.

The following non-metals may be used in ethyl alcohol service - the choice being dictated by the denaturants, such as ketones or other solvents, which may be present in the alcohol:

Glass, ceramic, carbon and graphite.
Polyethylene, polypropylene, TFE, polyvinyl chloride.
Natural and butyl rubbers, silicones, ethylene-propylene, elastomer and neoprene

## Guide for Storage Container Materials for Some Denatured Alcohols

DENATURANT	RECOMMENDATIONS
<b>Acidic Denaturants</b> Boric Acid Phenol Vinegar	Alcohols containing acidic denaturants should be stored in suitably resistant materials. Stainless steel, or baked phenolic lined steel tanks normally are used.
<b>Alkaline Denaturants</b> Aqueous Ammonia Caustic Soda	Copper and copper alloys should be avoided for alkaline denatured alcohol service. Aluminum and zinc also may be adversely affected. Iron, steel, and stainless steel are the usual materials of construction. Baked epoxy-phenolic lined steel tanks also may be used if desired.
<b>Other Denaturants</b> Formaldehyde Iodine Mercuric Iodide Potassium Iodide Quinine Sodium Iodide	Alcohols containing these denaturants also should be preferably stored in corrosion resistant materials. Alcohols containing denaturants other than those listed also may need special construction materials. Further, critical end uses may require specialized construction materials to maintain quality. Compatibilities should be investigated for unknown cases.

## Storage & Handling of Ethyl Alcohol

### Pipes & Fittings

The selection of materials for pipe and fittings was covered in an earlier section. Steel pipe and iron or bronze ball valves with Teflon seats are frequently used. Block valves on aboveground tanks, however, should be either steel or nodular iron with metal internal parts, for protection in case of fire. Welded and flanged piping connections are recommended for protection against leakage.

Threaded connections, where used, should be sealed with Teflon and or putty thread tape. Seal welding, although not recommended at elevated temperatures, may be used to seal threaded connections on lines operating at ambient temperatures.

### Pumps

It is preferable to use centrifugal pumps with mechanical seals for handling alcohols where the available net positive suction head is sufficiently high. If this is insufficient, self-priming centrifugals or positive displacement pumps may be used. A positive displacement pump must be provided with a relief valve to relieve possible excessive pressure caused by inadvertent closure of the discharge valve. Alcohol being a flammable liquid requires that all motors and controls meet the National Electrical Code requirements for Class 1, Group D locations.

### Filters and Meters

Material recommendations for filter bodies are given earlier. Disposable filter packs of Orion, cotton and viscose are suitable as are reusable ceramic cartridges. Positive displacement meters constructed of the materials indicated earlier are suitable for alcohol service.

### Gaskets and Packings

TFE envelope type gaskets are the preferred gasket material, although other common materials are satisfactory. Packings may be of standard materials.

### Hoses

Hose linings of stainless steel, polyethylene, butyl rubber, or TFE have given good service for alcohols.

### Lubricants

Since ethyl alcohol is an excellent solvent, specialized lubricants such as fluorinated hydrocarbons (TFE), silicones, molybdenum disulfide, and graphite-based products may be employed where lubricated parts are in direct contact with the liquid ethyl alcohol. Petroleum-based lubricants should not be used where they may contact ethyl alcohol.

### Electrical Equipment

All electrical installations should conform to the provisions in the latest edition of the National Electrical Code and an electrical area classification drawing should be made. Electrical equipment enclosures should be NEMA 3, 4, or 1, as applicable except for those installed in classified areas, which should be NEMA 4X when available or NEMA 7 with drains. Every effort should be made to minimize the exposure to or the accumulation of moisture in electrical equipment enclosures.

All new facilities should use high pressure sodium light fixtures. Any additions to existing lighting systems should be the same as the existing systems; all motors should be the high efficiency type and all electrical equipment, motors, tanks, piping and other fixed equipment should be permanently grounded and bonded. Temporary ground connections between the piping and any movable container being loaded or unloaded should be made prior to, and remain during, the transfer operation.

### Hazards

#### Health

Liquid ethyl alcohol is non-irritating to the skin, but continuous daily contact with this material may produce dehydration and possibly cracking of the skin. The liquid is irritating to the eyes.

Denaturants, which are characterized by objectionable odor and taste, are selected and added to ethyl alcohol for the purpose of rendering it unfit for human consumption. Ingestion of any denatured material exposes the drinker to the possibilities of severe gastric distress, brain and nerve damage, or possibly even death.

#### Fire and Explosion

Ethyl alcohol is a volatile and flammable liquid. Flash points of alcohol-water mixtures are given in the section on properties. The vapors also form explosive mixtures in the air-the lower explosive limit for this material is approximately 4.3% while the upper limit is approximately 19.0% ethyl alcohol.

In view of this, all ignition sources must be avoided when handling this solvent.

**For more information about the hazards of ethyl alcohol, consult the Material Safety Data Sheet.**



## Summary

- Ethyl alcohol bulk storage installations should be well designed by competent engineers.
- Compliance with applicable local or state regulations is required. In addition to such regulations, compliance with the safety data in the latest editions of the National Fire Protection Association Booklets\* No. 30, "Flammable and Combustible Liquids Code" and No. 77, "Static Electricity", is recommended.
- Enclosed equipment is preferable for ethyl alcohol processing, but where open containers are necessary, mechanical ventilation should be provided.
- Adequate curbs should be installed to contain spillage.
- Water should be readily available for flushing spillage.
- An automatic sprinkler system and/or other adequate fire protection devices should be provided
- Electrical equipment should be explosion proof; Class 1, Group D, Division I or 2 construction in accordance with the National Electrical Code (N.F.P.A. No. 70). Adequate protection from static electricity should be provided.
- Oxidizing materials should not be stored near ethyl alcohol.
- Aluminum construction is not recommended and should be avoided where storing or handling anhydrous alcohol.
- An effective employee education on the safe handling of ethyl alcohol should be provided, and appropriately supervised.
- Excessive or prolonged breathing of the vapor should be avoided.
- All Spills should be promptly flushed with water, within containment, to prevent flammable conditions.
- Protection from spark ignition due to static electricity or stray currents during unloading or transfer operations should be avoided by grounding the equipment and bonding the piping from the container being unloaded to the container being filled. This should be done before the containers are opened.
- Similarly, steam or air hoses should be bonded to the tank prior to a purging operation.
- All tools used around open containers should be spark-resistant.
- Also, since grounding does not rule out the possibility that sparking can occur on the liquid surface in the container being filled, loading lines or spouts should be extended to the bottom of this container to minimize splash and spray, thus reducing the chance of static generation.
- Tank car or tank truck unloading or other transfer operations should be done, preferably, with a pump. Air pressure should never be used for unloading or transferring of a flammable liquid. Shipping drums should be emptied either by gravity flow or by pump, and never by pressure under any circumstances.
- Tank cars are usually unloaded through the bottom outlet except in those states that require top unloading.
- Tanks, equipment, piping, etc., should be drained and thoroughly cleaned with water and/or steam before being repaired.
- Waste mixtures containing flammable amounts of ethyl alcohol should not be permitted to enter drains or sewers where there may be danger of ignition.

## Applicable Code of Federal Regulations (CFR)

21 CFR	Title
172.340	Fish protein isolate
172.560	Modified hop extract . I I
175.105	Adhesives
175.300	Resinous and polymeric coatings
175.380	Xylene-formaldehyde resins condensed with 4, 4' isopropylidenediphenol epichlorohydrin epoxy resins
175.390	Zinc-silicon dioxide matrix coatings
176.170	Components of paper and paperboard in contact with aqueous and fatty foods
176.180	Component of paper and paperboard in contact with dry food
176.200	Defoaming agents used in coatings
176.210	Defoaming agents used in the manufacture of paper and paperboard
176.1200	Cellophane
176.1210	Closures with sealing gaskets for food containers
176.1440	4.4 ' isopropylidenediphenol epichlorohydrin resins minimum molecular weight10,000
176.1010	Sanitizing solutions
182.99	Adjuvants for pesticide chemicals
184.1	Substances added directly to human food affirmed as generally recognized as safe (GRAS)
582.99	Adjuvants for pesticide chemicals

# The Health, Safety and Regulatory Aspects of Ethyl Alcohol and its Formulations

## Health

Denatured ethyl alcohol, commonly referred to as denatured alcohol, contains denaturants selected for their objectionable taste and odor to discourage ingestion. It is important to understand that the ingestion of denatured alcohol may be hazardous due to the potential toxicity of the denaturants.

Industrial exposure to undenatured ethyl alcohol has not posed severe health problems. Eye irritation from liquid contact may occur and can range from mild to severe depending on concentration of the alcohol and duration of contact.

Skin contact by the liquid is practically non-irritating except in the circumstance where evaporation is prevented, thus prolonging contact with the liquid. Such prolonged or repeated contact may result in defatting and drying of the skin resulting in irritation or even dermatitis. Absorption through the skin is minimal to nonexistent.

Inhalation of low concentrations of ethyl alcohol vapor is not irritating, but at higher concentrations, irritation to the mucous membranes of eyes, nose, throat and respiratory tract may occur.

## Safety and Industrial Hygiene

**Occupational Exposure Limits:** The standard has been set by the Occupational Safety and Health Administration as the Permissible Exposure Limit/Time Weighted Average or (OSHA-PEL/TWA). The OSHA-PEL/ TWA is established at 1000 parts per million (ppm) for an 8-hour workday.

The American Conference of Governmental Industrial Hygienists Threshold Limit Value/Time Weighted Average ACGIHTLV/TWA) is also established at 1000 ppm for an 8 hour workday.

## Regulatory

**The Alcohol and Tobacco Tax and Trade Bureau (TTB) (27 CFR):** The TTB regulates the use of ethyl alcohol in industrial situations under 27 CFR Parts 20, 21 and 22. The various denatured alcohol formulations are derived from the TTB provisions in Part 21.

**The Food and Drug Administration (FDA) (21 CFR):** Pure ethyl alcohol is acceptable in several applications regulated by the FDA. The table on the previous page summarizes the applicable Code of Federal Regulations (CFR).

In communications with industry, the FDA has affirmed ethyl alcohol as being prior sanctioned for use in flavoring. Also, the Flavor and Extract Manufacturer's Association has recognized it as safe.

Additionally, language in many sections within 21 CFR allows the use of cross referencing of chemicals that are not specifically listed in that section, but have utility for the desired end use. If coverage under a section not listed above is desired, that section should be examined for language that allows cross referencing.

**Environmental Protection Agency (EPA) (40 CFR) Federal Insecticide, Fungicide and Rodenticide Act (FIFR):** Ethyl alcohol is exempt from the requirements of a tolerance when used as a solvent or co-solvent in pesticide formulations (40 CFR 180.1001(c) and (e)).

**Resource Conservation and Recovery Act (RCRA):** Although not specifically listed as a hazardous waste, ethyl alcohol has a low flash point (56 °F -TCC) which gives it the "Characteristic of Ignitability" (i.e., an FP < 140 °F) (40 CFR 261.21). Thus, if discarded as is, it would be an ignitable hazardous waste, hazardous waste number D001. Refer to the latest EPA or state regulations regarding proper disposal.

## Comprehensive Environmental Response Compensation and

**Liability Act (CERCLA):** Under CERCLA ("Superfund"), releases of "reportable quantities" of hazardous substances to air, land or water may be reportable to the National Response Center (800-424-8802). Commercial grade (i.e., undenatured) ethyl alcohol is not a listed hazardous substance and therefore, not reportable under CERCLA. Releases of 100 lbs. or more of waste ethyl alcohol, intended to be discarded or recycled, are reportable as unlisted hazardous substances based on the characteristic of ignitability.

**Clean Air Act (CAA):** Ethyl alcohol is a volatile organic liquid (VOL) as defined in the CAA. Storage of VOUs may be regulated under state implementation plans designed to meet the Ozone National Ambient Air Quality Standard. Individual state air regulations should be reviewed for specific storage and handling requirements.

**Clean Water Act (CWA):** The CWA prohibits the discharge of any pollutant to surface waters and, in some cases, to ground water unless permitted under the National Pollution Discharge Elimination System (NPDES) Program. Ethyl alcohol will increase the biochemical oxygen demand (BED) of an effluent stream and may require permission to be discharged.

**Toxic Substances Control Act (TSCA):** Ethyl alcohol was reported on the initial TSCA Inventory of Chemical Substances (CAS Number 64-17-5). It also is listed in the European and Australian Core Inventories (same CAS Number).

**Department of Transportation (DOT) (49 CFR):** Ethyl alcohol's 56°F flash point translates to a DOT classification of "Flammable Liquid". The DOT Proper Shipping Name is "Ethyl Alcohol" and the Identification Number is UN1170. Packaging exceptions are found under 49 CFR 173.118 and specific requirements under 173.125. For Specially and Completely Denatured Alcohol formulations, the DOT classification remains "Flammable Liquid" but the DOT Proper Shipping Name is "Denatured Alcohol", and the ID Number is NA 1986. Denaturants in some of these products may be present in large enough quantity to require additional specific information on the shipping paper as described in 172.203 (c).

**Occupational Safety and Health Administration (OSHA) (29 CFR):** PRIDE's Material Safety Data Sheet(s) (MSDS) for ethyl alcohol and all its solutions are in compliance with the OSHA Hazard Communication Standard (29 CFR 1910.1200). The same format is followed for Special Industrial, Specially Denatured and Completely Denatured product lines. MSDS's are available from PRIDE through our Customer Service Department.

## **Government Regulations**

### **PROPRIETARY SOLVENTS**

Proprietary Solvents are prepared with specially denatured alcohol Formula No. 1 or 3A or 3C according to the general use formulas approved by the TTB in paragraph 20.113 part 20 CFR, Title 27. The compositions of Proprietary Solvents are presented on page 9. No permits or bonds are required for their use.

### **Special Industrial Solvents**

**Special Industrial Solvents**, are manufactured with specially denatured alcohol Formula No. 1, 3A or 3C according to the general use formulas approved by the TTB in paragraph 20.112 part 20, CFR, Title 27. The compositions and typical properties of Industrial Solvents are presented in the "Physical & Chemical Properties" section of this brochure. No permits or bonds are required for their use.

### **Specially Denatured Alcohol**

The varied types of denaturants used in preparing specially denatured alcohol allow the use of this type of denatured alcohol in a greater number of end uses than is possible with completely denatured alcohol. The formulas for and uses of the various specially denatured alcohols are very closely controlled.

Permits are required for the purchase and use of specially denatured alcohols. Procedures for procuring and using specially denatured alcohol are contained in part 20, Title 27, CFR. Essential points of the procedure to be followed by most users of specially denatured alcohol are outlined below.

#### **Permits for Use and Withdrawal of Specially Denatured Alcohol**

(Par 20.41-42) Anyone desiring to use and procure specially denatured alcohol should do the following:

File an application on Form 5150.22 to obtain a permit. (Form 5150.9) Form 5150.22 includes information relating to user's location, officers intended use, etc. See paragraph 20.42 in Title 27 of CFR for additional detail.

When the user desires to procure specially denatured alcohol, he shall forward the industrial alcohol user permit, Form 5150.9, to the distilled spirits plant or dealer from whom he will procure the alcohol. A permittee may make photocopies of its permit Form 5150.9 (Par 20.54). Each copy must be signed, dated and contain the word "COPY" across the face. This copy is suitable for showing any supplier that you are eligible to withdraw specially denatured alcohol. There is no longer a limitation on monthly withdrawals or on the amount authorized to be on hand or in-transit at any one time. The only remaining quantity limitation is on total annual withdrawals. Permits are continuous and continue automatically from year to year (Par 20.49).

Customers are required to confirm validity of SDA permits when placing subsequent orders (part 20.161.C2)

**Records** (Subpart P, Chapter 20, Title 27 CFR)-Each user shall maintain separate records for each different formula of specially denatured alcohol. Each user shall perform for the TTB a balanced accounting for each formula. The user shall submit this accounting to the TTB upon request by the regional director (Compliance). Specific record requirements are explained as below.

**Receipt** (Par 20.163)

**Used** (Par 20.192)

**Losses** (Par 20.202.203)

Each article made with specially denatured spirits shall be made in accordance with an approved formula, Form 5150.19 or an approved general use formula prescribed in paragraphs 20.111-124. The procedure for obtaining approval of a formula is detailed in paragraph 20.91-194, CFR.

**Samples** (Par 20.251-253) -Applicants and prospective applicants for permits to use SDA and users may procure samples of such spirits for experimental purposes or for use in the preparation of samples of finished products. Samples of 5 gallons or less may be procured without permit. Applications for withdrawal of SDA in excess of 5 gallons shall be made to the regional director on company letterhead explaining why the requested quantity is necessary. If approved, the letterhead application is sufficient for submittal to the distilled spirits plant for the larger sample.

**Completely Denatured Alcohol** (Par 20.141) - Formulas for completely denatured alcohol are found on page 10 in this brochure. If the formula places no restriction on use as prescribed in Par 21 of the CFR, the completely denatured alcohol may be sold or used for any lawful purpose. Persons distributing and using (but not recovering for reuse) completely denatured alcohol are not required to obtain a permit or to file a bond.

**Records** (Par 20.261) -When requested by the TTB, any person who receives, packages, stores, disposes of, or uses completely, denatured alcohol shall keep records of all transactions in completely denatured alcohol which will enable TTB officers to verify and trace receipt, packaging, storage, usage, and disposal of the spirits, and to determine whether there has been compliance with law and regulations. However, on sales in quantities of less than 5 gallons, only the total quantity disposed of daily needs to be recorded.

**Receipt** (Par 20.143) -Unless completely denatured alcohol received in bulk conveyances or by pipeline is to be used immediately, it should be deposited in storage tanks, stored in the tank cars or tank trucks in which received, or drawn into packages which shall be marked or labeled as required by this subpart.

**Marking Packages** (Par 20.146) -All packages of completely denatured alcohol having a capacity in excess of 1 gallon shall have marked or labeled on the container the name and address of the person filling the container, the contents in gallons, the words "COMPLETELY DENATUREDALCOHOL", and the formula number. Packages of 5 gallons or less shall bear labels as required by Paragraph 20.147.

**5 Gallons or Less Capacity** (Par 20.147) -Packages of CDA having a capacity of five gallons or less sold or offered for sale by a distributor shall be labeled to show in plain legible letters the words "COMPLETELY DENATURED ALCOHOL", and the statement "CAUTION - CONTAINS POISONOUS INGREDIENTS".

The name and address of the distributor filling the package shall be shown on each label, unless otherwise shown on the package.

## **Pure Ethyl Alcohol**

Pure ethyl alcohol can be purchased for industrial use by paying the tax imposed by the Federal Government on pure ethyl alcohol. The current rate of tax is \$13.50 per proof gallon, which is, in terms of wine gallons, \$27.00 per gallon at 200 proof or \$25.65 per gallon at 190 proof. Depending upon the status of the user, he may be required to:

- Pay full tax (i.e., purchase "tax paid" industrial alcohol).
- Pay part of the tax (i.e., obtain a partial refund or "drawback").
- Pay no tax (i.e., purchase "tax free" industrial alcohol).

## **Tax Paid Industrial Ethyl Alcohol**

Tax paid industrial alcohol is pure ethyl alcohol that has been released from Federal bond by payment of the Federal Tax at the rates indicated above. By paying this tax, pure alcohol may be purchased for non-beverage use by manufacturers and by others without a federal permit or bond. It is important to be aware, however, that most states have special regulations pertaining to the purchase and use of pure alcohol which must be observed. All orders for tax-paid pure ethyl alcohol must be accompanied by:

- payment for the amount of Federal Tax and...
- carry a statement that the alcohol is for industrial use (as defined below) only.

Industrial use, defined by the Federal Alcohol Administration is: The use of distilled spirits or wine for experimental purposes and in the manufacture of (a) medicinal, pharmaceutical, or antiseptic products, including prescriptions compounded by retail druggists; (b) toilet preparations; (c) flavoring extracts, syrup, or food products; or (d) scientific, chemical, mechanical, or industrial products, provided such products are unfit for beverage use, is regarded as "industrial" and will be excluded for any application of the term "non industrial use." (Par 1.60-1.62)

## **Drawback on Tax-Paid Industrial Ethyl Alcohol**

Manufacturers who use tax-paid alcohol in the manufacture or production of medicines, medicinal preparations, food products, flavors, or flavoring extracts, which are unfit for beverage purposes are allowed a drawback of internal revenue tax on the distilled spirits used.

The rate of Federal Tax and the rate of drawback is detailed in Part 17, 27CFR and are subject to change by Congress. The procedures for obtaining drawback on Tax-Paid ethyl alcohol are contained in part 17, Title 27 CFR and are briefly summarized below.

- File Form 5154.1, "Formula and Process for Non- Beverage Product" with the director, TTB for approval of formula and process. Drawback cannot be obtained without approval of formula and process. (Par 17.131-17.133)

- Users of non beverage products are required to register with TTB, upon filing their first draw back claim.

File Form SS-4, application for employer identification number, with district director of any internal revenue district in which the taxpayer operates a business subject to special tax. The district director will assign an employer identification number which is required on Form 5630.5

File Form 5630.5 "Special Tax Return" to the district director of TTB.

- To file claim for drawback, execute Form 5620.8, "Claim" and send with supporting data to TTB. This claim pertains only to alcohol used during any one quarter of the year, and only one claim may be filed for one quarter.

Claims must be filed within three months of the quarter during which the alcohol was used. Claims may be filed monthly by special permission. (Par 17.141-17.135)

**Records** - Every person intending to claim drawback must keep current and complete records of the data required. Such records shall be retained by the manufacturer for a period of not less than 3 years. (Par 17.161-17.171). All other requirements of Part 17, Title 27 CFR should be complied with.

**Tax-Free Industrial Ethyl Alcohol** - Under part 22, subpart G, Title 27 CFR are contained the regulations pertaining to the distribution and use of tax-free ethyl alcohol. The regulations state that pure industrial alcohol may be withdrawn from the bonded premises of a distilled spirits plant, free of tax, by and for use of:

- certain educational institutions, scientific universities and colleges of learning

- any laboratory exclusively in scientific research hospitals, blood banks and sanitariums pathological laboratories clinics operated for charity and not for profit

- United States or any governmental agency thereof, any State, any political subdivision of a State, or the District of Columbia

**Prohibited Uses** - Under no circumstances may tax-free alcohol be used for beverage purposes, or in any food products, or in any use in preparing beverage or food products (Part 22.102 )

**Tax Free Industrial Ethyl Alcohol** - Permit requirements to use and procure tax free alcohol shall file an application on Form 5150.22 for and obtain a permit Form 5150.9. Each person who intends to withdraw more than 1500 proof gallons of tax free alcohol per annum shall file a bond, Form 5150.25 before issuance of the permit. See Paragraph 22.41-22.71 on Title 27, CFR.

**Withdrawals Under Permit** (22.111) When the permittee desires to procure tax free alcohol, he shall forward the original permit or a copy (Form 5150.9) to the proprietor of the distilled spirits plant from whom he will procure such alcohol. Shipments shall not be made by the proprietor of a distilled spirits plant until he is in possession of a valid withdrawal permit. When the user desires to procure tax free ethyl alcohol, he shall forward the tax free permit (form 5150.9). Each copy must be signed, dated and contain the word "COPY" across the face. This copy is suitable for showing any supplier that you are eligible to withdraw tax free ethyl alcohol. There are quantity limitations on total annual withdrawals. Permits are continuous and continue automatically from year to year (Part 22.111). Customers are required to confirm validity of tax free permits when placing subsequent orders (Parat 22.111.C2).

**Receipt and Storage of Tax-Free Alcohol** (Par 22. 113) RECEIPT -

On receipt of tax-free alcohol by the permittee, he shall ascertain and account for any loss in transit, or on the premises. Semi-annual inventory is required by Par 22. 162 and losses should be reported at that time.

**Storage** - A tax-free alcohol user shall have premises suitable for the business being conducted and adequate for the protection of the revenue. All storage facilities must be equipped for locking.

**Records** - (Par 22. 161- 165)-Persons holding a permit to use tax-free alcohol shall keep records in sufficient detail to enable any internal revenue officer to verify all transactions in tax-free alcohol and to ascertain whether there has been compliance with law and regulations.

All other requirements pertaining to tax-free industrial ethyl alcohol contained in Part 22, Title 27 CFR should be complied with.

## A Glossary of Useful Terms

**Absolute Ethyl Alcohol** - Dehydrated ethyl alcohol containing not less than 99.5% by volume of ethyl alcohol as determined by specific gravity.

**Actual Proof** -See "Proof".

**Alcohol** - Those spirits known as ethyl alcohol (EA), ethanol, or spirits of wine, from whatever source or by whatever process produced. For industrial purposes the term does not include such spirits as whisky, brandy, rum, gin, vodka, etc.

**Apparent Proof** -The proof of a liquid is determined from its specific gravity at 60/60°F. Since the solution being measured may contain soluble materials and denaturants, the apparent proof is not necessarily the actual or true proof of the solution.

**Article** - Any substance or preparation used in the manufacture of denatured spirits, including the product obtained by further manufacture or by combination with other materials, if the article is subjected to further manufacture or mixed with a combination containing denaturing spirits.

**Denaturant** -A material authorized in accordance with part 21, Code of Federal Regulations (CFR), Title 27, to be added to spirits in order to render such spirits unfit for use as a beverage or for internal medicinal use.

**Denatured Alcohol** - Ethyl alcohol to which denaturants have been added of the types and in the quantities set forth in CFR, part 21, Title 27. Ethyl alcohol may be either Completely Denatured (CD alcohol) or Specially Denatured (SD alcohol). (See "Proprietary Solvents" "Special Industrial Solvents".)

**Drawback** -A refund of tax on tax-paid alcohol when it is used to produce approved products not fit as a beverage.

**Proof** -The ethyl alcohol content of a liquid at 60°F (15.56°C) stated as twice (2 x ) the percent of ethyl alcohol by volume.

**Proof Gallon** -A gallon at 60°F which contains 50% by volume of ethyl alcohol having a specific gravity of 0.7939 at 60/60 deg F or the alcoholic equivalent thereof. To calculate proof gallons. multiply the number of wine gallons at 60°F by proof and divide by 100.

**Proprietary Solvents** - Solvents that are manufactured with specially denatured alcohol in accordance with proprietary solvent formulations authorized in CFR. part 20, Title 27 (par., 20.113.)

**Pure Ethyl Alcohol** - Ethyl alcohol that has not been denatured. Sold as either 190 proof or 200 proof (absolute).

**Special Industrial Solvents** -Solvents that are manufactured with specially denatured alcohol in accordance with special industrial solvent formulations as authorized in CFR, part 20, Title 27, (par. 20. 112).

**Wine Gallon** - A standard gallon of 231 cubic inches.

### **WARRANTY**

Nothing contained herein constitutes a warranty by Pride. Please refer to the written warranty, if any, supplied by Pride with respect to any particular product.

## NOTES



**PRIDE CHEMICAL SOLUTIONS, INC.**

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