

SPIRIT OF HVEN BACKAFALLSBYN

LABORATORY - SCIENTIFIC SERVICES



LABORATORY CERTIFICATE ID: ADI COMPETITION SPECIFIC

Certificate of analysis of sample as received:

Client	American Distilling Insitute	Laboratory	Spirit of Hven Backafallsbyn AB
Country	USA	Country	Sweden
Contact	Bill Owens	Laboratory Contact	MD Henric Molin
Tel.		Tel.	+46418449999
E-mail		E-mail	hm@hven.com
Laboratory ref. ID		Product Variety	
Analysis date		Client reference ID	
Certificate expiry date		Belongs to batch ID	

General comment

Spirit of Hven Laboratory certifies that product with above stated laboratory reference, as received to laboratory, have been tested with below given result. On tests as below, the product is compliant and fulfils the technical definitions and requirements according to EC 110/2008 with amendments. As so it is found fit for human consumption

General test	Art.No.	Value	Legal Limit	Method	Date: July 18 th 2016	(signature)	Dr Ulf Olsson, Laboratory manager
Alcohol by volume	ADI-040	vol%		GC			
Density (∫ at 20C)	ADI-002	g/dm ³		NIR			
Total Solids	ADI-006	g/hL (100%)	1,5	TS			
Turbidity	ADI-004			Turb.			
Colour (EBC)	ADI-005			Scada			
pH	ADI-003			pH			
Ethyl Carbamate	ADI-008	µg/L (100%)	0,1	GCMS			
<i>Acidity</i>		<i>g/ hL of sample</i>	<i>Limit</i>	<i>Method</i>			
Volatile acidity (as acetic acid)	ADI-031			GC/LC			
Fixed acidity (as acetic acid)	ADI-032			Calc			
Total acidity (as acetic acid)	ADI-030		1,5	Titr.			
<i>Carbohydrates</i>		<i>g/ hL of sample</i>	<i>Limit</i>	<i>Method</i>			
Fructose	ADI-091			HPLC			
Glucose	ADI-092			HPLC			
Sucrose	ADI-099			HPLC			
Total Sugars	ADI-090			HPLC			
<i>Esters</i>		<i>g/ hL of sample</i>	<i>Limit</i>	<i>Method</i>			
Total Esters (as Ethyl acetate)	ADI-070		1,3	LC/GC			
<i>Aldehydes</i>		<i>g/ hL of sample</i>	<i>Limit</i>	<i>Method</i>			
Furfuraldehyde	ADI-081		N.D	GC			
Total Aldehydes (as Acetaldehyde)	ADI-080		0,5	LC/GC			
<i>Alcohols</i>		<i>g/ hL of sample</i>	<i>Limit</i>	<i>Method</i>			
Methanol	ADI-041		30	GC			
n-Propanol	ADI-042			GC			
Isobutanol (2-methylpropan-1-ol)	ADI-043			GC			
Iso Amyl alcohol (3-methyl-1-butanol)	ADI-044			GC			
Active Amyl alcohol (2-methyl-1-butanol)	ADI-045			GC			
Phenethyl alcohol (2-phenylethanol)	ADI-046			GC			
Total Amyl alcohol	ADI-050			GC			
Total Higher alcohols	ADI-060		0,5	GC			

Spirit of Hven Backafallsbyn AB
 Norrebrogsvägen 55
 S-26013 Sankt Ibb
 Sweden
 www.backafallsbyn.se

VAT No.
 SE556247470901
Excise No.
 SEP5562474709
 Company site: Landskrona

Tel.
 +46-(0)418-449999
Fax.
 +46-(0)418-449991
 info@backafallsbyn.se

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Supplement 1:

Fingerprint; Shimadzu GCMS, ADI Specific x1.000.000 TIC (1.00); Retention time & Area

ADI specific example

Compound	Rt	Area
Acetaldehyde	1.495	
Ethanol	1.637	
1-Propanol	1.899	
Ethyl Acetate	2.199	
1-Propanol, 2-methyl-	2.340	
Acetic acid	2.505	
Ethanol, 2-nitro-	2.603	
1-Butanol	2.716	
Ethane, 1,1-diethoxy-	3.753	
1-Butanol, 3-methyl-	3.930	
1-Butanol, 2-methyl-	4.023	
2,3-Butanediol, [S-(R*,R*)]-	5.209	
2,3-Butanediol	5.398	
Propanoic acid, 2-hydroxy-, ethyl ester	5.532	
Furfural	5.852	
Propane, 1,1-diethoxy-2-methyl-	6.269	
1-Hexanol	6.465	
1-Butanol, 3-methyl-, acetate	6.561	
Butane, 1,1-diethoxy-3-methyl-	7.545	
Glycerin	7.844	
Hexanoic acid, ethyl ester	8.076	
Phenol, 2-methyl-	8.640	
Phenol, 2-methyl-	8.839	
Phenylethyl Alcohol	9.249	
Octanoic acid	9.615	
Butanedioic acid, diethyl ester	9.720	
Octanoic acid, ethyl ester	9.882	
(S)-(+)-2,3'-Dideoxyribonolactone	9.940	
Isosorbide	10.082	
Acetic acid, 2-phenylethyl ester	10.385	
n-Decanoic acid	11.090	
Ethyl 9-decenoate	11.283	
Decanoic acid, ethyl ester	11.340	
.beta.-D-Glucopyranose, 1,6-anhydro-	12.015	
Dodecanoic acid	12.387	
Dodecanoic acid, ethyl ester	12.617	
Benzaldehyde, 4-hydroxy-3,5-	13.053	
1-Dodecanol	0.000	
Octadecanoic acid, ethyl ester	13.758	
n-Heptadecanol-1	14.246	
Tridecanoic acid	14.617	
Ethyl 9-hexadecenoate	14.699	
Heptadecanoic acid, ethyl ester	14.794	
Di-n-octyl phthalate	17.214	

