



**APRC**  
Aromatic Plant Research Center

## LABORATORY REPORT

**SAMPLE NAME:** Cedarwood, Virginia

**BOTANICAL NAME:** *Juniperus Virginiana*

**COMPANY NAME:** ACHS

**COMPANY LOT #:** 13120C

**Column:** ZB5 (60 m length × 0.25 mm inner diameter × 0.25 μm film thickness)

**Instrument:** Shimadzu GCMS-QP2010 Ultra

**Carrier gas:** Helium 80 psi

**Temperature ramp:** 2 degrees Celsius per minute up to 260-degree Celsius

**Split ratio:** 30:1

**Sample preparation:** 5% w/v solution with Dichloromethane

**Interpretation on sample:**

This oil meets the expected profile of *Juniperus Virginiana*.

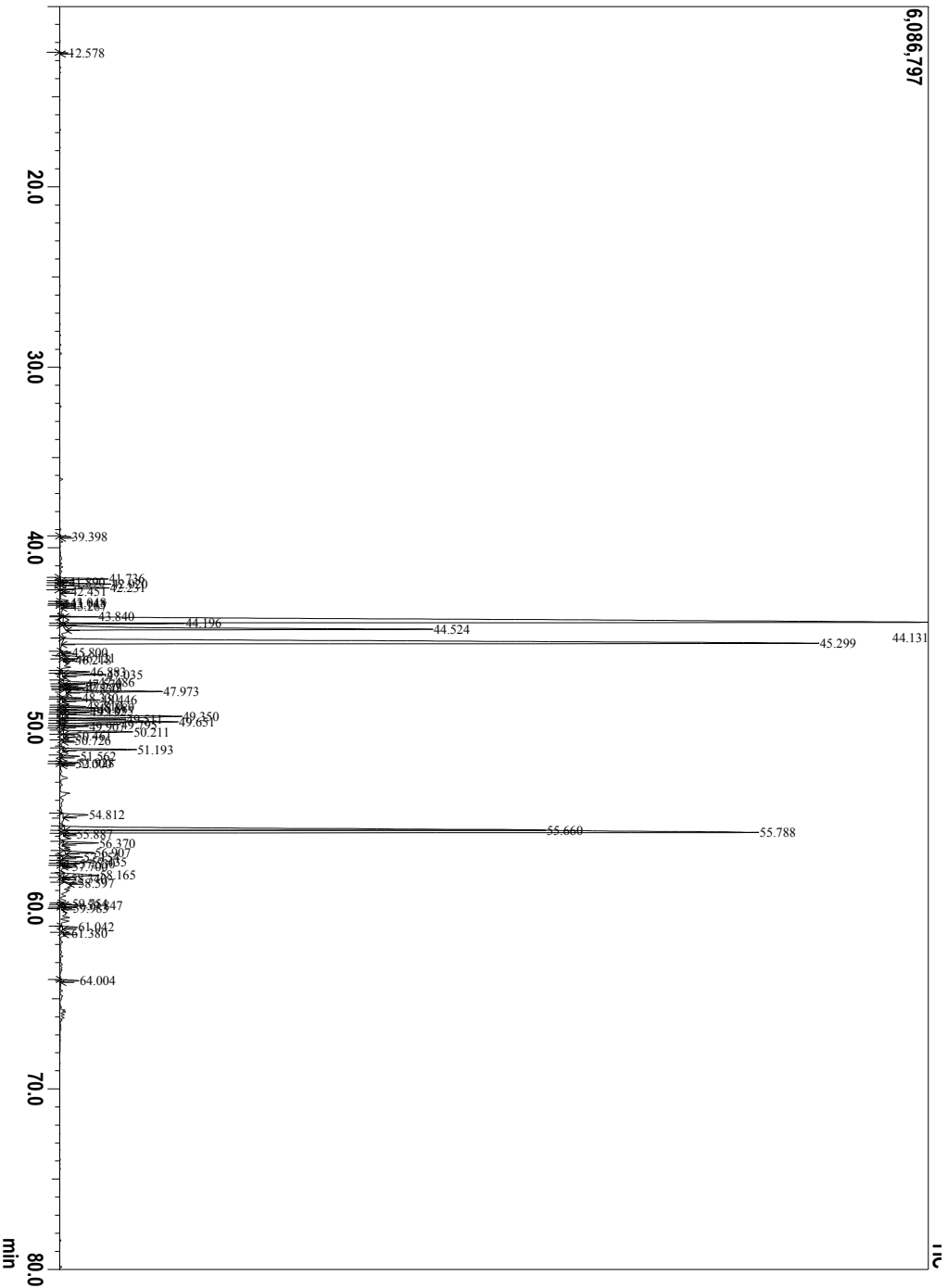
**Analyzed by:** Dr. Prabodh Satyal

**Reviewed by:** Ambika Poudel

**Issued Date:** 2/26/2019

Sample Information

Analyzed by : Dr. Prabodh Satyal  
 Analyzed : 2/25/2019 7:50:51 PM  
 Sample Type : Essential Oil  
 Sample Name : Cedarwood Virginia  
 Lot# : 13120C  
 Injection Volume : 0.30



Retention Time (min)	Peak Name	Area%
12.578	Pinenes <alpha>	0.06
39.398	Terpinyl acetate <alpha>	0.12
41.736	Furbiene <-2-epi-alpha>	0.62
41.890	Copaene <alpha>	0.11
42.020	Duprezanene <alpha>	0.70
42.231	Elemene <beta>	0.92
42.451	Longifolene-iso	0.13
43.048	Funebrene <alpha>	0.11
43.143	Sesquithujene	0.09
43.267	Di-epi- <alpha>-cedrene	0.13
43.840	Furberene <beta>	0.13
44.131	Cedrene <alpha>	26.71
44.196	Caryophyllene <trans>	1.23
44.524	Cedrene <beta>	5.79
45.299	Thujopsene<Z>	19.84
45.800	Himachalene-1,4-diene<isomer>	0.11
46.121	Prezazene	0.36
46.218	Farnesene<(E)-beta>	0.14
46.883	Acoradiene <alpha>	0.34
47.035	Acoradiene <beta>	0.60
47.486	Chamigrene<beta>	0.56
47.570	Cadlana-1(6),4-diene <trans>	0.22
47.773	Curcumenes <gamma>	0.25
47.830	Amorphene <alpha>	0.18
47.973	Chamigrene <beta>	1.22
48.330	Selinene <delta>	0.22
48.446	Selinene <beta>	0.47
48.810	Alaskene <beta>	0.26
48.889	Selinene <alpha>	0.50
49.055	Muurolene <alpha>	0.49
49.132	Himachalene <beta>	0.32
49.350	Cuprene <alpha>	2.41
49.511	Chamigrene <alpha>	0.75
49.651	Cuparene	1.71
49.795	Alaskene <alpha>	0.83
49.907	Amorphene <delta>	0.34
50.211	Cadinene <delta>	1.04
50.461	Cuprenene<isomer>	0.26
50.726	Bisabolene <-E-gamma>	0.12
51.193	Cuprene <gamma>	0.92
51.562	Calcorene-alpha	0.23
51.928	Cuprene <delta>	0.22
52.000	Cedranoxide<8,14>	0.15
54.812	Cedrol <allo>	0.52
55.660	Widrol	8.93
55.788	Cedrol	14.63
55.887	Biotol <beta>	0.15
56.370	Cedrol <epi>	0.49
56.907	Acorenol <alpha>	0.44
57.154	Acorenol <beta>	0.24
57.435	Sesquiterpineol	0.46
57.530	Muuroiol <epi-alpha>	0.18
57.700	Cadinol <delta>	0.09
58.165	Cadinol <alpha>	0.74
58.340	Selin-1-en-4-alpha-ol	0.10
58.597	Ced-8-en-15-ol	0.11
59.754	Acorenone	0.09
59.847	Bisabolol <alpha>	0.29
59.983	Nookkatol <isomer>	0.13
61.042	Thujopsenal <cis>	0.20
61.380	Thujopsenal <trans>	0.08
64.004	Cedryl acetate	0.22

Comments:  
 The analysis of this Cedarwood batch sample meets the expected chemical profile of authentic essential oil of Juniperus Virginiana.

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Reviewed by: Ambika Poudel

R Time Name

Area%  
100.00

# AROMATIC PLANT RESEARCH CENTER PHYSICAL CONSTANTS REPORT

**Oil Name:** Cedarwood Virginia

**Botanical Name:** *Juniperus Virginiana*

**Lot #:** 13120C

Organoleptic Information	
<b>Appearance</b>	Clear, Medium thickness
<b>Color</b>	Clear with tinge of yellow
<b>Odour</b>	Woody

Physical Constants Information (at 20 °C)			
Tests	Observed	ISO Range	Comments
<b>Specific Gravity</b>	N/A	N/A	
<b>Refractive Index</b>	1.50537	N/A	
<b>Optical Rotation</b>	-29.76	N/A	

**N/A: Not Available**

**Comments:**

ISO Standard for Cedarwood Virginia is not available for physical constants.

**Analyzed by:** Cierra Gunn  
**Reviewed by:** Ambika Poudel

**Date:** 2-25-19  
**Date:** 2-26-19



American College Of Healthcare Sciences

5940 SW Hood Ave
Portland, OR 97239

Client Sample ID: Cedrawood Virginia Essential Oil 13120C
PAL Sample ID: P190337-01

Report Number: P190337
Report Date: March 13, 2019
Client Project ID:

Sample Date: 02/28/2019
Received Date: 03/01/2019
Extraction Date: 03/06/2019

Certificate of Analysis

Table with 10 columns: Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes, Analysis Date, Analyte, Amount Detected, LOQ (mg/kg), Notes. Includes a section for Modified EPA 8270D (GC-MS/MS) with multiple rows of pesticide data.

Handwritten signature of Rick Jordan



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Certificate of Analysis  
(Continued)

Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes	Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes
<b>Modified EPA 8270D (GC-MS/MS) (Continued)</b>									
03/06/2019	Oxadiazon	ND	0.50		03/06/2019	Oxyfluorfen	ND	0.50	
03/06/2019	p,p'-DDD	ND	0.50		03/06/2019	p,p'-DDE	ND	0.50	
03/06/2019	p,p'-DDT	ND	0.50		03/06/2019	Parathion-methyl	ND	0.50	
03/06/2019	PCA	ND	0.50		03/06/2019	PCB	ND	0.50	
03/06/2019	PCNB	ND	0.50		03/06/2019	Pendimethalin	ND	0.50	
03/06/2019	Pentachlorophenyl methyl sulfide	ND	0.50		03/06/2019	Permethrin	ND	2.5	
03/06/2019	Procymidone	ND	0.50		03/06/2019	Prodiamine	ND	0.50	
03/06/2019	Pronamide	ND	0.50		03/06/2019	Propachlor	ND	0.50	
03/06/2019	Pyriproxyfen	ND	0.50		03/06/2019	Quinoxifen	ND	0.50	
03/06/2019	Spirodiclofen	ND	0.50		03/06/2019	Tetraconazole	ND	0.50	
03/06/2019	Tetradifon	ND	0.50		03/06/2019	trans-Nonachlor	ND	0.50	
03/06/2019	Trifluralin	ND	0.50		03/06/2019	Vinclozalin	ND	0.50	
<b>Modified EPA 8321B (HPLC MS-MS)</b>									
03/07/2019	3-Hydroxycarbofuran	ND	0.50		03/06/2019	Abamectin	ND	0.50	
03/07/2019	Acephate	ND	0.50		03/06/2019	Acetamiprid	ND	0.50	
03/06/2019	Acibenzolar-S-methyl	ND	1.0		03/07/2019	Aldicarb	ND	0.50	
03/07/2019	Aldicarb Sulfone	ND	0.50		03/07/2019	Aldicarb Sulfoxide	ND	0.50	
03/07/2019	Allethrin	ND	0.50		03/07/2019	Ametoctradin	ND	0.50	
03/06/2019	Atrazine	ND	0.50		03/07/2019	Azinphos-ethyl	ND	0.50	
03/06/2019	Azinphos-methyl	ND	1.0		03/06/2019	Azoxystrobin	ND	0.50	
03/07/2019	Bendiocarb	ND	0.50		03/07/2019	Bensulide	ND	0.50	
03/06/2019	Bifenazate	ND	0.50		03/07/2019	Bitertanol	ND	0.50	
03/06/2019	Boscalid	ND	0.50		03/07/2019	Bromacil	ND	0.50	
03/06/2019	Carbaryl	ND	0.50		03/06/2019	Carbendazim	ND	0.50	
03/07/2019	Carbofuran	ND	0.50		03/06/2019	Carfentrazone-ethyl	ND	0.50	
03/06/2019	Chlorantraniliprole	ND	0.50		03/07/2019	Clethodim	ND	1.0	
03/06/2019	Clofentezine	ND	0.50		03/06/2019	Clothianidin	ND	0.50	
03/07/2019	Cyanazine	ND	0.50		03/06/2019	Cyantraniliprole	ND	0.50	
03/07/2019	Cyazofamid	ND	0.50		03/07/2019	Cycloate	ND	1.0	
03/06/2019	Cyflufenamid	ND	0.50		03/06/2019	Cyflumetofen	ND	0.50	
03/06/2019	Cymoxanil	ND	0.50		03/06/2019	Cyprodinil	ND	0.50	
03/07/2019	Cyromazine	ND	0.50		03/06/2019	DCPMU	ND	0.50	
03/07/2019	Diazoxon	ND	0.50		03/06/2019	Difenoconazole	ND	0.50	
03/06/2019	Diflubenzuron	ND	0.50		03/06/2019	Dimethoate	ND	0.50	
03/07/2019	Dimethomorph	ND	0.50		03/06/2019	Dinotefuran	ND	0.50	



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Report Date: March 13, 2019

Client Project ID:

Sample Date: 02/28/2019

Received Date: 03/01/2019

Extraction Date: 03/06/2019

Certificate of Analysis  
(Continued)

Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes	Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes
<b>Modified EPA 8321B (HPLC MS-MS) (Continued)</b>									
03/07/2019	Disulfoton sulfone	ND	0.50		03/06/2019	Diuron	ND	0.50	
03/06/2019	Dodine	ND	0.50		03/07/2019	d-Phenothrin	ND	0.50	
03/06/2019	Emamectin Benzoate	ND	0.50		03/07/2019	Ethion	ND	0.50	
03/06/2019	Famoxadone	ND	0.50		03/07/2019	Famphur	ND	0.50	
03/07/2019	Fenamidone	ND	0.50		03/07/2019	Fenamiphos sulfone	ND	0.50	
03/07/2019	Fenamiphos sulfoxide	ND	0.50		03/07/2019	Fenazaquin	ND	0.50	
03/06/2019	Fenbuconazole	ND	0.50		03/06/2019	Fenbutatin oxide	ND	0.50	
03/06/2019	Fenhexamid	ND	0.50		03/07/2019	Fenobucarb	ND	0.50	
03/06/2019	Fenpropathrin	ND	0.50		03/06/2019	Fenpyroximate	ND	0.50	
03/07/2019	Fenuron	ND	0.50		03/06/2019	Flonicamid	ND	0.50	
03/06/2019	Fluazinam	ND	0.50		03/06/2019	Flubendiamide	ND	1.0	
03/06/2019	Flumioxazin	ND	0.50		03/07/2019	Fluometuron	ND	0.50	
03/07/2019	Fluopicolide	ND	0.50		03/06/2019	Fluopyram	ND	0.50	
03/06/2019	Fluoxastrobin	ND	0.50		03/06/2019	Flupyradifurone	ND	0.50	
03/06/2019	Fluridone	ND	0.50		03/06/2019	Flutriafol	ND	0.50	
03/07/2019	Fluvalinate	ND	0.50		03/06/2019	Fluxapyroxad	ND	0.50	
03/07/2019	Fonofos	ND	1.0		03/06/2019	Formetanate HCl	ND	0.50	
03/07/2019	Hexaconazole	ND	0.50		03/06/2019	Hexazinone	ND	0.50	
03/06/2019	Hexythiazox	ND	0.50		03/06/2019	Imazalil	ND	0.50	
03/06/2019	Imidacloprid	ND	0.50		03/06/2019	Indaziflam	ND	0.50	
03/06/2019	Indoxacarb	ND	0.50		03/06/2019	Iprodione	ND	2.5	
03/07/2019	Isoxaben	ND	0.50		03/07/2019	Linuron	ND	0.50	
03/07/2019	Malaoxon	ND	0.50		03/07/2019	Mandipropamid	ND	0.50	
03/06/2019	Metconazole	ND	0.50		03/07/2019	Methamidophos	ND	1.0	
03/06/2019	Methidathion	ND	0.50		03/07/2019	Methiocarb	ND	0.50	
03/06/2019	Methomyl	ND	0.50		03/06/2019	Methoxyfenozide	ND	0.50	
03/06/2019	Metrafenone	ND	0.50		03/07/2019	Metribuzin	ND	0.50	
03/07/2019	Mevinphos	ND	0.50		03/06/2019	Norflurazon	ND	0.50	
03/06/2019	Novaluron	ND	0.50		03/07/2019	Omethoate	ND	0.50	
03/06/2019	Oryzalin	ND	0.50		03/07/2019	Oxadixyl	ND	0.50	
03/06/2019	Oxamyl	ND	0.50		03/06/2019	Oxydemeton-Methyl	ND	0.50	
03/06/2019	Penthiopyrad	ND	0.50		03/07/2019	Phorate Sulfone	ND	0.50	
03/07/2019	Phorate Sulfoxide	ND	0.50		03/07/2019	Phosalone	ND	0.50	
03/06/2019	Phosmet	ND	0.50		03/07/2019	Phosphamidon	ND	0.50	
03/06/2019	Piperonyl Butoxide	ND	0.50		03/07/2019	Pirimicarb	ND	0.50	
03/07/2019	Pirimiphos-methyl	ND	0.50		03/07/2019	Prometon	ND	0.50	



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Client Project ID:

Sample Date: 02/28/2019

Received Date: 03/01/2019

Extraction Date: 03/06/2019

### Certificate of Analysis (Continued)

Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes	Analysis Date	Analyte	Amount Detected	LOQ (mg/kg)	Notes
<b>Modified EPA 8321B (HPLC MS-MS) (Continued)</b>									
03/07/2019	Prometryn	ND	0.50		03/06/2019	Propargite	ND	0.50	
03/06/2019	Propazine	ND	0.50		03/06/2019	Propiconazole	ND	1.0	
03/06/2019	Prothioconazole	ND	1.0		03/07/2019	Pymetrozine	ND	0.50	
03/06/2019	Pyraclostrobin	ND	0.50		03/07/2019	Pyraflufen-ethyl	ND	0.50	
03/06/2019	Pyrethrin	ND	2.5		03/06/2019	Pyridaben	ND	0.50	
03/06/2019	Pyrimethanil	ND	0.50		03/06/2019	Rotenone	ND	0.50	
03/06/2019	Saflufenacil	ND	0.50		03/07/2019	Sethoxydim	ND	1.0	
03/07/2019	Siduron	ND	0.50		03/06/2019	Simazine	ND	0.50	
03/07/2019	Simetryn	ND	0.50		03/06/2019	Spinetoram	ND	0.50	
03/06/2019	Spinosad	ND	0.50		03/06/2019	Spiromesifen	ND	1.0	
03/06/2019	Spirotetramat	ND	0.50		03/07/2019	Spiroxamine	ND	0.50	
03/07/2019	Sulfentrazone	ND	0.50		03/06/2019	Sulfoxaflor	ND	0.50	
03/06/2019	Tebuconazole	ND	0.50		03/06/2019	Tebufenozide	ND	0.50	
03/07/2019	Tebuthiuron	ND	0.50		03/06/2019	Terbacil	ND	0.50	
03/07/2019	Terbuthylazine	ND	0.50		03/07/2019	Terbutryn	ND	0.50	
03/06/2019	Thiabendazole	ND	0.50		03/06/2019	Thiacloprid	ND	0.50	
03/06/2019	Thiamethoxam	ND	0.50		03/07/2019	Thiobencarb	ND	0.50	
03/07/2019	Thiodicarb	ND	0.50		03/06/2019	Thiophanate methyl	ND	0.50	
03/06/2019	Tolfenpyrad	ND	0.50		03/06/2019	Triadimefon	ND	0.50	
03/06/2019	Triadimenol	ND	1.0		03/06/2019	Trifloxystrobin	ND	0.50	
03/06/2019	Triflumizole	ND	0.50						

### Notes and Definitions

Notes	Definition
LOQ	Limit of Quantitation
ND	Not Detected
*	Not included under current scope of accreditation

The results contained in this report relate only to the items tested.  
The results reflect the condition of the samples as received by PAL.  
Samples will be stored for a minimum of 60 days after the final report is issued, as described in our Quality Manual.  
Reports should not be reproduced, except in full, without written approval from PAL.  
PAL is accredited to ISO/IEC 17025:2017 Standard, by PJLA, Accreditation #64422, Testing.