One Stop DIY Shop

PO Box 104
New Germany, MN 55367

Carbonyl Assay

Samples Received 09/09/2014

Analysis Report
(0914-72)

GC/MS Analysis

Pentanedione (aka Acetyl propionyl)
Diacetyl

Enthalpy Analytical, Inc.

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I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized

This analytical report was prepared in Portable Document Format (.PDF) and contains 9 pages.

Emil W. Stewart

QA Review Performed by - Emil W. Stewart

Report Issued: 09/20/2014

Summary of Results

Report for: One Stop DIY Shop
Client Project: na

Project Code: 0914-72
Project Start Date: 09/09/2014
Analysis Method: GC/MS Analysis

		Concentrations, ug/mL	
Enthalpy Code	**Description / Notes**	**Diacetyl**	**2,3-Pentanedione #**
0914-72-01	Old Tyme Rootbeer Flavoring	8.13 J	< 0.853 ND
0914-72-02	Blueberry Flavoring	< 0.827 ND	< 0.853 ND
0914-72-03	Cacti Cooler Flavoring	< 0.827 ND	< 0.853 ND
0914-72-04	Sweet Southern Tea Flavoring	< 0.827 ND	< 0.853 ND
0914-72-05	Chocolate Cream Flavoring	250	< 0.853 ND
0914-72-06	Tennessee Whiskey Flavoring	87.1	< 0.853 ND
0914-72-07	Wild Cherrylicious Flavoring	< 0.827 ND	< 0.853 ND
0914-72-08	Baked Cinnamon Roll Flavoring	131	< 0.853 ND
0914-72-09	Blue Raspberry Slush Flavoring	5.68 J	< 0.853 ND
0914-72-10	Arnold Palmer Flavoring	< 0.827 ND	< 0.853 ND
0914-72-11	Blue Pom Flavoring	< 0.827 ND	< 0.853 ND
0914-72-12	Margarita Flavoring	4.23 J	< 0.853 ND
0914-72-13	Caramel Mocha Flavoring	41.0	3,223
0914-72-14	Strawberry Milk Flavoring	36.2	18.2
0914-72-15	Pink Lemonade Flavoring	< 0.827 ND	< 0.853 ND

Pentanedione is also known as acetyl propionyl.

ND: Non Detect or analytical result below the MDL and is less than (<) the reported value.

J: Result is below the lower curve limit & above the MDL and is considered estimated value.

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	One Stop DIY Shop
Analyst	KEH
Parameters	GC/MS Analysis

Client Proj	na
Job #	0914-72
# Samples	15 eLiquids

Custody	Summer Mims received the samples on 9/9/14 without chain of custody documentation after being relinquished by One Stop DIY Shop. The samples were received at ambient temperature in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.
Analysis	The samples were analyzed for 2,3-pentanedione (aka acetyl propionyl) and diacetyl following the analytical procedures for GC/MS analyses. A measured volume of sample was combined with a measured volume of acetonitrile. A measured amount of internal standard (butanedione-d6) was added and the vial capped and mixed thoroughly to combine. An aliquot was then analyzed quantitatively against a linear calibration curve using a GC/MS. The Agilent Model 6890N Gas Chromatograph "Herman" was equipped with a 5975B Mass Selective Detector and an appropriate column for these analyses.
QC Notes	Diacetyl and 2,3-pentanedione were not detected in the method blank at levels above the minimum detection limit (MDL).
Reporting Notes	Sample and calibration curve chromatograms are available upon request. The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, Inc. data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.
- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.
- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.
- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.
- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.
- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.
- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).
- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.
- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).
- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

General Reporting Notes

(continued)

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection and/or sample transport.
- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits.
- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

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