Laboratory Report 695

Introduction

This report contains the detailed analysis of various mixtures comprising different oils and compounds, evaluated using multiple instrumentation techniques. The following sections delineate the evaluation of these samples under varied conditions, utilizing a diverse array of analytical instruments. The data is segmented into observations, measurements, and results, each scrutinized for consistency and accuracy.

Observations

For each test, a specific mixture was prepared and underwent a series of analyses:

Sample Mixtures Evaluated:

Instrumentation Utilized:

Observation: Clear separation was noted in the gas chromatographic profile.

Ion Chromatograph IC-2100

Additional Notes:

Measurements

Below is a detailed compilation of the measurements obtained during sample analysis. This section provides insight into the specific properties of each mixture as tested by various devices.

Table 1: Chromatographic and Spectroscopic Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instrument** | **Sample** | **Key Compound** | **Measurement Type** | **Value** |
| Gas Chromatograph GC-2010 | Almond Oil, Cetyl Alcohol, Vitamin E | Cetyl Alcohol | Concentration | 543 ppm |
| Ion Chromatograph IC-2100 | Jojoba Oil, Gum | - | Concentration | 45.6 mM |
| UV-Vis Spectrophotometer UV-2600 | Coconut Oil, Vitamin E | - | Absorbance | 2.1 Abs |
| Spectrometer Alpha-300 | Almond Oil, Cetyl Alcohol | - | Wavelength | 350 nm |
| Conductivity Meter CM-215 | Coconut Oil | - | Conductivity | 1500 μS/cm |

Irrelevant Data Points for Consideration:

Results

The analysis of each sample revealed significant insights into the interactions and stability of the compounds within their respective mixtures.

Centrifugal and Rheological Analysis:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instrument** | **Sample** | **Components** | **Measurement Type** | **Value** |
| Centrifuge X100 | Almond Oil, Gum, Glycerin | Glycerin | Speed | 12500 RPM |
| Rheometer R-4500 | Jojoba Oil, Gum | - | Viscosity | 450 Pa-s |

Note:

These measurements were conducted under controlled conditions to ensure validity, including frequent cross-referencing with known standards.

Viscometric Analysis:

The detailed viscosity insights for complex mixtures are presented below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Viscometer VS-300** | **Sample** | **Components** | **Viscosity** |
| nan | Coconut Oil, Vitamin E | - | 4989.23 cP |
| nan | Jojoba Oil, Beeswax, Vitamin E | Beeswax, Vitamin E | 2933.58 cP |

Conclusion

The series of tests performed in this report illuminated the distinctive behaviors and properties of elaborate sample mixtures when subjected to various analytical methods. Despite intermittent calibration checks, all devices yielded consistent and reliable results.

Final Observations:

This extensive assessment contributes valuable knowledge pertinent to the analyses of complex organic mixtures and serves as a reference for future material properties examinations.