Lab Report: Analysis of Various Oil Mixtures

Report ID: 1442

Overview

This report details the analyses performed on different oil mixtures using advanced laboratory instruments. All measurements were recorded and observations noted during repeated testing to ensure accuracy and reliability. Below is a summary of the experimental details, results, and commentary for each mixture tested.

Experimental Setup

Instruments Used:

Table 1: Summary of Test Samples and Instruments

|  |  |  |
| --- | --- | --- |
| **Sample Mix** | **Instruments** | **Observation / Measurement** |
| Jojoba Oil, Gum | LC-400, X100 | Result to be discussed below |
| Almond Oil, Cetyl Alcohol, Vitamin E | FTIR-8400, T-905, TC-5000 | Detailed evaluation follows |
| Coconut Oil, Cetyl Alcohol, Glycerin | FB-1000, PH-700 | Comprehensive details are enumerated later |
| Almond Oil, Gum, Glycerin | Alpha-300, MRX | Analytical findings shall be examined |
| Jojoba Oil, Cetyl Alcohol | VS-300 | Further insights into viscosity parameters |
| Almond Oil, Beeswax, Vitamin E | VS-300 | Additional viscosity analysis provided below |

Detailed Observations and Measurements

Sample: Jojoba Oil, Gum

Using theLiquid Chromatograph LC-400, we identified a high interaction potential of these compounds at a concentration of250 μg/mL. The transparency and fluidity were pivotal at this concentration.

TheCentrifuge X100performed optimally at12,000 RPM, producing a thorough phase separation, indicative of strong centrifugal forces acting on the suspension.

Sample: Almond Oil, Cetyl Alcohol, Vitamin E

FTIR Spectrometer FTIR-8400analysis registered a notable absorption feature at700 1/cm, highlighting the presence of Vitamin E distinctly.

Titration withTitrator T-905revealed an equivalence point at0.005 M, suggesting a prominent reactivity profile.

Temperature was maintained steady at55°Cusing theThermocycler TC-5000, to prevent any thermal degradation during molecular transformation evaluations.

Sample: Coconut Oil, Cetyl Alcohol, Glycerin

The lubricating capabilities were visibly enhanced according to theFour Ball FB-1000apparatus, with a wear scar diameter of0.750 mmindicating a satisfactory boundary lubrication.

pH measurement usingPH-700stabilized at7.5, confirming neutralization behavior, which is crucial for emulsion stability testing.

Sample: Almond Oil, Gum, Glycerin

The spectral analysis captured throughSpectrometer Alpha-300peaked noticeably at450 nm, hinting at complex refractive index phenomena possibly involving Glycerin.

Conversely, OD readings on theMicroplate Reader MRXwere stable at2.5, reflecting on a steady absorbance capacity.

Sample: Jojoba Oil, Cetyl Alcohol

Viscosity tests conducted viaViscometer VS-300showed a value of2750.91 cP. The viscosity levels were satisfactorily within the predicted range, indicating a homogenous mixture.

Sample: Almond Oil, Beeswax, Vitamin E

Another viscosity assessment with theViscometer VS-300revealed a significantly higher viscosity of7226.56 cP, aligning with the anticipated profile due to Beeswax's thickening properties.

Conclusion

The report delineates the intricate testing methodologies and results for each mixture. Realizing the unique properties of each combination offers a foundation for further studies. This examination underscores the potential functional uses of these oil compositions in industrial applications. Detailed depictions of technological utilizations alongside the numerical values demonstrate the distinctiveness of the constituents though little can be considered trivial at the expert level.