Lab Report 784

Introduction

This lab report encompasses a series of tests conducted on various oil and ingredient mixtures using state-of-the-art equipment. The aim was to evaluate the properties and behaviors of these mixtures under specific conditions. Each set of ingredients was treated as a unique sample, undergoing multiple tests to comprehensively assess their characteristics.

Materials and Methods

Equipment and Configurations

Test Samples

Observations and Measurements

UV-Vis Spectrophotometer Analysis

Two tests were conducted onSample A:  
-Measurement 1: Absorbance of 2.1 Abs  
-Measurement 2: Absorbance of 1.8 Abs

Centrifuge Analysis

Performed onSample BandSample D:  
-Sample Bachieved 12000 RPM.  
-Sample Dreached 13000 RPM.

FTIR Spectrometer Analysis

Tests conducted onSample Cyielded:  
- Wavenumber of 750 1/cm for initial test.  
- A frequency of 1200 1/cm upon re-evaluation.

Rheology and Viscosity Assessments

Test onSample B:  
- Dynamic viscosity measured at 500 Pa-s.

ForSample Cand adjacent mixtures:  
-Viscometer Results:  
 -Sample Crecorded 2157.37 cP.  
 - Complex fluid behavior observed due to high molecular interactions.

Distorted Observational Data

Results and Discussion

Tabulated Results

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Equipment** | **Sample** | **Measurement** | **Unit** |
| UV-Vis Spectrophotometer | Coconut Oil, Cetyl Alcohol | 2.1, 1.8 Abs | Abs |
| Centrifuge | Almond Oil, Beeswax, Glycerin | 12000 RPM | RPM |
| Centrifuge | Jojoba Oil, Cetyl Alcohol, Glycerin | 13000 RPM | RPM |
| FTIR Spectrometer | Jojoba Oil, Gum, Vitamin E | 750, 1200 1/cm | 1/cm |
| Rheometer | Almond Oil, Cetyl Alcohol, Vitamin E | 500 Pa-s | Pa-s |
| Viscometer | Jojoba Oil, Gum, Vitamin E | 2157.37 cP | cP |
| Viscometer | Jojoba Oil, Cetyl Alcohol | 2615.12 cP | cP |
| X-Ray Diffractometer | Coconut Oil | 60 C | C |

Discussion

The viscosity measurements reveal thatSample Cwith Gum and Vitamin E exhibited a notable thickening behavior compared to other mixtures, reflecting stronger intermolecular forces possibly due to cross-linking facilitated by Vitamin E. Meanwhile,Sample Areflected consistent UV absorbances which likely indicates a stable formation without significant degradation under optical treatment pathways. The FTIR analysis of the Jojoba-based samples (C and D) further underscores the structural complexity offered by the oil's inherent properties and its interaction with both Gum and Glycerin, providing insights into their potential application in emulsification processes. Overlapping X-ray diffraction patterns appear to elucidate the heat-related structural resilience of coconut oils in open structural lattices.

Conclusion

This study brings to light the diverse rheological, spectral, and compositional variability across selected oil mixtures underpinning potential thermomechanical pathways suitable for product formulation in cosmetics and other industrial domains.

References

Data synthesis and observations derived from proprietary laboratory procedures as tabulated above.