Lab Report 2295

Introduction

The objective of this report is to present the findings of various tests conducted on different mixtures using different laboratory equipment. Each mixture was tested for various physical and chemical properties, resulting in a comprehensive assessment of the material characteristics. Each test involved the application of different measurement techniques to obtain a detailed analysis.

Materials and Methods

A series of tests were performed using the following equipment:

Each piece of equipment was utilized to analyze mixtures containing combinations of Almond Oil, Jojoba Oil, Beeswax, Cetyl Alcohol, Glycerin, and Coconut Oil.

Observations and Results

Table 1: Physical Measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Equipment** | **Mixture** | **Measurement** | **Unit** |
| Four Ball FB-1000 | Almond Oil, Beeswax, Glycerin | 0.5 | mm |
| Rheometer R-4500 | Jojoba Oil, Glycerin | 350.0 | Pa-s |
| Thermocycler TC-5000 | Coconut Oil, Cetyl Alcohol, Glycerin | 72.0 | °C |

Notes on Observations

Table 2: Chemical Measurements

|  |  |  |  |
| --- | --- | --- | --- |
| **Instrument** | **Mixture** | **Concentration** | **Unit** |
| Ion Chromatograph IC-2100 | Jojoba Oil | 0.85 | mM |
| Microplate Reader MRX | Jojoba Oil, Cetyl Alcohol, Glycerin | 2.5 | OD |
| Conductivity Meter CM-215 | Almond Oil | 1500.0 | µS/cm |

Detailed Analysis

Ion Concentration

TheIon Chromatograph IC-2100assessed the Jojoba Oil sample for ion concentration, revealing a value of 0.850 mM. This low concentration suggests minimal ionic contamination.

Absorbance

With theMicroplate Reader MRX, analysis of Jojoba Oil combined with Cetyl Alcohol and Glycerin achieved an optical density (OD) of 2.5. This absorbance level reflects effective mixing and potential for light-sensitive applications.

Conductivity

A conductivity reading of 1500 µS/cm in the Almond Oil sample, as measured by theConductivity Meter CM-215, suggests high ionic or metallic content, which might affect electrical properties.

Extraneous Data

Conclusion

The tests conducted in this study provide insight into the diverse properties of oil-based mixtures regularly used in cosmetic and pharmaceutical formulations. The integration of robust testing methodologies enhances understanding of the materials, which is vital for future applications. Each instrument provided a crucial component of the final analysis, offering both standalone data and integrative insights. These findings can guide further formulation improvements and industrial applications.

Summary of Key Findings

Further investigations can explore long-term stability and interaction effects within these mixtures for comprehensive applicability assessments.