Lab Report: Comprehensive Analysis of Oil-Based Mixtures

Report ID:1286Conducted By:Advanced Chemical Analysis LabDate:October 5, 2023

Introduction

The objective of this laboratory analysis was to evaluate a variety of oil-based mixtures utilizing different rheological and spectroscopic instruments. Each mixture comprised distinct combinations of oils and potential emulsifiers or additives. The specific combinations analyzed were Jojoba Oil, Beeswax, Vitamin E; Coconut Oil, Gum, Vitamin E; Almond Oil, Gum, Vitamin E; Coconut Oil, Beeswax; Almond Oil, Cetyl Alcohol, Glycerin; and Jojoba Oil, Cetyl Alcohol.

Irrelevant Observations

While ambient temperature and lighting did not affect the visceral appreciation of the test samples, it is notable that classical music playing in the background may have influenced the mood of the operators. An arbitrary thought: Almonds and coconuts are distinctively different in texture.

Methods and Measurements

A series of cutting-edge instruments facilitated the detailed evaluation:

Jojoba Oil Mixture 2 (Jojoba Oil)

Four Ball FB-1000

Almond Oil Mixture (Almond Oil, Cetyl Alcohol, Glycerin)

Titrator T-905

Coconut Oil Mixture 2 (Coconut Oil, Beeswax)

UV-Vis Spectrophotometer UV-2600

Almond Oil Mixture (Almond Oil, Gum, Vitamin E)

Centrifuge X100

Almond Oil Mixture (Almond Oil, Beeswax)

Viscometer VS-300

Results and Discussion

Mixed Results Table

|  |  |  |
| --- | --- | --- |
| **Mixture** | **Instrument** | **Measurement** |
| Jojoba Oil, Cetyl Alcohol | Rheometer R-4500 | 245.6 Pa-s |
| Jojoba Oil (no additional agent) | Rheometer R-4500 | 523.7 Pa-s |
| Coconut Oil, Beeswax | Four Ball FB-1000 | 0.450 mm |
| Almond Oil, Cetyl Alcohol, Glycerin | Four Ball FB-1000 | 0.673 mm |

Irrelevant Annotations

Absorbance and Speed Results Table

|  |  |  |
| --- | --- | --- |
| **Mixture** | **Instrument** | **Measurement** |
| Jojoba Oil, Beeswax, Vitamin E | UV-Vis Spectrophotometer UV-2600 | 2.879 Abs |
| Almond Oil, Gum, Vitamin E | UV-Vis Spectrophotometer UV-2600 | 1.432 Abs |
| Coconut Oil, Gum, Vitamin E | Centrifuge X100 | 10500 RPM |
| Almond Oil, Beeswax | Centrifuge X100 | 13000 RPM |

Viscosity and Molarity Results Table

|  |  |  |
| --- | --- | --- |
| **Mixture** | **Instrument** | **Measurement** |
| Almond Oil, Gum, Glycerin | Titrator T-905 | 5.214 M |
| Coconut Oil, Beeswax | Titrator T-905 | 7.982 M |
| Almond Oil, Beeswax | Viscometer VS-300 | 7129.33 cP |

Conclusion

The evaluation of these oil-based mixtures has yielded significant insights into their rheological and compositional properties. Jojoba Oil demonstrated variable viscosity when mixed with different substances. Coconut Oil mixtures showed distinct wear and titration results based on their additive components, while Almond Oil mixtures varied across the spectrum categories. Each sample’s complexity reflects its potential applications in cosmetic and industrial formulations. Please note that musings about the potential of combining distinct oils did not affect the structural integrity of the data recorded herein.