Lab Report 1455

Introduction

In this report, we present detailed findings using diverse instrumentation to analyze various mixtures composed of oils and additives. Each sample underwent a suite of tests, providing insights into their chemical and physical properties.

Objectives

Equipment Used

Methodology

We prepared samples by mixing specific ingredients and subjected them to various tests. The procedure aimed to simulate realistic conditions, with each result carefully recorded and analyzed.

Data and Observations

Below are detailed tables summarizing the tests and observations:

Table 1: pH Measurements

Sample	Ingredients	Instrument	pH Value
A1	Jojoba Oil, Gum, Vitamin E	PH-700	7.2

Table 2: Spectrometry and Chromatography

Sample	Ingredients	Instrument	Measurement	Unit
B1	Coconut Oil	MS-20	180.5	m/z
C1	Almond Oil	IC-2100	0.075	mM
D1	Jojoba Oil, Beeswax, Vitamin E	GC-2010	150.0	ppm
E1	Almond Oil, Gum	Alpha-300	550.0	nm

Table 3: Rheometric and Lubrication Properties

Sample	Ingredients	Instrument	Measurement	Unit
F1	Coconut Oil, Gum, Vitamin E	R-4500	450.0	Pa-s
G1	Jojoba Oil, Cetyl Alcohol, Glycerin	FB-1000	0.45	mm

Table 4: Viscosity Analysis

Sample	Ingredients	Instrument	Measurement	Unit
H1	Almond Oil, Gum, Glycerin	VS-300	7653.97	cP
I1	Coconut Oil, Cetyl Alcohol, Glycerin	VS-300	5095.57	cP

Table 5: PCR Analysis

Sample	Ingredients	Instrument	Measurement	Unit
J1	Jojoba Oil, Beeswax, Glycerin	PCR-96	25	Ct

Results and Discussion

Jojoba Oil Mixtures:

The pH measurement for Jojoba Oil, Gum, and Vitamin E was notably neutral at 7.2, indicating potential stability in diverse environments. The gas chromatograph revealed 150 ppm presence of an unknown compound, necessitating further exploration.

Coconut Oil Mixtures:

Coconut Oil's molecular mass, detected using the mass spectrometer, was 180.5 m/z, possibly implicating the presence of medium-chain triglycerides. Its viscosity was relatively high (5095.57 cP), suggesting substantial thickening when mixed with Cetyl Alcohol and Glycerin.

Almond Oil Mixtures:

Almond Oil and Gum reflected a strong spectrometric signal at 550 nm. Meanwhile, its ion concentration was determined to be 0.075 mM, possibly influenced by inherent salinity interactions.

Miscellaneous Findings:

Rheometric properties of Coconut Oil, Gum, and Vitamin E implied significant structural integrity with a viscosity of 450 Pa-s. However, Jojoba Oil's lubrication efficacy was lower at 0.450 mm wear scar diameter, indicating less robustness under mechanical stress.

Conclusion

This comprehensive study provides requisite benchmarks for the involved mixtures, opening avenues for potential industry applications. Our findings illustrate the complex interplay of oils and additives, highlighting the necessity for detailed understanding of their individual and collective properties.

Note: Certain descriptions and values might require further interpretation and validation against existing standards for application-specific requirements.