Laboratory Analysis Report

Report 787: Analysis of Various Oil-Based Mixtures

This report provides comprehensive data from a series of experiments conducted on mixtures of different oils and compounds using multiple instruments. The study aimed to understand the physical and chemical properties of these mixtures in various conditions.

Experimental Details

Equipment and Measurements

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| **Equipment** | **Mixture Components** | **Third Component** | **Measurement Result** | **Unit** |
| X-Ray Diffractometer XRD-6000 | Jojoba Oil, Beeswax | nan | 157.0 | Celsius |
| Ion Chromatograph IC-2100 | Almond Oil, Cetyl Alcohol | nan | 12.5 | mM |
| Titrator T-905 | Coconut Oil, Glycerin | nan | 5.8 | M |
| Four Ball FB-1000 | Almond Oil, Gum | Vitamin E | 0.75 | mm |
| Conductivity Meter CM-215 | Coconut Oil, Beeswax | Vitamin E | 1475.0 | uS/cm |
| UV-Vis Spectrophotometer UV-2600 | Jojoba Oil, Beeswax | Glycerin | 2.3 | Abs |
| HPLC System HPLC-9000 | Jojoba Oil, Beeswax | nan | 100.0 | mg/L |
| Centrifuge X100 | Almond Oil, Gum | Vitamin E | 8500.0 | RPM |
| PCR Machine PCR-96 | Coconut Oil, Beeswax | Vitamin E | 28.4 | Ct |
| Viscometer VS-300 | Coconut Oil, Gum | nan | 5215.69 | cP |
| Viscometer VS-300 | Coconut Oil, Cetyl Alcohol | Glycerin | 5008.68 | cP |

Observations and Results

The thermal stability measured using the X-Ray Diffractometer XRD-6000 indicated a high temperature tolerance reaching 157°C. This suggests robust applications in temperature-variable environments. Additionally, when examined with the UV-Vis Spectrophotometer UV-2600, the absorbance value of 2.3 Abs was recorded, indicative of potential light absorption properties.

Almond Oil and Cetyl Alcohol Mixture:

Ion Chromatograph IC-2100 results returned a concentration of 12.5 mM, highlighting its ionic potential in various applications. The minimal chemical interference provides a basis for its use in formulation studies.

Coconut Oil and Glycerin Mixture:

The mixture, analyzed with Titrator T-905, revealed a molarity of 5.8 M, suggesting high reactivity. This high concentration is useful for applications requiring rapid chemical transformations.

Four Ball Wear Test on Almond Oil and Gum with Vitamin E:

A wear scar diameter of 0.750 mm was reported, indicating moderate lubricating properties. These findings are critical in applications seeking balanced wear and tear resistance.

Coconut Oil and Beeswax with Vitamin E:

Conductivity Meter CM-215 measured a conductivity of 1475 uS/cm, denoting decent ionic activity within the mixture. The PCR amplification cycle threshold (Ct) was found to be 28.4, useful for biotechnological applications.

Viscometric Analysis of Coconut Oil Blends:

Coconut Oil with Gum demonstrated higher viscosity (5215.69 cP) compared to the Coconut Oil, Cetyl Alcohol, and Glycerin mixture (5008.68 cP), indicating a thicker consistency, beneficial in emulsifying agents.

Centrifugation of Almond Oil, Gum, and Vitamin E:

Unrelated Notes

Interestingly, a local folklore states that applying mixtures with these oils may strengthen hair fibers, though no scientific evidence supports this claim. Additionally, a sudden fall in ambient temperature in the lab caused a brief halt in operations.

Complex Chemical Interactions

During analysis, intricate intermolecular forces were observed, notably in the Jojoba and Beeswax interaction study utilizing HPLC System HPLC-9000. The concentration of 100.0 mg/L reported suggests substantial potential for pharmaceutical uses.

Conclusions

The varied analysis techniques and mixed data types within these assessments help to characterize the material properties essential to industrial and biotechnological fields. Each combination of oil and compounds demonstrated unique traits, encouraging further investigation into specific application thresholds and benefits.

For further inquiries or data extraction guidance, please refer to the enclosed contact directory.