

All data taken at Pacific Northwest National Laboratory (PNNL)

Operators: Jerome C. Birnbaum, Timothy J. Johnson, Rodica Lindenmaier, Tanya L. Myers

SAMPLE CONDITIONS & PHYSICAL PROPERTIES

Chemical name	Petroleum Jelly
Chemical formula	Mixture of saturated hydrocarbons
Synonyms	Vaseline
CAS number	8009-03-8
Location of field sample	n/a
History of sample	n/a
Molecular Weight	Typical ranges 352-450 g/mole
Melting Point	36-60 °C
Boiling Point	302 °C
Density (25° C)	0.9 g/cm ³
Hardness, Mohs scale	n/a
Crystallography:	
Cell dimension	a = Å b = Å c = Å
Crystal system	
H-M symbol (point gr)	
Space group	
H-M symbol (space gr)	
Crystal habit	
Color	Colorless/pale yellow
Diaphaneity	Translucent
Particle size	n/a
Particle size assessment	n/a
Supplier	Safeway
Stated purity	100% pure white petroleum jelly
Date packed	28 October 2015 Weight: 2.052 grams
Synthesis method	n/a
Synthesis reference	n/a
Texture	Oily gelatinous substance
Physical state	Solid/gel
Surface roughness	n/a
Elemental composition	n/a
Isotopic composition	n/a
Moisture content	n/a
Temperature of sample	25 ± 2 °C
Substrate	n/a

INSTRUMENT PARAMETERS

Tensor 37 FT-IR manufactured by Bruker Optics

External diffuse reflectance accessory	A 562-G integrating sphere
Sphere diameter	75 mm
Angle to normal incidence	14.8°
Sphere opening diameter	19 mm (entrance port)
Spectral range	7,500 to 600 cm^{-1} saved; 7500 to 600 cm^{-1} reported
Beamsplitter	Ge on KBr
Detector (dia. Det. Port in sphere)	2×2 mm, 60° field of view MCT (550; 0.9); 1 cm
Apodization function	Blackman-Harris 3-term
Aperture	6 mm
Coadded scans	2048
Scanner speed	40 kHz
Switch gain on	512 points
Low pass filter	Open
Scan technique	double-sided, forward-backward
Non-linear correction	On
High and low folding limit	15800.54-0.00 cm^{-1}
Phase resolution	32.00
Phase correction mode	Mertz
Zerofilling	4×
Wavenumber accuracy	$\pm 0.4 \text{ cm}^{-1}$
Spectral resolution	4 cm^{-1}
Accuracy verification	10/28/2015
Wavelength vetted on:	ICL polystyrene standard #0009-7394-0025A, thin film
Reflectance:	$\pm 2\%$ using SRS reflectance standards 50-010-DH27B-4878

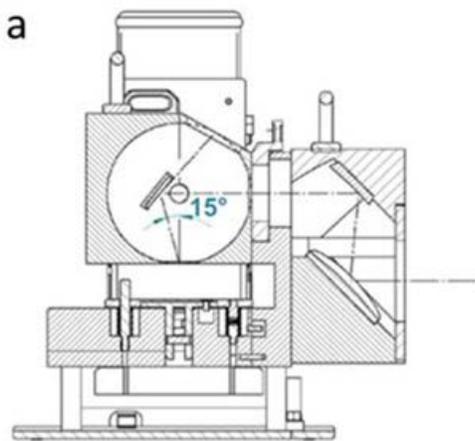


Figure 1: The Bruker 562-G integrating sphere (a) and Tensor 37 (b)

Photographs of sample Petroleum Jelly



Figure 2: Petroleum Jelly in store container, front label.

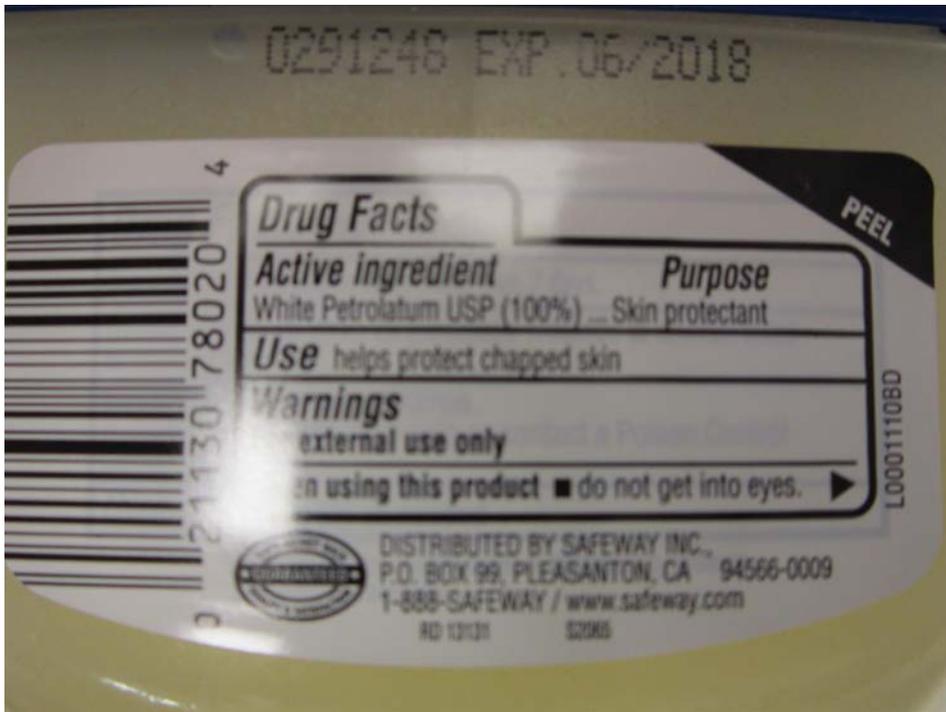


Figure 3: Petroleum Jelly in store container, back label.



Figure 4: Petroleum Jelly loaded in IR sample cup.