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## Analysis of Expansion Joint for the Presence of Wax

A Report to: Emseal, LLC  
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Report No.: 10-05-2662-1-4  
3 Pages, 2 Appendices

Date: February 16, 2010

## 1.0 INTRODUCTION

An expansion joint, identified as Backerseal (BKS), was submitted for characterization using Fourier transform infrared (FTIR) spectroscopy and differential scanning calorimetry (DSC) in an attempt to determine the presence of wax.

The sample was received, logged in and assigned sample number 10-05-A0045.

## 2.0 EXPERIMENTAL AND RESULTS

All raw data are referenced in Lab Book No. 12263.

### 2.1 FTIR

The analysis was carried out using a Nicolet 6700 Fourier transform infrared (FTIR) spectrometer (MII #A16201, calibration valid until 2010-03-30) and a Smart Orbit single reflection horizontal (HATR) accessory (Asset #16211), equipped with a diamond internal reflectance element. A computer-aided search was carried out on the generated spectrum.

Copies of the infrared spectrum and computer-aided search are shown in Appendix A. The infrared spectrum is shown in the full wavelength range of  $4000\text{ cm}^{-1}$  to  $500\text{ cm}^{-1}$ .

Spectrum #1 represents the sample and is generically identified (Search #1) as an acrylic based composition. The spectrum does not show any evidence of additional absorbance bands at  $2915\text{ cm}^{-1}$ ,  $2848\text{ cm}^{-1}$ ,  $1463\text{ cm}^{-1}$ ,  $729\text{ cm}^{-1}$  and  $719\text{ cm}^{-1}$  that could possibly be associated with the presence of wax.

### 2.2 DSC

Differential scanning calorimetry was carried out using a TA Instruments DSC Q1000 Differential Scanning Calorimeter (MII #A15228, calibration valid until 2010-02-07).

A portion of the sample was cut, accurately weighed and crimped into an aluminum pan for analysis. The sample was heated from ambient to 300°F at 18°F/min in a nitrogen atmosphere flowing at 50cc/min.


A copy of the DSC scan is attached in Appendix B.

Scan #1 represents the Backerseal (BKS) sample. The DSC scan does not show any indication of low temperature melting endotherms that could possibly indicate the presence of wax.


### 3.0 CONCLUSIONS

Using both FTIR and DSC analyses wax was not detected in the submitted sample Backerseal (BKS).

Reported by:

  
\_\_\_\_\_  
Susan Hannah  
Technologist  
Polymer Characterization

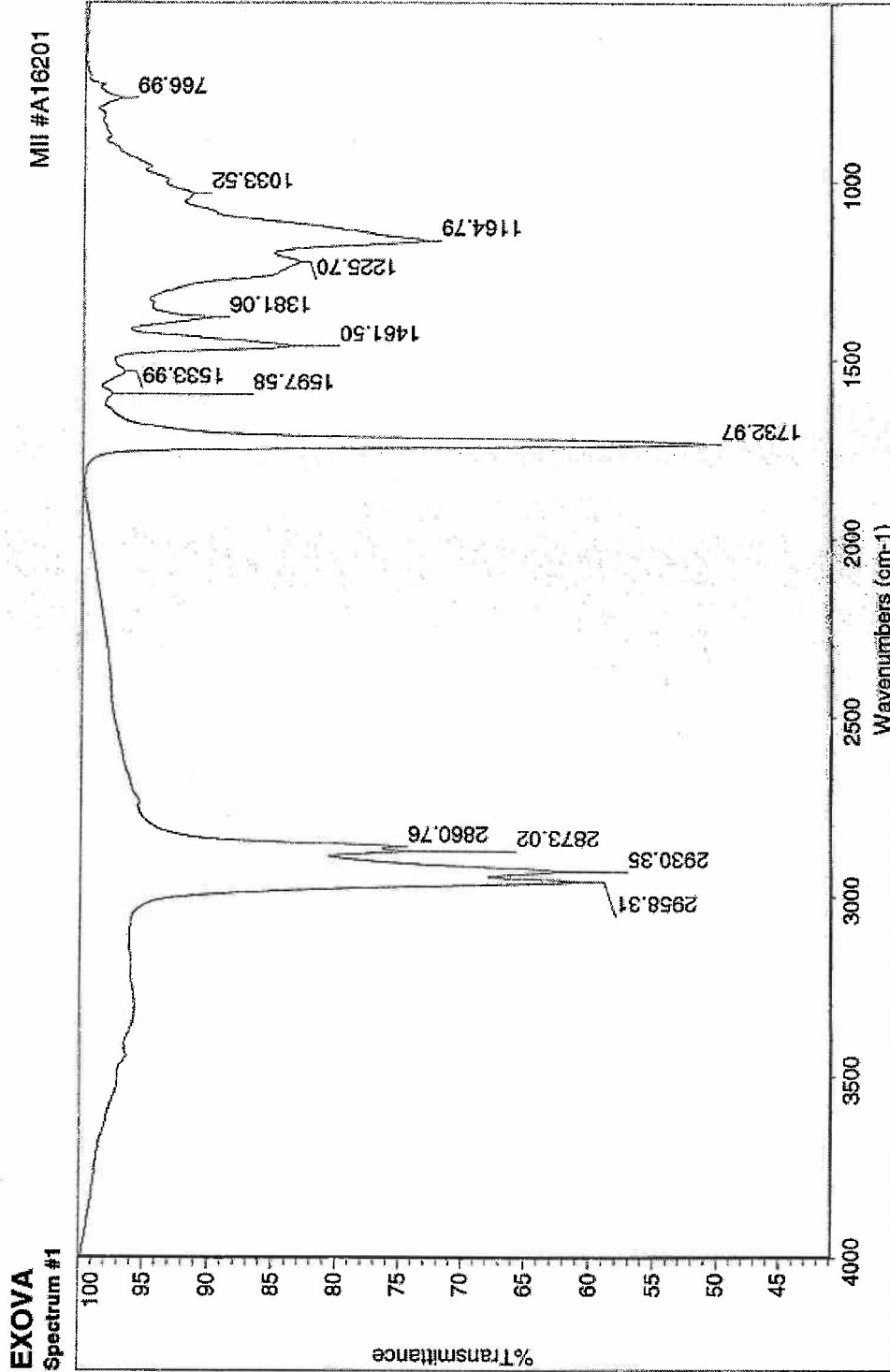
Reviewed and Authorized by:

  
\_\_\_\_\_  
Bryan Wickson, B.Sc. Eng.  
Manager  
Polymer Characterization

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**Appendix A**

FTIR Spectrum and Computer-Aided Search  
(2 pages)

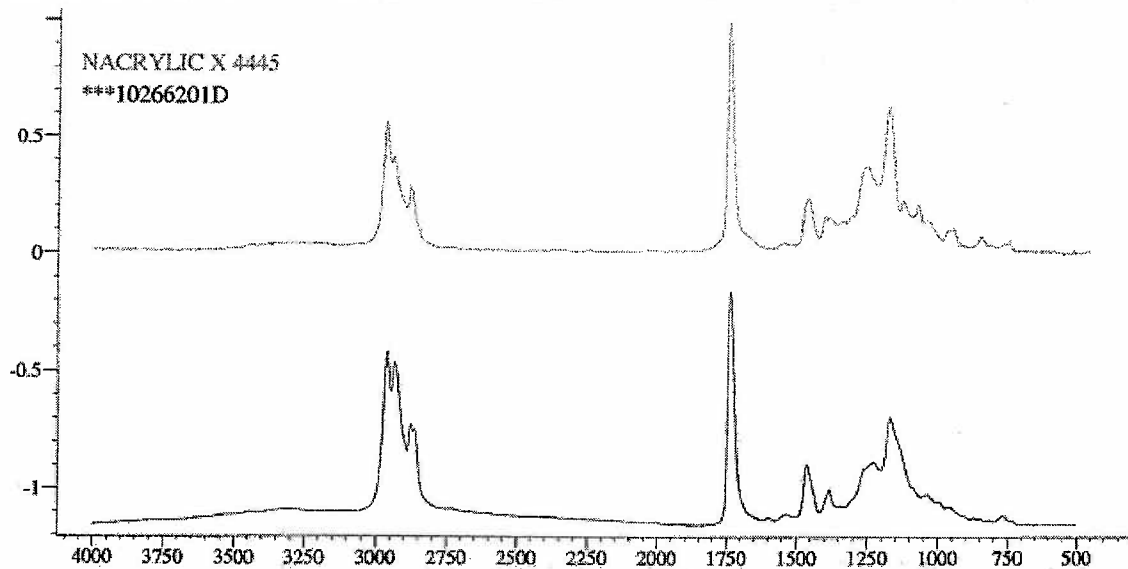


Filename: \*\*\*10266201D  
Collection time: Tue Jan 19 10:39:00 2010 (GMT-05:00)  
Operator: schubert  
Date: 2010-01-19

Comments: 10-05-A0045 BACKERSEAL (BKS)

Search #1

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|                   |   |
|-------------------|---|
| Name(s):          | NACRYLIC X 4445                                       |
| Technique:        | FILM  |
| Comments:         | Chemical Description= SELF REACTIVE ACRYLIC COPOLYMER |
| Content:          | Solids Content= 45%                                   |
| Solution Data:    | pH= 3.0   |
| Source Of Sample: | NATIONAL STARCH AND CHEMICAL CORPORATION              |
| Viscosity Data:   | (Brookfield)= 100 CPS                                 |
| Weight:           | 8.5 LBS   |

**Appendix B**

DSC Scan  
(1 page)

File: C:\TA\Data\2010\DSC\WF10266201D.001  
Operator: S.V.HANNAH-~~Adonah~~  
Run Date: 19-Jan-2010 14:53 2010-02-11  
Instrument: DSC Q1000 V9.8 Build 296

Sample: BACKERSEAL (BKS)  
Size: 4.4690 mg  
Method: HEATING 10°C/MIN  
Comment: 10-05-A0045, HEATING 10°C/MIN, N2 @ 50CC/MIN

DSC

