Exova
2395 Speakman Dr.
Mississauga
Ontario
Canada
L5K 1B3

T: +1 (905) 822-4111
F: +1 (905) 823-1446
E: sales@exova.com
W: www.exova.com

Testing. Advising. Assuring.

Analysis of Expansion Joint for the Presence of Wax

A Report to:	Emseal, LLC 120 Carrier Drive Toronto, Ontario M9W 5R1
Attention:	Bill Witherspoon
Telephone: Email:	(416) 740-2090 Ext.220 bwitherspoon@emseal.com
Report No.:	10-05-2662-1-5 3 Pages, 2 Appendices
Date:	February 16, 2010

1.0 INTRODUCTION

An expansion joint, identified as WFR2, 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-A0046.

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 cm^{-1} to 500 cm^{-1}.

Spectrum #1 represents the sample and is generically identified (Search #1A) as an acrylic based composition. The spectrum does not show any evidence of additional absorbance bands at 2915 cm^{-1}, 2848 cm^{-1}, 1463 cm^{-1}, 729 cm^{-1} and 719 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 WFR2 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 WFR2.

Reported by:

S. D. Hannah

Susan Hannah
Technologist
Polymer Characterization

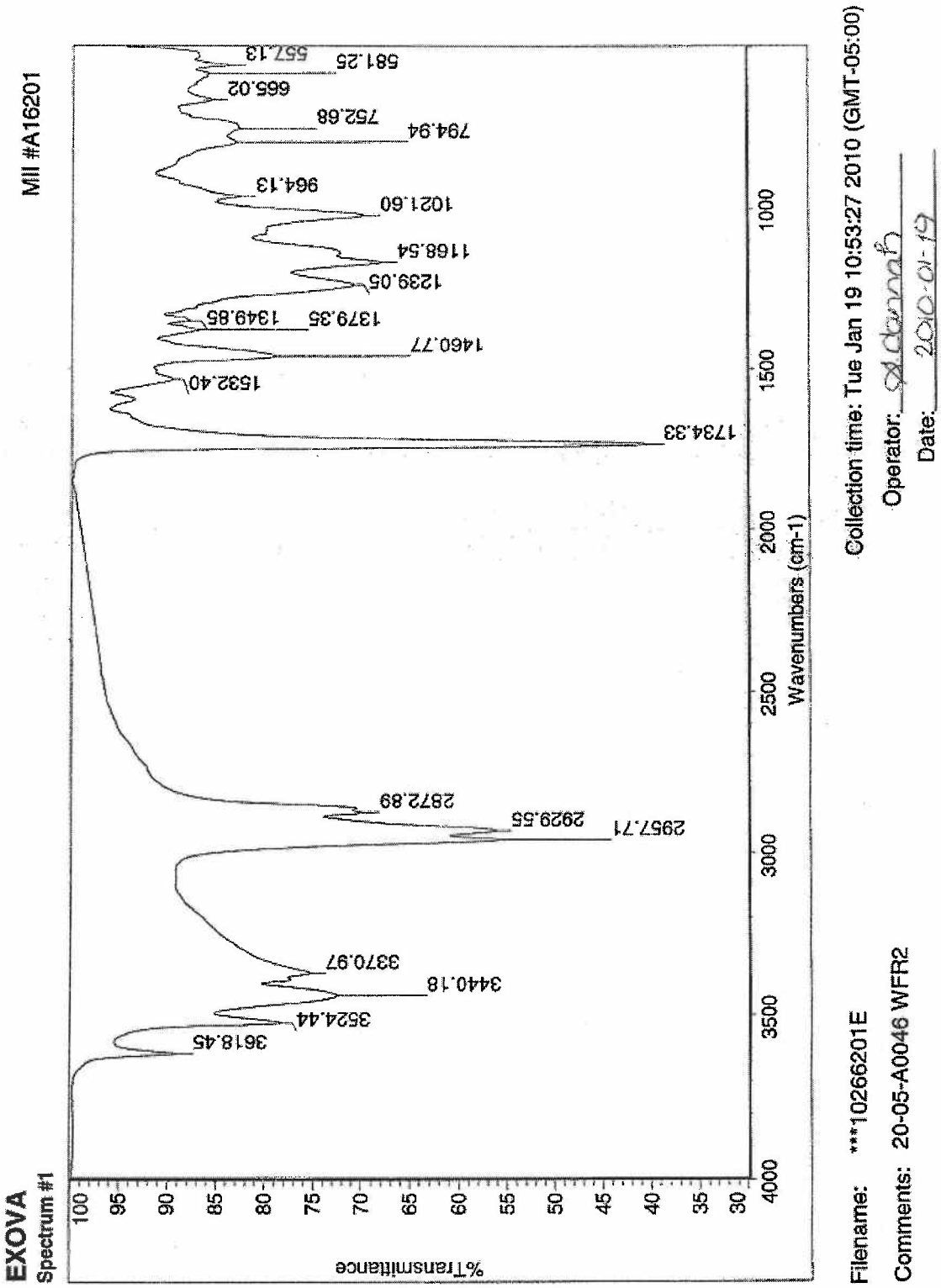
Reviewed and Authorized by:

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

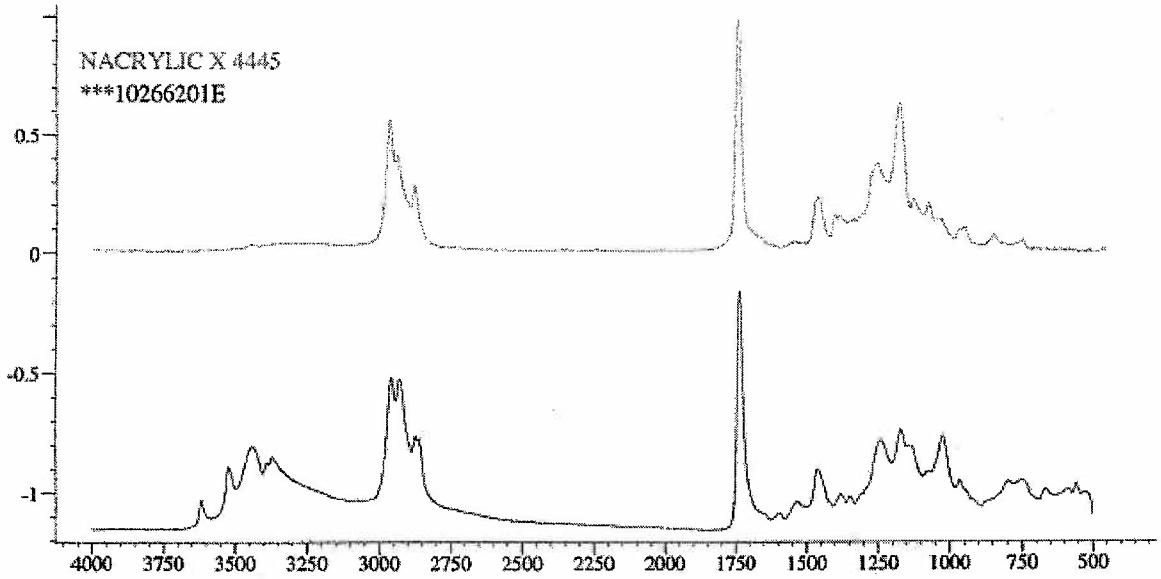
Appendix A

FTIR Spectrum and Computer-Aided Search

(2 pages)


EXOVA
Spectrum #1
Mill #A16201
%Transmittance
Wavenumbers (cm-1)
4000
3500
3000
2500
2000
1500
1000
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
3618.45
3524.44
3440.18
3370.97
2957.71
2929.55
2872.89
1734.33
1532.40
1460.77
1379.35
1349.85
1239.05
1168.54
1021.60
964.13
794.94
752.68
665.02
581.25
557.13
Collection time: Tue Jan 19 10:53:27 2010 (GMT-05:00)
Operator:
Date: 2010-01-19
Filename: ***10266201E
Comments: 20-05-A0046 WFR2

Search #1A

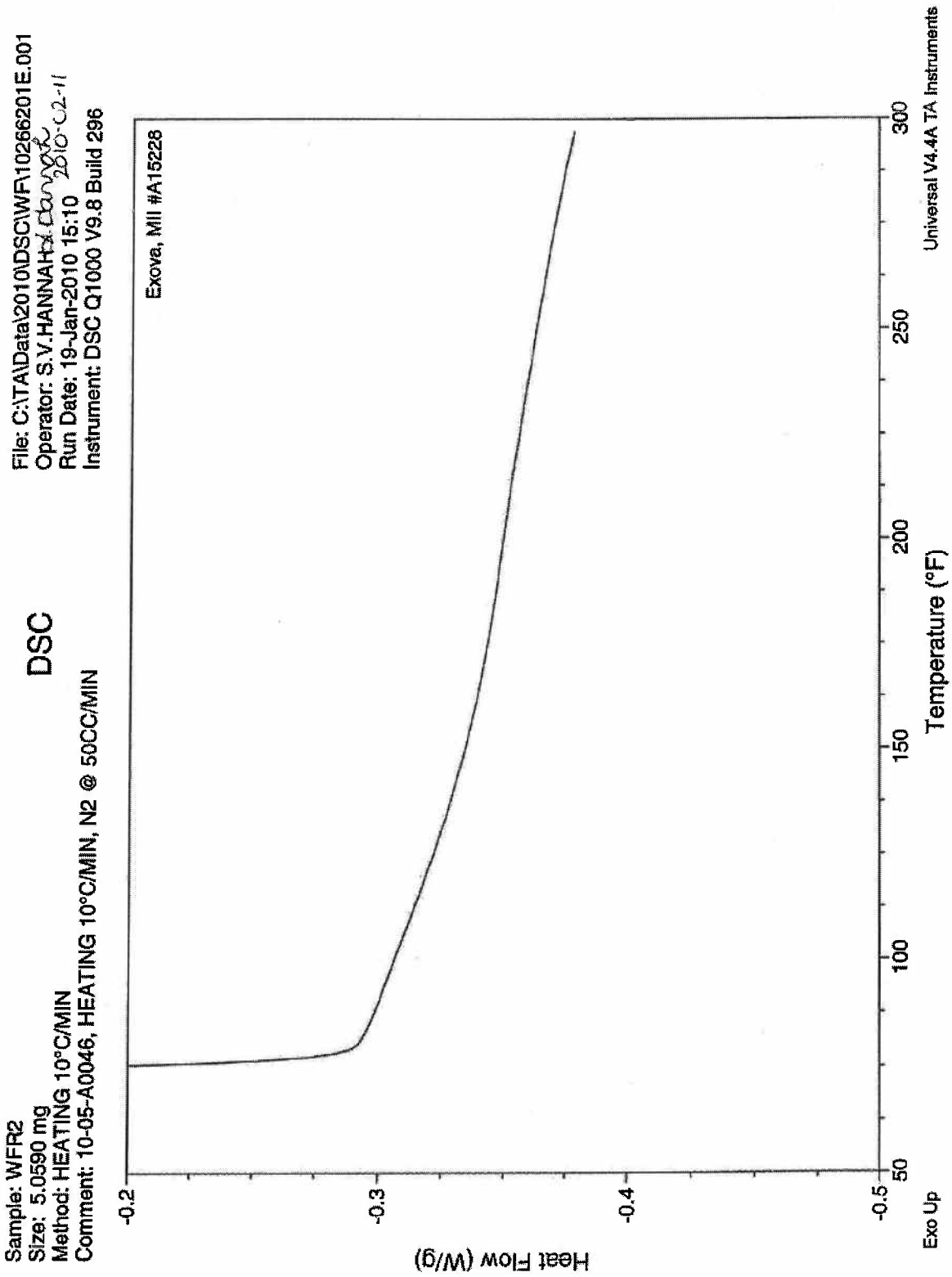


Name(s):	NACRYLIC X 4445
Technique:	FILM
Comments:	Chemical Description= SELF REACTIVE ACRYLIC COPOLYMER
Content:	Solids Content= 45%
Solution Data:	pH= 3.0
Source Of Sample:	NATIONAL STARCH AND CHEMICAL CORPORATION
Viscosity Data:	(Brookfield)= 100 CPS
Weight:	8.5 LBS

Appendix B

DSC Scan

(1 page)


DSC
File: C:\TA\Data\2010\DSC\WFR10266201E.001
Operator: S.V.HANNAH
Run Date: 19-Jan-2010 15:10
Instrument: DSC Q1000 V9.8 Build 296
Sample: WFR2
Size: 5.0590 mg
Method: HEATING 10°C/MIN
Comment: 10-05-A0046, HEATING 10°C/MIN, N2 @ 50CC/MIN
Exova, Mll #A15228
Universal V4.4A TA Instruments
Heat Flow (W/g)
Temperature (°F)
Exo Up
-0.2
-0.3
-0.4
-0.5
50
100
150
200
250
300