

# Supplemental information for

## Degradation of Bioderived Polyurethane Polyester Composites by Spectroscopy in ISO20200 Composting Conditions.

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**Figure S1** – Tabulated degradation data for ISO 20200 degradation trial.

#	Compost period	Initial Mass (g)	Final Mass (g)	Mass Loss (g)	Mass Loss (%)
<b>1</b>	45 days	10.591	10.346	0.245	2.3
<b>2</b>	45 days	10.129	8.122	2.007	19.8
<b>3</b>	45 days	10.237	7.591	2.646	25.8
<b>4</b>	45 days	10.037	6.939	3.098	30.9
<b>5</b>	45 days	10.232	7.477	2.755	26.9
<b>6</b>	45 days	10.270	7.745	2.525	24.6
<b>7</b>	45 days	10.341	7.831	2.510	24.3
<b>8</b>	45 days	10.135	9.932	0.203	2.0

**Figure S2** – List of extended ISO 20200 degradation trial samples (EX). Note that each set of samples were kept in the same composting reactor. Data for 90 day degradation is considered to be inaccurate due to mold growth on samples leading to artificial mass gain.

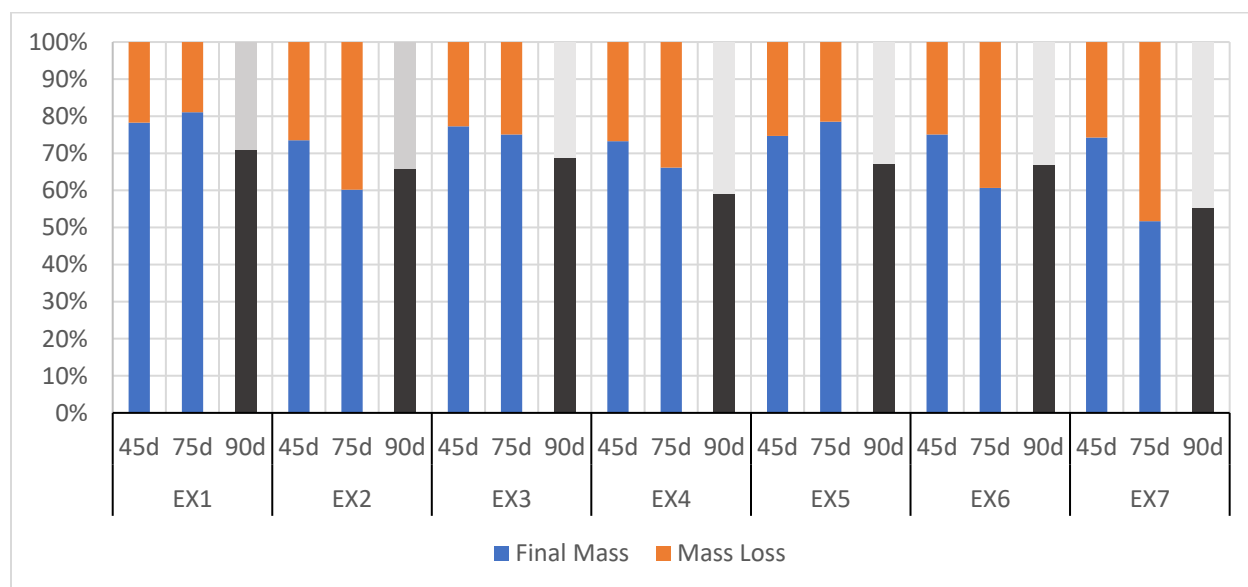
#	Polyol	Surfactant	Lignin adduct	Charcoal adduct	Bio-based isocyanate	Glycerol Crosslinker	Evoco Probiotics
<b>EX1</b>	Polyester	Tributyl citrate	No	No	No	Normal	No
<b>EX2</b>	Polyester (GMR-38 polyol)	Tributyl citrate	No	No	No	Normal	No
<b>EX3</b>	Polyester (GMR-45 polyol)	Tributyl citrate	No	No	No	Normal	No
<b>EX4</b>	Polyester	Tributyl citrate	No	No	No	Normal	<b>0.5%</b>
<b>EX5</b>	Polyester	Tributyl citrate	No	No	No	Normal	<b>1%</b>
<b>EX6</b>	Polyester	<b>Tween</b>	No	No	No	Normal	No
<b>EX7</b>	Polyester	Tributyl citrate	No	No	No	Normal	<b>5% (carrier only)</b>

**Figure S3** – Tabulated degradation data for extended ISO 20200 degradation trial samples (EX). Note that each set of samples were kept in the same composting reactor. Data for 90 day degradation is considered to be inaccurate due to mold growth on samples leading to artificial mass gain.

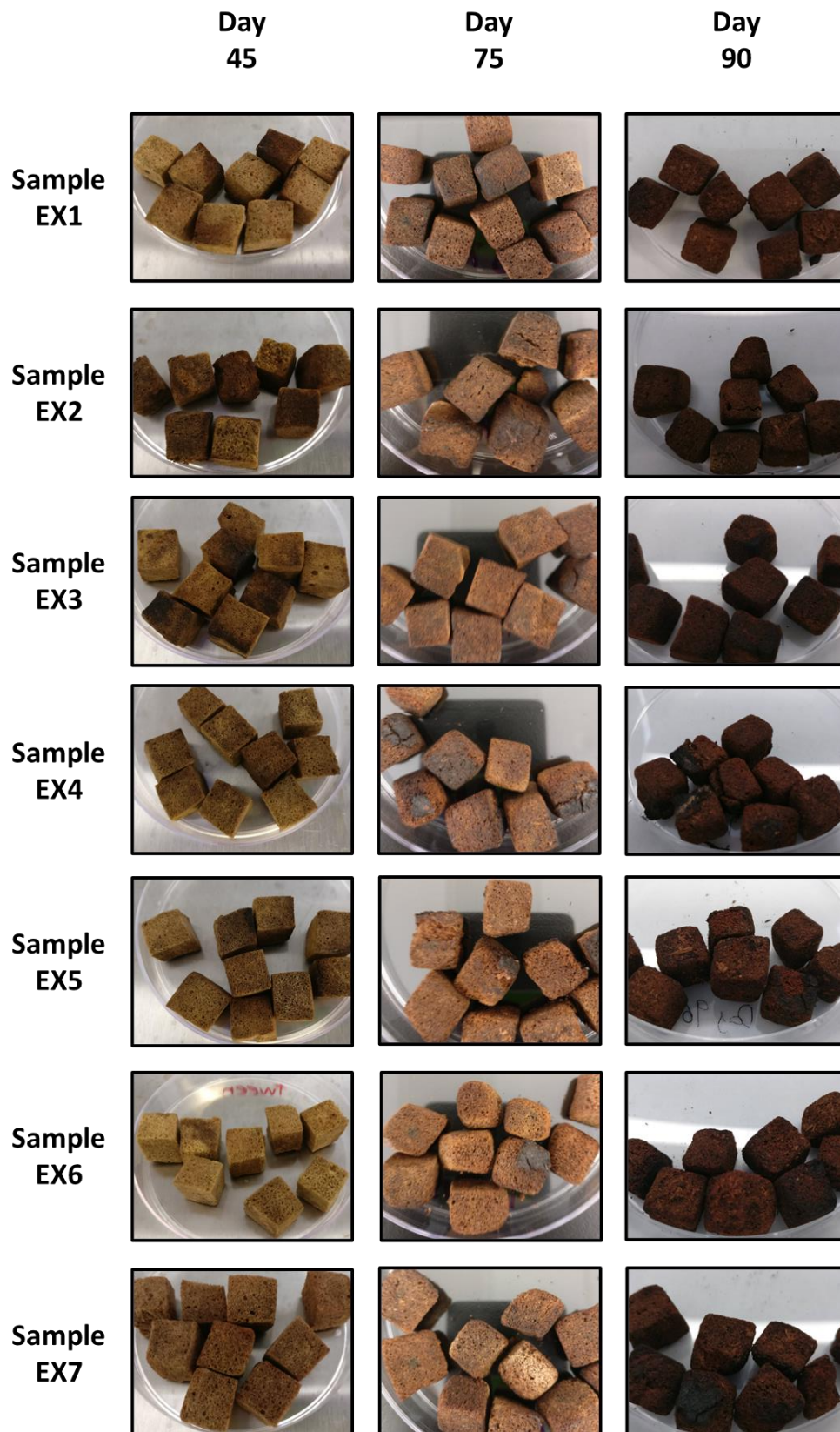
#	Compost period	Initial Mass (g)	Final Mass (g)	Mass Loss (g)	Mass Loss (%)
<b>EX1</b>	45 days	5.11	4.00	1.11	21.7
	75 days	5.34	4.33	1.01	18.9
	90 days	5.40	3.84	1.56	28.9
<b>EX2</b>	45 days	5.44	4.00	1.44	26.5

	75 days	5.25	3.16	2.09	39.8
	90 days	5.34	3.52	1.82	34.1
<b>EX3</b>	45 days	5.32	4.11	1.21	22.7
	75 days	5.34	4.01	1.33	24.9
	90 days	5.28	3.64	1.64	31.1
<b>EX4</b>	45 days	5.31	3.89	1.42	26.7
	75 days	5.20	3.44	1.76	33.8
	90 days	5.28	3.12	2.16	40.9
<b>EX5</b>	45 days	5.14	3.84	1.30	25.3
	75 days	5.26	4.13	1.13	21.5
	90 days	5.27	3.54	1.73	32.8
<b>EX6</b>	45 days	5.30	3.98	1.32	24.9
	75 days	5.44	3.30	2.14	39.3
	90 days	5.31	3.55	1.76	33.1
<b>EX7</b>	45 days	5.24	3.89	1.35	25.8
	75 days	5.28	2.73	2.55	48.3
	90 days	5.37	2.98	2.39	44.5

**Figure S4** – Graph representing data from Figure S3.

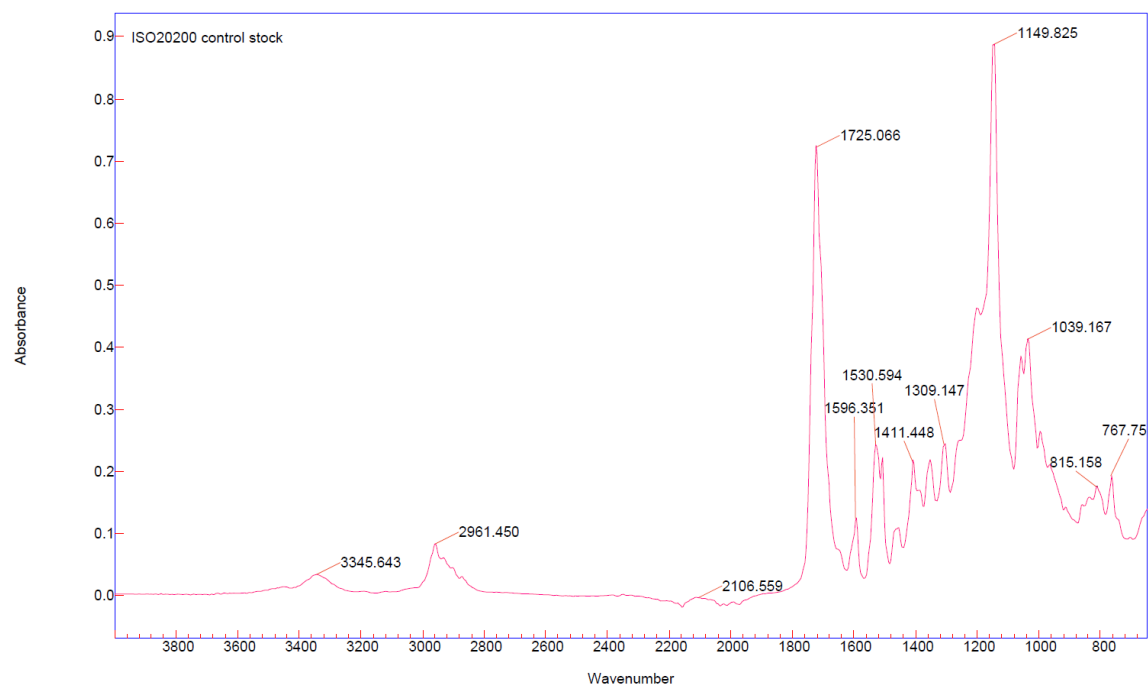


**Figure S5** – Composite image of extended ISO 20200 degradation trial samples (EX).



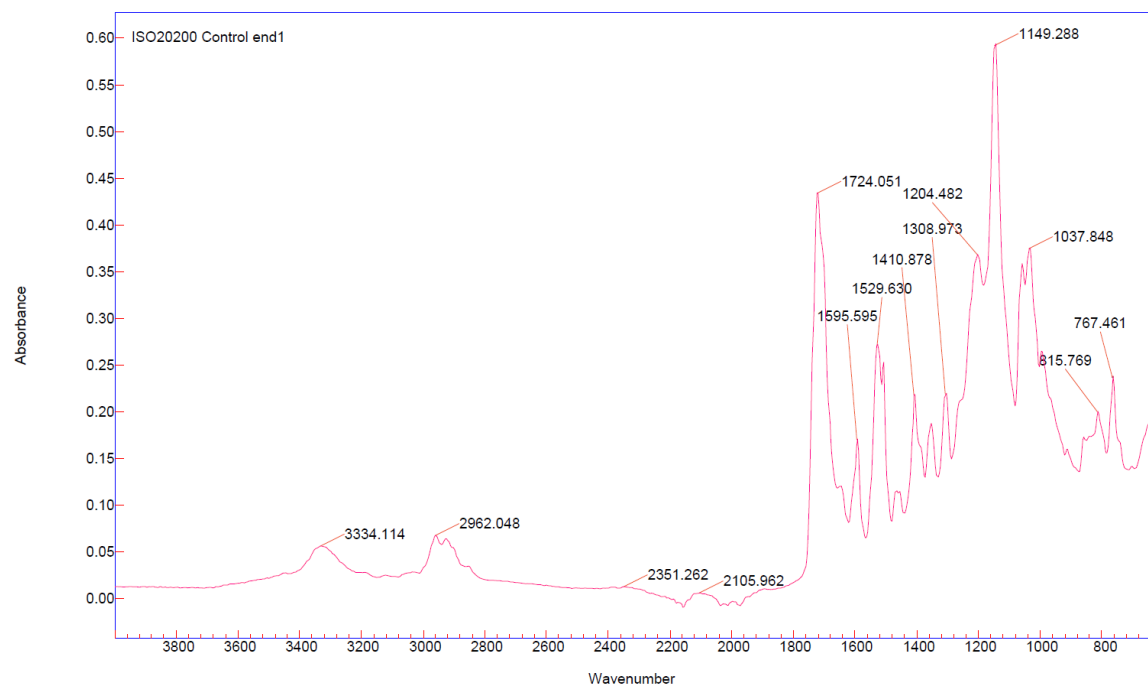
**Figure S6** – Raw FTIR data for EX1 at 0 days (top) and 45 days (bottom)

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Name
ISO20200 control stock

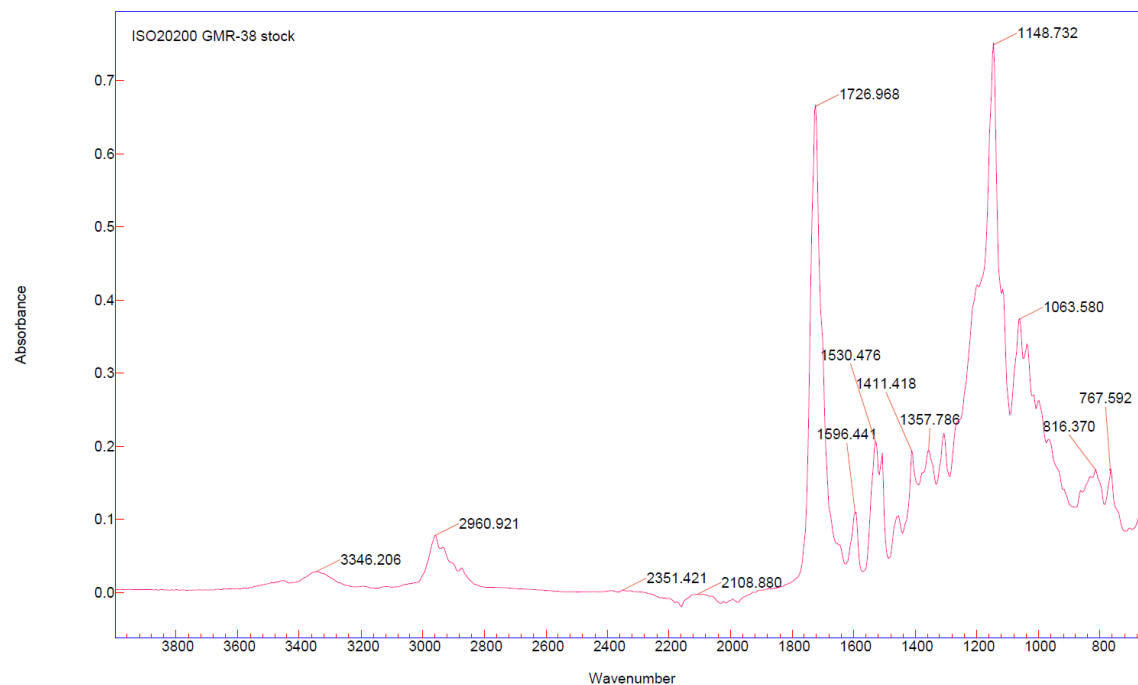
**Agilent Resolutions Pro**



Name
ISO20200 Control end1

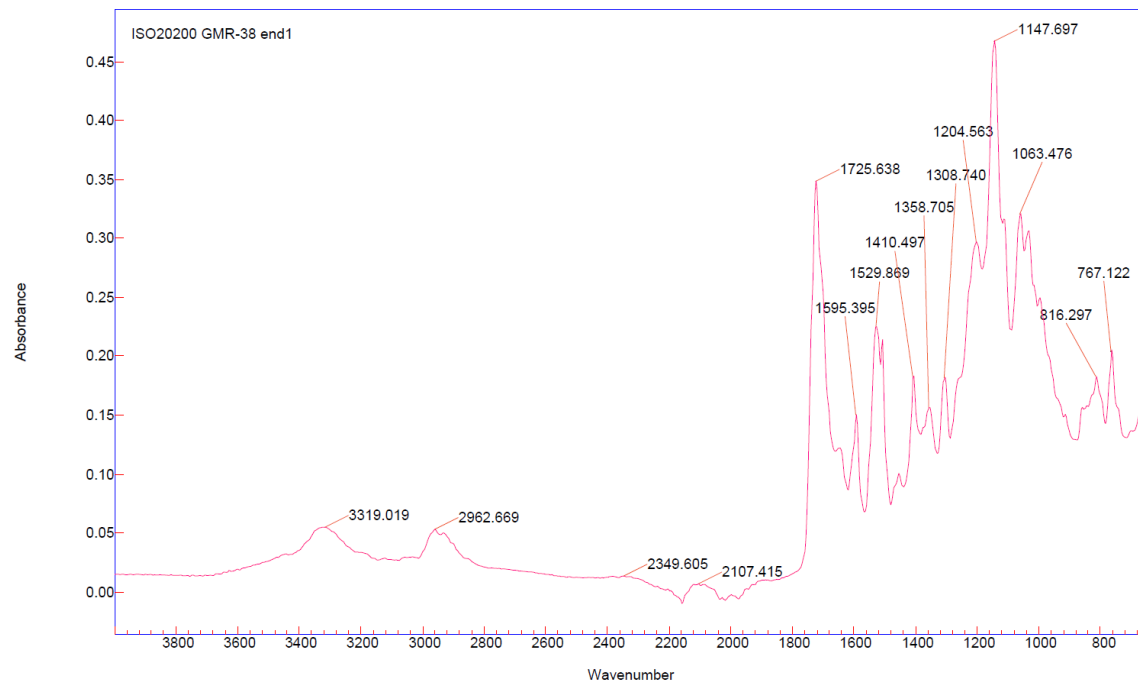
**Figure S7 – Raw FTIR data for EX2 at 0 days (top) and 45 days (bottom)**

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Name
ISO20200 GMR-38 stock

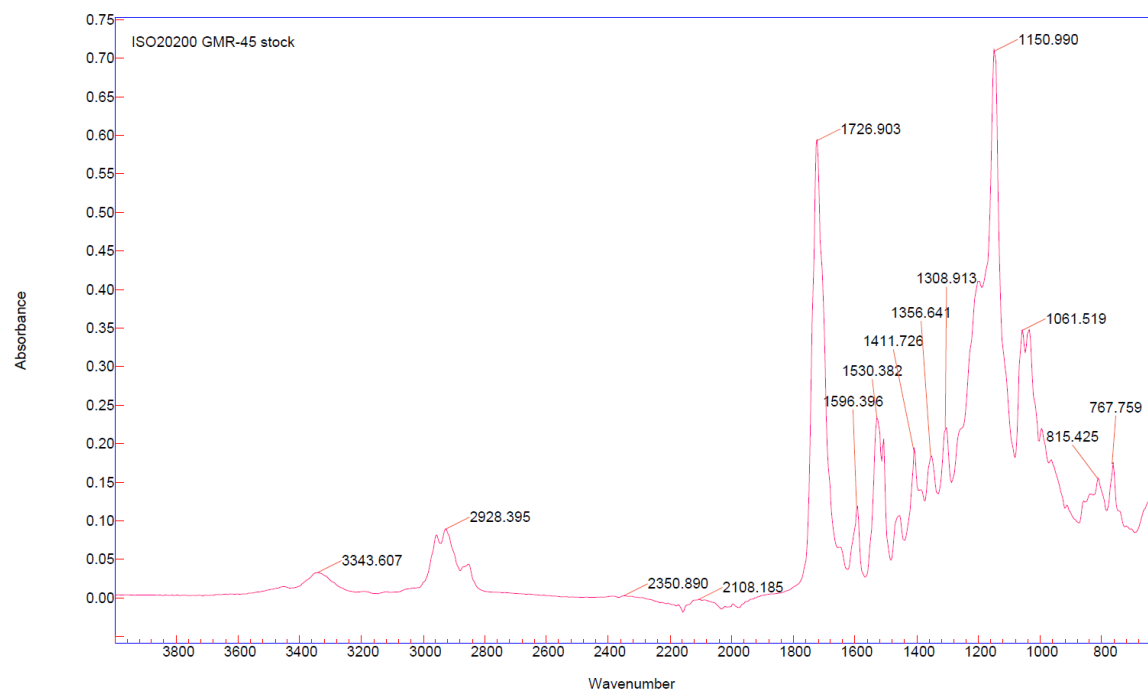
**Agilent Resolutions Pro**



Name
ISO20200 GMR-38 end1

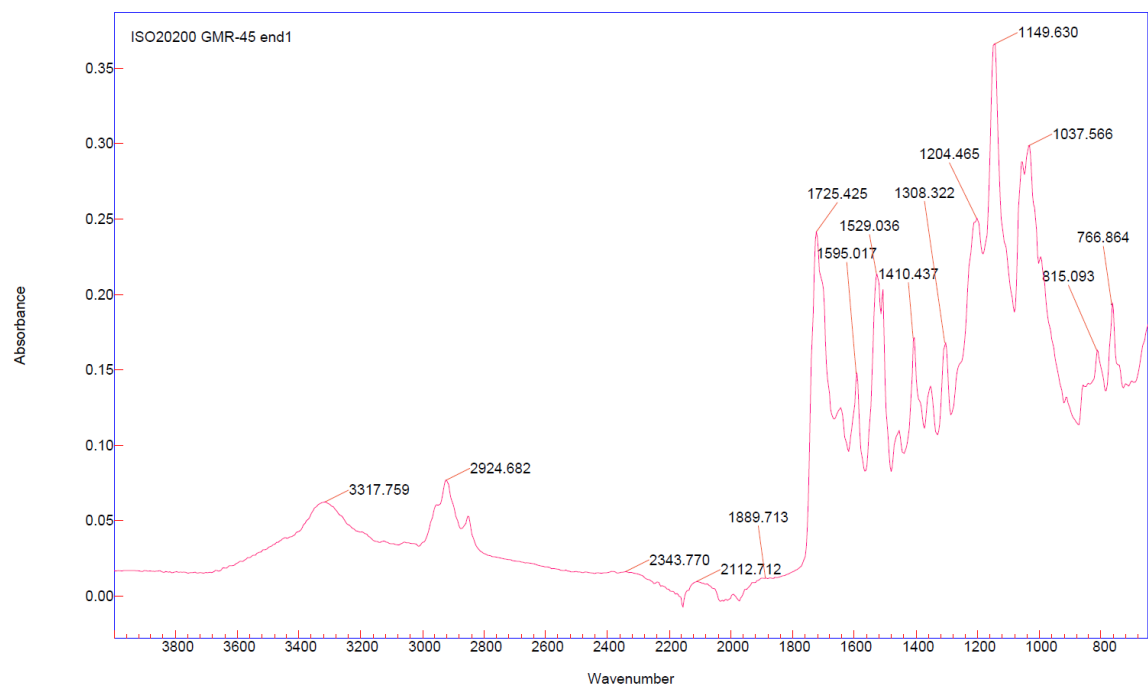
**Figure S8 – Raw FTIR data for EX3 at 0 days (top) and 45 days (bottom)**

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Name
ISO20200 GMR-45 stock

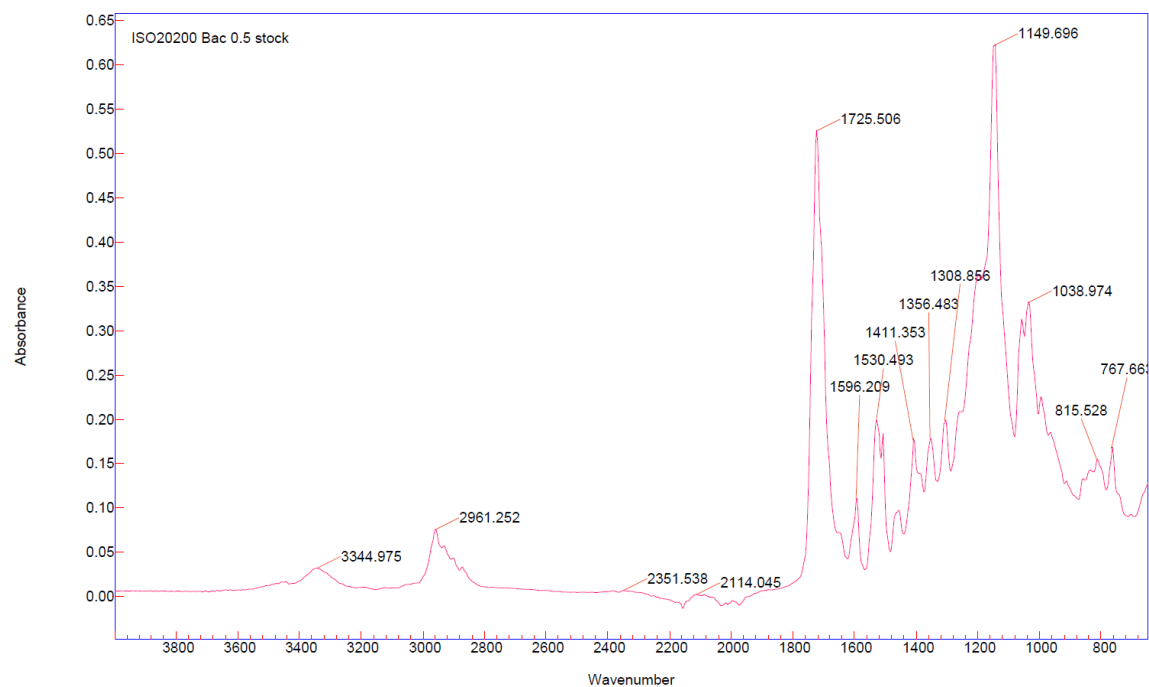
**Agilent Resolutions Pro**



Name
ISO20200 GMR-45 end1

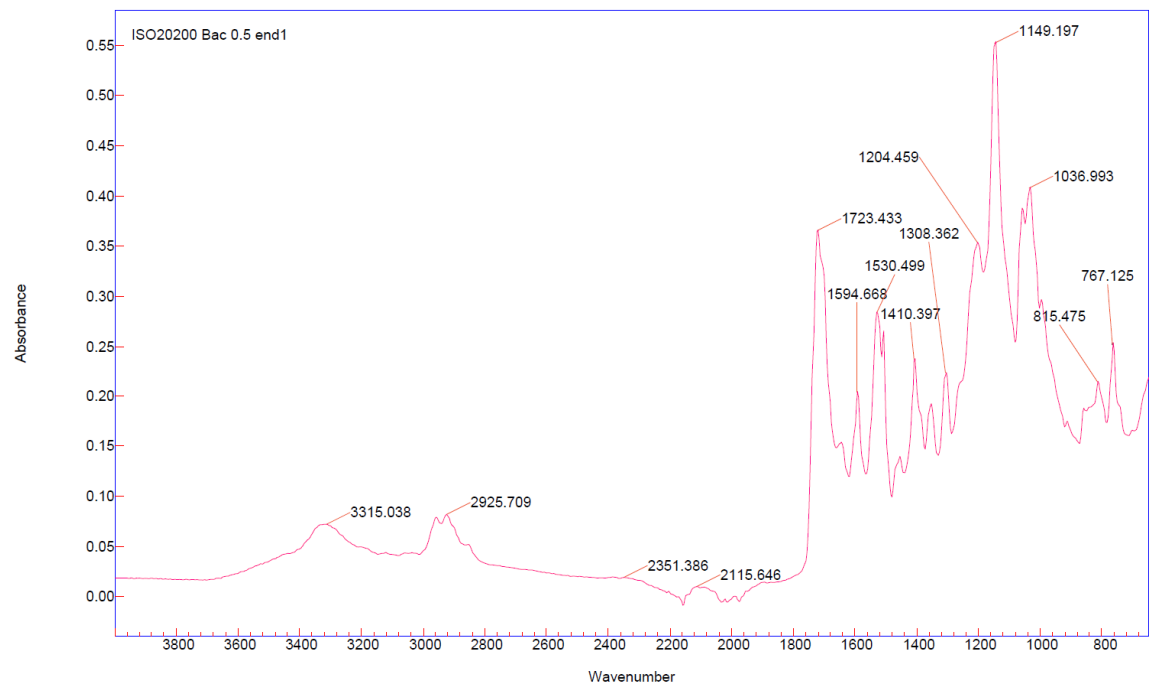
**Figure S9 – Raw FTIR data for EX4 at 0 days (top) and 45 days (bottom)**

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Name
ISO20200 Bac 0.5 stock

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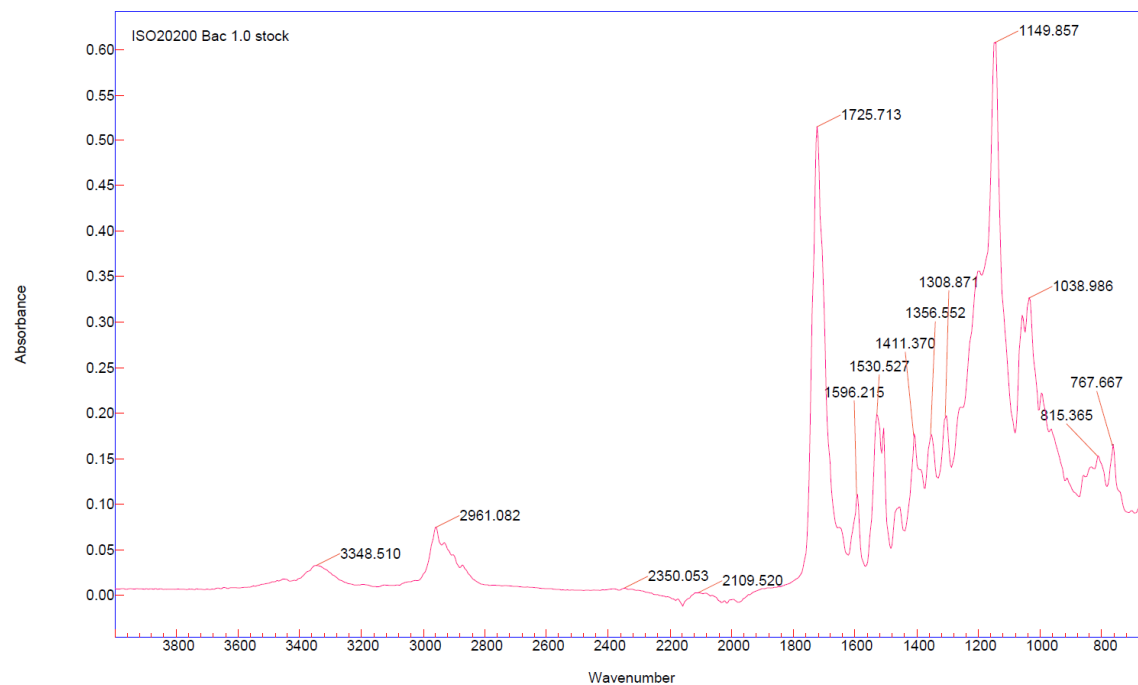


Name
ISO20200 Bac 0.5 end1



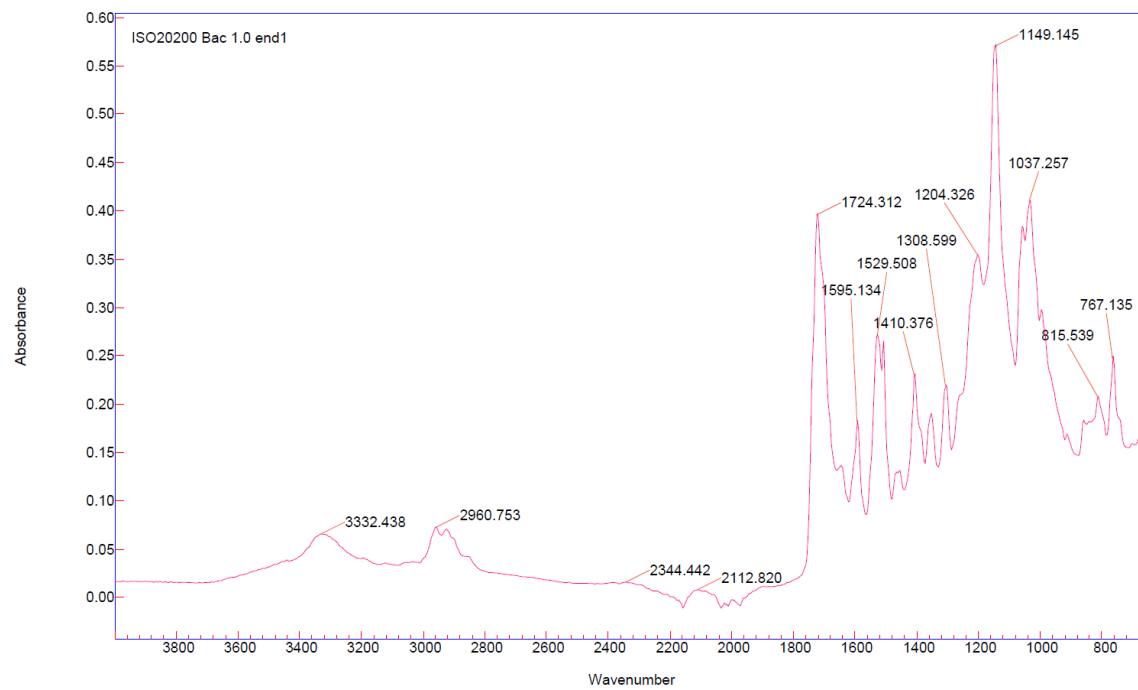
**Figure S10** – Raw FTIR data for EX5 at 0 days (top) and 45 days (bottom)

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Name
ISO20200 Bac 1.0 stock

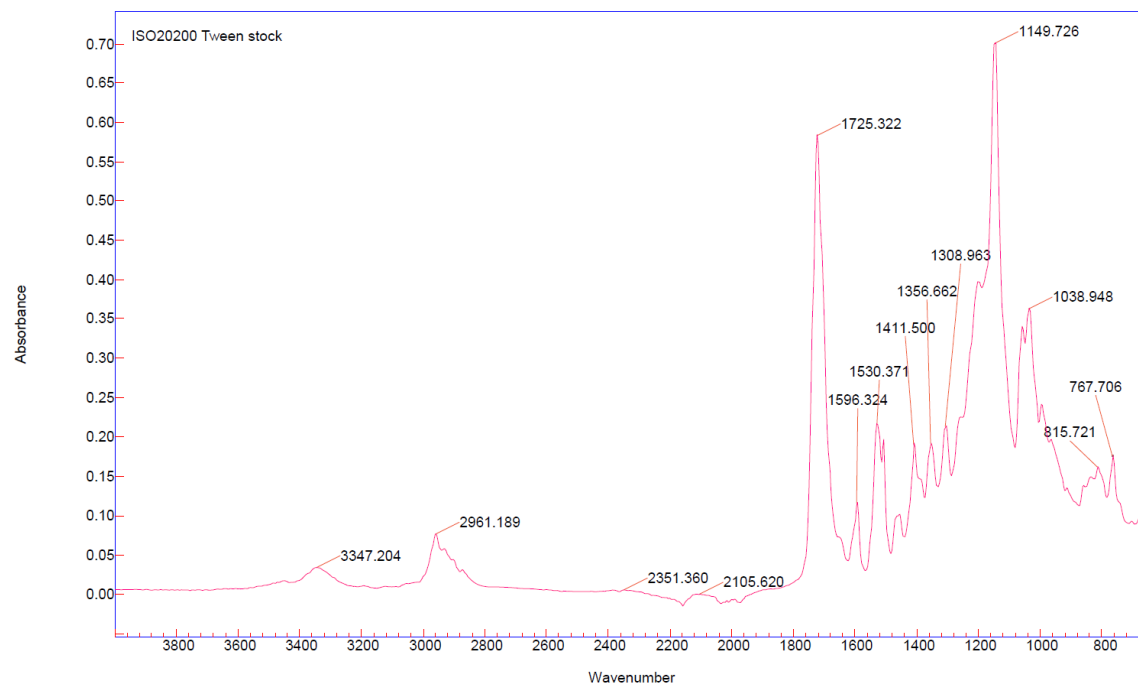
**Agilent Resolutions Pro**



Name
ISO20200 Bac 1.0 end1

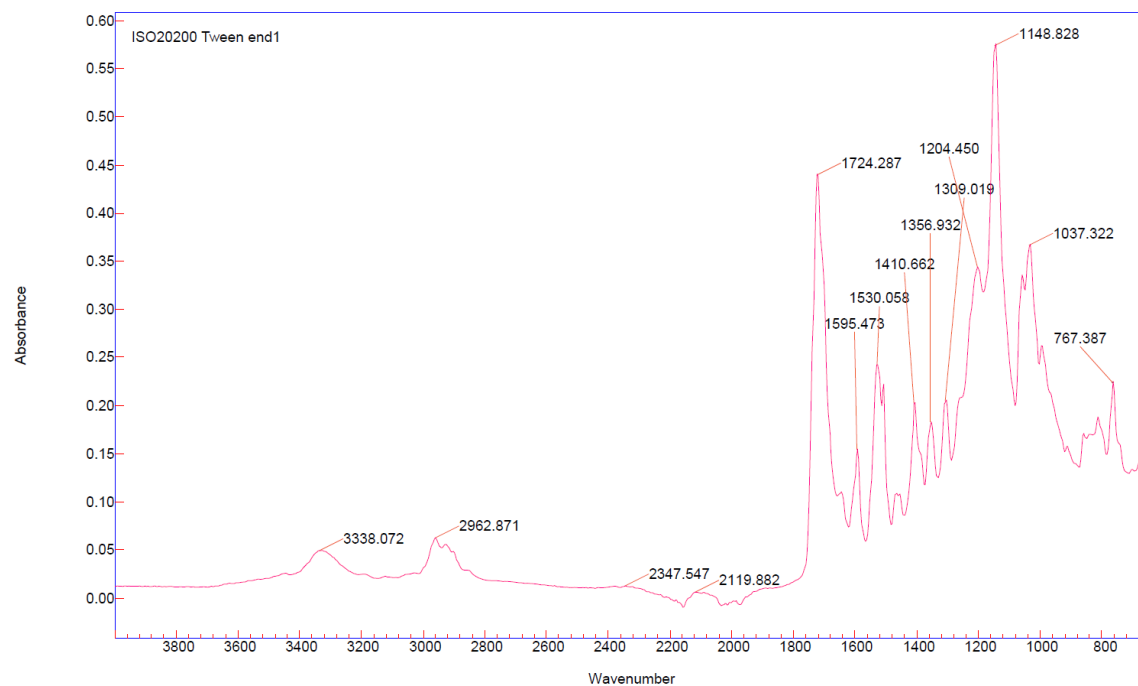
**Figure S11 – Raw FTIR data for EX6 at 0 days (top) and 45 days (bottom)**

**Agilent Resolutions Pro**



Name
ISO20200 Tween stock

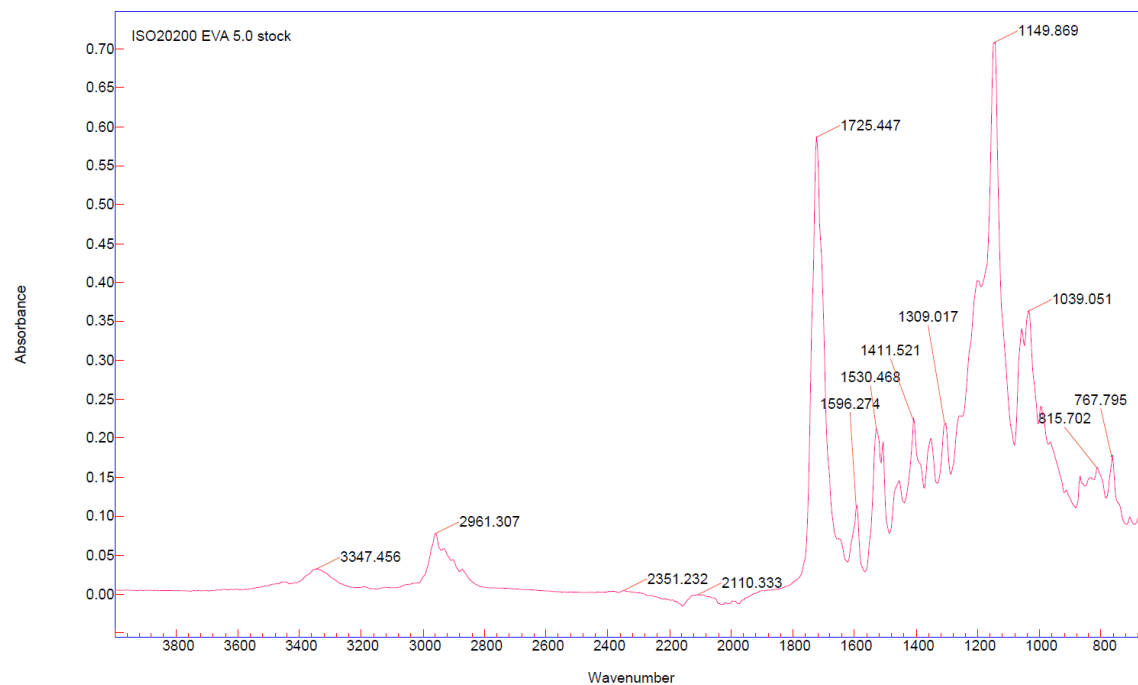
**Agilent Resolutions Pro**



Name
ISO20200 Tween end1

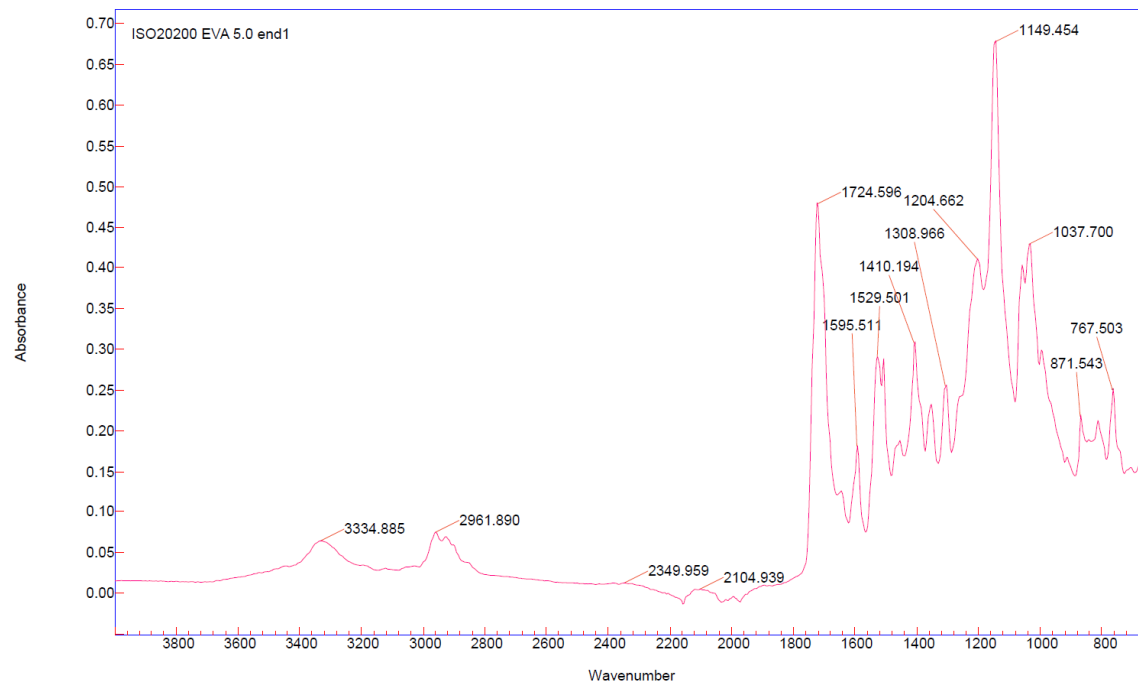
**Figure S12 – Raw FTIR data for EX7 at 0 days (top) and 45 days (bottom)**

**Agilent Resolutions Pro**



Name
ISO20200 EVA 5.0 stock

**Agilent Resolutions Pro**



Name
ISO20200 EVA 5.0 end1