

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD
3

4
5 VANTAGE SPECIAL CHEMICALS, INC,
6 PETITIONER,
7 vs
8 CARGILL, INC,
9 PATENT OWNER.

)
)
) Case No IPR2023-00589
)
) US Patent No 11, 248, 245
)
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)

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16 VIDEOTAPED HYBRID DEPOSITION

17 of

18 DAVID ROCKSTRAW, Ph.D., P.E.

19 New York, New York

20 Friday, November 17, 2023
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22
23

24 Reported by:

25 Mary Agnes Drury, RPR, NYACR, CLR

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November 17, 2023

9:01 a.m.

VIDEOTAPED HYBRID DEPOSITION of
DAVID ROCKSTRAW, Ph.D., P.E., held at the law
firm of Shearman & Sterling, 599 Lexington
Avenue, New York, New York, before Mary
Agnes Drury, RPR, NYACR, CLR, a Notary
Public of the State of New York.

1 A P P E A R A N C E S:

2
3 SHEARMAN & STERLING, LLP

4 Attorneys for Petitioner Vantage

5 599 Lexington Avenue

6 New York, New York 10022

7 (212) 848-4000

8 BY: ERIC LUCAS, ESQ.

9 eric.lucas@shearman.com

10
11 FISH & RICHARDSON, PC

12 Attorneys for Patent Owner Cargill

13 60 South 6th Street, Suite 3200

14 Minneapolis, Minnesota 55402

15 (612) 335-5070

16 BY: MICHAEL J. KANE, ESQ.

17 kane@fr.com

18 - and -

19 222 Delaware Avenue, 18th Floor

20 Wilmington, Delaware 19801

21 BY: CASEY M. KRANING, PhD, ESQ.

22 kraning@fr.com

1 A P P E A R A N C E S (Continued):

2

3 ALSO PRESENT:

4

5 Cass Dottridge, Cargill Rep

6 David Cooperberg, Vantage Rep

7 Ahmed Davis, Fish (via Zoom)

8 Grace Kim, Fish (via Zoom)

9 Rosalynd Upton, Fish (via Zoom)

10 Debbie O'Toole, Legal Video Specialist

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IT IS HEREBY STIPULATED AND AGREED

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by and between the attorneys for the

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respective parties herein, that filing and

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sealing be waived and the same are hereby

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waived.

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IT IS FURTHER STIPULATED AND AGREED

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that all objections, except as to the form

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of the question, shall be reserved to the

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time of the trial.

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IT IS FURTHER STIPULATED AND AGREED

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that the within deposition may be sworn to

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and signed before any officer authorized

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to administer an oath, with the same

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force and effect as if signed and sworn to

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before the Court.

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1 P R O C E E D I N G S

2 New York, New York, Friday, November 17, 2023;
3 the proceedings commenced as follows:

4 - oOo -

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6
7 VIDEOGRAPHER: Here begins the 09:02
8 Deposition of Dr. David Rockstraw in the 09:02
9 matter of Vantage Specialty Chemicals Inc 09:02
10 versus Cargill Inc. 09:02

11 Today's date is November 17, 2023, 09:02
12 the time is 9:01 a.m. 09:02

13 The deposition is being taken at 09:02
14 Shearman & Sterling, 599 Lexington Avenue, 09:02
15 New York, New York, and was made at the 09:02
16 request of Fish & Richardson. 09:02

17 I'm Debbie O'Toole, the 09:02
18 videographer, and the court reporter is 09:02
19 Mary Agnes Drury from Gregory Edwards, LLC. 09:02

20 Counsel please identify yourself and 09:02
21 state whom you represent. 09:02

22 MR. KANE: Michael Kane, Fish & 09:02
23 Richardson, representing Cargill. And with 09:02
24 me we have -- I will let my colleagues 09:02
25 introduce themselves. 09:02

1 DAVID ROCKSTRAW, PhD, PE
2 MS. KRANING: Casey Kraning also 09:02
3 from Fish & Richardson. 09:02
4 MS. DOTTRIDGE: And Cass Dottridge 09:02
5 from Cargill. 09:02
6 MR. KANE: And we have Ahmed Davis, 09:02
7 Grace Kim, and Rozzi Upton attending 09:02
8 remotely. 09:03
9 MR. LUCAS: And for Vantage, the 09:03
10 Petitioner, this is Eric Lucas from Sherman 09:03
11 & Sterling. With me is my colleague 09:03
12 Dr. David Cooperberg, and the witness. 09:03

13

14 D A V I D R O C K S T R A W, P h D, P E,
15 called as a witness, having been duly
16 sworn or affirmed by a Notary Public, was
17 examined and testified as follows:

18 EXAMINATION BY

19 MR. KANE: 09:03
20 Q. Good morning, Dr. Rockstraw. 09:03
21 A. Good morning. 09:03
22 Q. Can you please state your full name 09:03
23 and address for the record. 09:03
24 A. My name is David Arthur Rockstraw. 09:03
25 I live at 2008 Calle de El Paso, Las Cruces, 09:03

1	DAVID ROCKSTRAW, PhD, PE	
2	New Mexico.	09:03
3	Q. And I believe you've been deposed	09:03
4	before, correct?	09:03
5	A. That is correct.	09:03
6	Q. Approximate number of times?	09:03
7	A. I would say it's somewhere around 40	09:03
8	times now.	09:03
9	Q. You're an expert at being deposed.	09:03
10	So you know the ground rules, but	09:03
11	generally, I'll be asking questions.	09:03
12	Obviously, we are recording and taking down a	09:04
13	transcript here with the court reporter, so	09:04
14	it's important that we don't talk over each	09:04
15	other, and I'll try to make sure that I don't	09:04
16	cut you off and ask that you do the same so she	09:04
17	can get it down; is that fair?	09:04
18	A. That's fair.	09:04
19	Q. And if you don't understand a	09:04
20	question, please ask me to clarify, I'll do the	09:04
21	best that I can to do that for you. If you	09:04
22	don't do that, I'll assume that you understood	09:04
23	my question; is that fair?	09:04
24	A. That's fair. I understand.	09:04
25	Q. Okay. Is there any reason that you	09:04

1	DAVID ROCKSTRAW, PhD, PE	
2	cannot give accurate or complete testimony	09:04
3	today?	09:04
4	A. There is no reason.	09:04
5	Q. When were you first retained by	09:04
6	Vantage in connection with this dispute?	09:05
7	A. I don't recall the exact date. I	09:05
8	would suspect it was sometime in 2022 or '21.	09:05
9	Q. Okay. And were you retained in	09:05
10	connection first for the IPR or the litigation?	09:05
11	A. I don't recall that either.	09:05
12	Q. Okay. Was that retention before	09:05
13	December of 2022?	09:05
14	A. I believe it was.	09:05
15	(Whereupon, Vantage Exhibit 1001, US	09:06
16	Patent 11,248,245 Dated 2/15/22, 17-Pages	09:06
17	was marked for identification.)	09:06
18	BY MR. KANE:	09:06
19	Q. So, Dr. Rockstraw, we've handed you	09:06
20	what was marked as Vantage Exhibit 1001.	09:06
21	Do you see that?	09:06
22	A. I do.	09:06
23	Q. And that's US Patent 11,248,245,	09:06
24	correct?	09:06
25	A. That is correct.	09:06

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And this is a patent that you 09:06
3 analyzed and formed your opinions on in 09:06
4 connection with this matter? 09:06

5 A. I have reviewed this patent, yes. 09:06
6 (Whereupon, Vantage Exhibit 1003, 09:07
7 Rockstraw Declaration Dated 2/23/23, 09:07
8 124-Pages was marked for identification.) 09:07

9 BY MR. KANE: 09:07

10 Q. Dr. Rockstraw, I've also put in 09:07
11 front of you Vantage Exhibit 1003. 09:07
12 Do you see that? 09:07

13 A. I do. 09:07

14 Q. It says this is the Declaration of 09:07
15 David A. Rockstraw on the front page. 09:07
16 Do you see that? 09:07

17 A. I do. 09:07

18 Q. And is this the Declaration that you 09:07
19 signed for this proceeding? 09:07

20 A. Yes, it is. 09:07

21 Q. If you turn to page 112, that's your 09:07
22 signature? 09:07

23 A. Yes, it is. 09:07

24 Q. February 23rd, 2023? 09:07

25 A. Yes. 09:07

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Do you have any estimation of how 09:08
3 long you spent working in preparation of this 09:08
4 Declaration? 09:08

5 A. I honestly have no idea how much 09:08
6 time I spent on it. 09:08

7 Q. Do you know when you started working 09:08
8 on that Declaration? 09:08

9 A. Obviously, it would have been 09:08
10 sometime before my signature, but I don't 09:08
11 recall how long before. 09:08

12 Q. Several months? 09:08

13 A. I would assume so, yes. 09:08

14 Q. Okay. Can you describe generally 09:08
15 the process that you went through to prepare 09:08
16 this Declaration? 09:08

17 A. Well, in general, I review the 09:08
18 patent that is at a point of contention in the 09:08
19 matter, I do a review of the literature for 09:08
20 content that's relevant, I read the Complaint 09:09
21 to understand the issues in the matter, and 09:09
22 then I work with counsel to assure that I'm 09:09
23 addressing the issues that are relevant to the 09:09
24 client. 09:09

25 Q. So in this case had you — you had 09:09

1	DAVID ROCKSTRAW, PhD, PE	
2	read the Complaint in the litigation as part of	09:09
3	your -- or before you started this review?	09:09
4	A. I did not include that as one of the	09:10
5	items that I relied upon, and I don't recall if	09:10
6	I actually read it before that or not.	09:10
7	Q. Have you read it since?	09:10
8	A. I have read the Complaint since,	09:10
9	yes.	09:10
10	Q. Or at some point, maybe before or	09:10
11	after, it's unclear?	09:10
12	A. Yeah, I don't know when I did.	09:10
13	Q. Okay. Who did you work with in	09:10
14	drafting this Declaration?	09:10
15	A. I work primarily alone, but I worked	09:10
16	with Tom Makin and his team as I went along.	09:10
17	Q. And who is Tom Makin?	09:10
18	A. Tom Makin is counsel at Sterling,	09:10
19	Shearman & Sterling for Vantage.	09:10
20	Q. And so -- and his team were also	09:10
21	with that law firm?	09:10
22	A. Correct.	09:10
23	Q. Did you talk to anyone at Vantage?	09:10
24	A. I spent some time at Vantage talking	09:10
25	with their employees, yes.	09:10

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And when did that occur? 09:11

3 A. That occurred, I believe it was in 09:11
4 February of this year. 09:11

5 Q. And who did you talk to at Vantage? 09:11

6 A. I worked primarily with Michael -- 09:11
7 his last name starts with an "S," but I'm at a 09:11
8 loss right now. 09:11

9 Q. Do you recall his position? 09:11

10 A. I believe he was director of 09:11
11 research and development. 09:11

12 Q. Anyone else at Vantage you 09:11
13 interacted with? 09:11

14 A. I spent some time working with Chris 09:11
15 Lyons, essentially at the benchtop. 09:11

16 Q. And do you know his position? 09:11

17 A. He was a -- I believe it was a 09:11
18 research and development chemist within the 09:11
19 organization. 09:11

20 Q. When you say you were "at the 09:11
21 benchtop," can you explain? 09:11

22 A. I physically carried out 09:11
23 esterifications with these materials to become 09:11
24 familiar with the reactions and what happens 09:12
25 during the reactions. 09:12

1 DAVID ROCKSTRAW, PhD, PE

[illegible]

5 equipment together. He made some runs himself 09:12

6 and showed me how he did it, and then I took it 09:12

7 from there. 09:12

8 Q. Do you have any records relating to 09:12

9 that? 09:12

10 MR. LUCAS: I just want to lodge a 09:12

11 little bit of an objection here. 09:12

12 This is high level, which is fine, 09:12

13 but since you are retained in both the 09:12

14 District Court litigation and the IPR, and 09:12

15 this deposition is about the IPR, I want 09:12

16 you to make sure you're cabineting your 09:12

17 testimony to matters that pertain to the 09:12

18 IPR and not the work that was done in the 09:12

19 District Court litigation, if you can do 09:12

20 that. 09:12

21 THE WITNESS: Understood. 09:12

22 None of the work I did in February 09:12

23 was relevant to the IPR. 09:12

24 BY MR. KANE: 09:12

25 Q. Okay. Did you -- were there any 09:12

1 DAVID ROCKSTRAW, PhD, PE

2 interactions with folks from Vantage that was 09:12
3 relevant to the IPR? 09:13

4 A. There was a team of analytical 09:13
5 chemists there that I interacted with regularly 09:13
6 to learn how to operate the various analytical 09:13
7 devices. 09:13

8 Q. But in doing your analysis of the 09:13
9 validity of the '245 patent, did you talk to 09:13
10 people at Vantage? 09:13

11 A. I did not. 09:13

12 Q. Who identified the references that 09:13
13 are cited in your Declaration? 09:13

14 A. I believe I identified most of them. 09:13

15 Q. Who else -- who identified others? 09:13

16 A. There may have been some that came 09:13
17 from the law firm of Sherman & Sterling, I 09:13
18 don't recall. 09:13

19 I do recall spending a lot of time 09:13
20 in the library and the literature identifying 09:13
21 relevant articles. 09:14

22 Q. And how did you go about drafting 09:14
23 the Declaration? 09:14

24 A. Well, once the articles were put 09:14
25 together, I looked for the -- I looked through 09:14

1	DAVID ROCKSTRAW, PhD, PE	
2	the content of the articles to understand	09:14
3	essentially what the articles told me relative	09:14
4	to the patent, and put the combinations	09:14
5	together that I believe taught a person of	09:14
6	skill in the art what the patent does.	09:14
7	Q. And then did you do the first draft	09:14
8	of the Declaration?	09:14
9	A. I always do the first draft of my	09:14
10	Declarations.	09:14
11	Q. And then there was some editing	09:14
12	process between you and the lawyers?	09:14
13	A. There usually is, yes.	09:14
14	Q. And there was in this case?	09:14
15	A. There was.	09:14
16	Q. Did you — in that process, did you	09:14
17	talk with anyone other than the lawyers?	09:15
18	A. In that process, no.	09:15
19	Q. So if we turn to page seven of	09:15
20	Exhibit 1003. You have a section there	09:15
21	entitled, "Materials Considered," which I think	09:15
22	you looked at earlier. Is this the entirety of	09:15
23	the materials you considered in preparing your	09:15
24	opinions?	09:15
25	A. I believe it is thorough, yes.	09:15

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And then who did -- the '245 patent 09:15
3 obviously? 09:15

4 A. I'm sorry? 09:15

5 Q. That included the '245 patent as we 09:15
6 see there, 1001? 09:15

7 A. Yes, that's the first entry in the 09:16
8 table. 09:16

9 Q. Okay. And 1002 is the file history 09:16
10 for the patent. 09:16

11 Do you see that? 09:16

12 A. That's correct. 09:16

13 Q. Did you review the entire file 09:16
14 history? 09:16

15 A. There is a lot of forms in there 09:16
16 that I find irrelevant, so I didn't really 09:16
17 review those. But the content between the 09:16
18 government forms, I did review all of it, yes. 09:16

19 Q. And then you also have Exhibits 1004 09:16
20 to 1030 in here, correct? 09:16

21 A. Correct. 09:16

22 Q. Anything -- any other documents or 09:16
23 exhibits you considered? 09:16

24 MR. LUCAS: Asked and answered. 09:16

25 THE WITNESS: Well, this list is the 09:16

1 DAVID ROCKSTRAW, PhD, PE

2 ones that I used to form my opinions. 09:16

3 Whenever you are in the library you 09:16

4 encounter many articles that some of them 09:16

5 you will find irrelevant and you toss them 09:16

6 to the side. I looked at many articles, 09:16

7 but these are the ones that I used in 09:16

8 forming my opinions. 09:17

9 BY MR. KANE: 09:17

10 Q. Have you subsequently looked at the 09:17

11 Patent Owner's Preliminary Response filed by 09:17

12 Cargill? 09:17

13 A. I have. 09:17

14 Q. And have you analyzed the Board's 09:17

15 Institution Decision? 09:17

16 A. Oh, yes. 09:17

17 Q. What did you do to prepare for your 09:17

18 deposition today? 09:17

19 A. I spent the previous two days here 09:17

20 with counsel reviewing documents. 09:17

21 Q. How long, approximately, was that 09:17

22 process? 09:17

23 A. I would say five or six hours each 09:17

24 day. 09:17

25 Q. Okay. Anyone other than counsel 09:17

1	DAVID ROCKSTRAW, PhD, PE	
2	present?	09:17
3	A. There was not.	09:17
4	Q. And did you review your Declaration	09:17
5	as part of that process?	09:17
6	A. Yes, I did.	09:17
7	Q. Do you have any changes or additions	09:18
8	you'd like to make to your Declaration at this	09:18
9	point?	09:18
10	A. I do. On page 49 of 124, I present	09:18
11	an expression that I use for calculating the	09:18
12	percent of hydrogenated jojoba oil from various	09:18
13	iodine values, and I made an error in the	09:18
14	expression that I put on the document.	09:18
15	Q. And just so the record is clear,	09:19
16	we're talking about paragraph 104 that begins	09:19
17	on page 48 and continues on to page 49?	09:19
18	A. That's correct.	09:19
19	Q. And what is the error that you	09:19
20	identified in that equation?	09:19
21	A. The terms in the denominator are	09:19
22	reversed. It should be "IV" which stands for	09:19
23	Iodine Value. Subscript HJ0, Hydrogenated	09:19
24	Jojoba Oil, should be the leading term, minus	09:19
25	IV subscript J0 for Jojoba Oil, that should be	09:19

1 DAVID ROCKSTRAW, PhD, PE

2 the subsequent term and the difference. 09:19

3 (IVHJ0–IVJ0) 09:19

4 Q. Anything else that you identified in 09:19

5 the Declaration that you would like to correct? 09:19

6 A. No, that's all I found. 09:19

7 Q. Having seen the Patent Owner's 09:20

8 Preliminary Response, have your opinions 09:20

9 changed in any way? 09:20

10 A. They have not. 09:20

11 Q. And have you seen the Board's 09:20

12 Institution Decision, have your opinions 09:20

13 changed in any way? 09:20

14 A. They have not. 09:20

15 Q. Now, we're going to be using some 09:20

16 terminology today. "Transesterification," are 09:20

17 you familiar with that term? 09:20

18 A. I am. 09:20

19 Q. And "interesterfication," are you 09:20

20 familiar with that term? 09:20

21 A. I am. 09:20

22 Q. And as you note in here and you cite 09:20

23 the Xu reference, those terms are somewhat used 09:21

24 interchangeably in the field? 09:21

25 A. They are. 09:21

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And so can we agree to use them 09:21
3 interchangeably today? 09:21

4 A. We can. 09:21

5 Q. And within that terminology there 09:21
6 are, I understand that there are three types of 09:21
7 reactions: Acidolysis, alcoholysis, and 09:21
8 ester-ester exchange; is that correct? 09:21

9 A. I understand that to be the case 09:21
10 also, yes. 09:21

11 Q. An alcoholysis is a reaction between 09:21
12 an ester and an alcohol? 09:21

13 A. That's my understanding. 09:21

14 Q. And the acidolysis is a reaction 09:21
15 between an ester and a fatty acid? 09:21

16 A. That's my understanding. 09:21

17 Q. And ester-ester exchange is an 09:21
18 exchange between two esters? 09:21

19 A. That's correct. 09:21

20 Q. So let's look at Claim 1 of the '245 09:21
21 patent, please. 09:22

22 And as you see here, you agree that 09:22
23 Claim 1 is a process claim? 09:22

24 A. I do, it starts with a process. 09:22

25 Q. And then the first step in that 09:22

1	DAVID ROCKSTRAW, PhD, PE	
2	process is "providing a feedstock comprising	09:22
3	jojoba wax esters and hydrogenated wax esters,	09:22
4	wherein the amount of hydrogenated jojoba wax	09:22
5	esters is 20 to 50 percent by weight of the	09:22
6	feedstock," correct?	09:22
7	A. You read that almost correctly, you	09:22
8	left the word "jojoba" out after "hydrogenated"	09:22
9	the first time.	09:23
10	Q. Oh, all right.	09:23
11	And then the next step in the	09:23
12	process is "contacting the feedstock with	09:23
13	lipase"?	09:23
14	A. That's correct.	09:23
15	Q. And the next step is	09:23
16	"Transesterifying the jojoba wax esters and the	09:23
17	hydrogenated jojoba wax esters with the	09:23
18	feedstock with the lipase to form a	09:23
19	transesterified product," correct?	09:23
20	A. That is correct.	09:23
21	Q. And final step is "Wherein an	09:23
22	Oxidative Stability Index (OSI) of the	09:23
23	transesterified product is greater than the OSI	09:23
24	of the feedstock," correct?	09:23
25	A. That is correct.	09:23

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And so the transesterifying step is 09:23
3 a -- as we said earlier, a reaction between 09:23
4 esters, correct? 09:24

5 A. In this case that is correct, yes. 09:24

6 Q. So it's between the jojoba wax 09:24
7 esters and the hydrogenated jojoba wax esters? 09:24

8 A. That is correct. 09:24

9 Q. So in that broad category as we were 09:24
10 talking about earlier, that would fall in the 09:24
11 ester-ester exchange? 09:24

12 A. Correct. 09:24

13 (Whereupon, Vantage Exhibit 1004, 09:24
14 Cummings Article, "A Natural Alternative," 09:24
15 4-Pages was marked for identification.) 09:24

16 BY MR. KANE: 09:24

17 Q. So, Dr. Rockstraw, I've handed you 09:24
18 what was marked as Vantage Exhibit 1004. 09:24

19 Do you see that? 09:25

20 A. I do. 09:25

21 Q. Is this one of the articles that you 09:25
22 analyzed and refer to in your DECLARATION? 09:25

23 A. Yes, it is. 09:25

24 Q. And the lead author is Melanie 09:25
25 Cummings? 09:25

1	DAVID ROCKSTRAW, PhD, PE	
2	A. That is correct.	09:25
3	Q. So I believe you refer to it as the	09:25
4	"Cummings" reference?	09:25
5	A. I do.	09:25
6	Q. And this was published in 1999?	09:25
7	A. That is correct.	09:25
8	Q. So that's about 15 years before the	09:25
9	priority date of the '245 patent?	09:25
10	A. I believe that to be correct also.	09:25
11	Q. And on the right-hand side we see a	09:25
12	paragraph heading "Unique Composition"?	09:25
13	A. I do.	09:25
14	Q. Which states that "While all other	09:25
15	seed oils are triglycerides, the jojoba plant	09:26
16	bears a peanut-sized, dark chestnut colored	09:26
17	seed containing a unique oil that is chemically	09:26
18	a liquid wax ester," right?	09:26
19	MR. LUCAS: Sorry, Mike, where are	09:26
20	you seeing that? I'm not seeing that.	09:26
21	THE WITNESS: I'm not seeing it	09:26
22	under Unique Composition where you directed	09:26
23	me.	09:26
24	MR. KANE: Oh, I'm sorry. You're	09:26
25	right. It's actually the middle paragraph	09:26

1	DAVID ROCKSTRAW, PhD, PE	
2	in the middle column.	09:26
3	The first full paragraph in the	09:26
4	middle column.	09:26
5	THE WITNESS: I see that, yes.	09:26
6	BY MR. KANE:	09:26
7	Q. First sentence. Okay.	09:26
8	And you agree with that?	09:26
9	A. My research in the literature	09:26
10	suggests that is true, yes.	09:26
11	Q. Okay. So jojoba oil is not a	09:26
12	triglyceride, correct?	09:27
13	A. That's correct.	09:27
14	Q. And, in fact, it's a liquid wax	09:27
15	ester?	09:27
16	A. That's correct.	09:27
17	Q. And if we look at Figure 1 on page	09:27
18	two of the document, we see there that there is	09:27
19	a -- it's titled "Jojoba Ester Production,"	09:27
20	right?	09:27
21	A. I see that, yes.	09:27
22	Q. Okay. And it's not the clearest	09:27
23	figure in the world, but it appears that the	09:27
24	top representation in the figure is for --	09:27
25	what's referred to as "jojoba oil," correct?	09:27

1 DAVID ROCKSTRAW, PhD, PE

2 A. It is a representation of one of the 09:27
3 molecular components of jojoba oil. 09:27

4 Q. And it's your understanding is 09:27
5 that's an oil with unsaturated bonds? 09:28

6 A. Please repeat the question? 09:28

7 Q. So in that representation there, at 09:28
8 the top those -- the chains in those -- in that 09:28
9 representation are unsaturated, they have 09:28
10 double bonds? 09:28

11 MR. LUCAS: Objection to form. 09:28

12 THE WITNESS: I understand that 09:28
13 there is a double bond in each of the fatty 09:28
14 acid chains on either side of the ester 09:28
15 group in each of the molecules present in 09:28
16 the jojoba oil. 09:28

17 Q. Okay. Then the next step here is 09:28
18 hydrogenation, correct? 09:28

19 A. Well, it shows a hydrogenation 09:28
20 reaction for part of the jojoba oil to generate 09:28
21 a saturated jojoba oil product. 09:28

22 Q. Okay. And so then those saturated 09:28
23 products do not have the double bond in the 09:29
24 chains? 09:29

25 A. That's correct, it's fully 09:29

1	DAVID ROCKSTRAW, PhD, PE	
2	saturated, so both of the double bonds are	09:29
3	eliminated.	09:29
4	Q. Okay. And then there is the	09:29
5	representation of a catalyst being added,	09:29
6	correct?	09:29
7	A. Yes. The catalyst is shown as that	09:29
8	which drives a reaction between the jojoba oil	09:29
9	and the saturated jojoba oil to create the	09:29
10	various esters that are the product.	09:29
11	Q. So that catalyst is what is used to	09:29
12	drive that ester-ester exchange?	09:29
13	A. Yes, the catalyst promotes the	09:29
14	reaction.	09:29
15	Q. So in this -- well, in your	09:30
16	understanding then of what's being shown here	09:30
17	in the reaction, is there some mixture in the	09:30
18	feedstock of both the saturated and the fully	09:30
19	hydrogenated or the unsaturated and the fully	09:30
20	hydrogenated jojoba oil components?	09:30
21	MR. LUCAS: Objection to form.	09:30
22	THE WITNESS: Repeat the question.	09:30
23	Q. If you look at -- if you go down a	09:30
24	couple of sentences below there is a sentence	09:30
25	that begins, "Jojoba oil is converted to jojoba	09:30

1	DAVID ROCKSTRAW, PhD, PE	
2	esters through a process known as	09:30
3	interesterification."	09:30
4	Do you see that?	09:30
5	A. I do.	09:30
6	Q. So it says, "In this process	09:30
7	different ratios of unsaturated jojoba oil are	09:30
8	combined with fully saturated" oil and then	09:30
9	interesterified.	09:30
10	Do you see that?	09:30
11	A. I do.	09:30
12	MR. LUCAS: "Fully saturated jojoba	09:30
13	oil."	09:30
14	MR. KANE: Sorry.	09:30
15	Q. And then this "process results in	09:31
16	jojoba esters engineered to deliver specific	09:31
17	physical, functional, and chemical	09:31
18	characteristics," right?	09:31
19	A. That is correct.	09:31
20	Q. So is it your understanding that	09:31
21	that paragraph is trying to describe the -- or	09:31
22	is illustrated by the representation in	09:31
23	Figure 1?	09:31
24	A. That paragraph describes the bottom	09:31
25	half of Figure 1.	09:31

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Yes. And so it's -- in the process 09:31
3 though there are -- there are components that 09:31
4 are both unsaturated jojoba oil are combined 09:31
5 with fully saturated jojoba oil, correct, in 09:31
6 different ratios? 09:31

7 MR. LUCAS: Objection to form. 09:31

8 THE WITNESS: Yeah. I think the key 09:32
9 is in different ratios, and that ratio 09:32
10 could be zero also. 09:32

11 Q. Right. But it could be 20, it could 09:32
12 be 70, it could be 15? 09:32

13 A. Correct. 09:32

14 Q. So as labeled here in Figure 1, the 09:32
15 jojoba oil is the unsaturated components of the 09:32
16 process, correct? 09:32

17 MR. LUCAS: Objection to form. 09:32

18 THE WITNESS: Jojoba oil contains 09:32
19 unsaturated molecules, so it represents the 09:32
20 unsaturated component of the reaction. 09:32

21 Q. Okay. And that forms part of the 09:32
22 feedstock used in the reaction? 09:32

23 A. Part or all or none, depending upon 09:33
24 which blend you're making. 09:33

25 Q. Are there any examples shown where 09:33

1 DAVID ROCKSTRAW, PhD, PE

2 it is -- there's no unsaturated jojoba oil in 09:33
3 the example, in the process? 09:33

4 MR. LUCAS: Objection to form. 09:33

5 THE WITNESS: In Figure 2 we have a 09:33
6 list of all the potential combinations of 09:33
7 fatty acids that are found in the jojoba 09:33
8 oil, the hydrogenated jojoba oil, or the 09:34
9 esters that are the result of a reaction of 09:34
10 those two materials. 09:34

11 We see two horizontal lines in that 09:34
12 table. Above the first horizontal line are 09:34
13 the components in the jojoba oil or an 09:34
14 ester created from only jojoba oil. 09:34

15 And below the second line are the 09:34
16 components contained in the fully 09:34
17 hydrogenated jojoba oil, and the esters 09:34
18 created from only the fully hydrogenated 09:34
19 jojoba oil. 09:34

20 So that's a long answer to say yes, 09:34
21 Figure 2 has such an example. 09:34

22 Q. So it's your understanding that 09:35
23 Jojoba Esters 15 has no saturated material in 09:35
24 that product or in that reaction? 09:35

25 MR. LUCAS: Objection to form. 09:35

1 DAVID ROCKSTRAW, PhD, PE

2 THE WITNESS: That's what Figure 2 09:35
3 informs a person of skill in the art that 09:35
4 there are none of the hydrogenated 09:35
5 components in Jojoba Esters 15. 09:35

6 Q. Okay. If we look above Figure 2 in 09:35
7 the middle column of there's a sentence that 09:36
8 states, "Jojoba esters demonstrate remarkable 09:36
9 stability with OSI values of all jojoba esters 09:36
10 greater than 100 hours, and as high as 09:37
11 675 hours. " 09:37

12 Do you see that? 09:37

13 A. I do. 09:37

14 Q. And that's the value of OSI after 09:37
15 the transesterification process? 09:37

16 A. Yeah. Those numbers are referring 09:37
17 to the jojoba esters which are the products, so 09:37
18 it would be after transesterification. 09:37

19 Q. And in the Cummings reference, what 09:37
20 is disclosed as the catalyst causing the 09:37
21 transesterification? 09:37

22 A. I believe Cummings speaks to the 09:38
23 nature of the catalyst. 09:38

24 Q. Is there any discussion in Cummings 09:38
25 about using an enzyme as the catalyst? 09:38

1	DAVID ROCKSTRAW, PhD, PE	
2	A. I don't believe there is, no.	09:39
3	Q. So Cummings does not disclose the	09:39
4	contact within the feedstock of lipase?	09:39
5	A. Cummings discloses the need for a	09:39
6	catalyst, so a person of skill in the art would	09:39
7	recognize the need to add that third component;	09:39
8	Cummings just does not point to enzymes as a	09:39
9	possible catalyst.	09:39
10	Q. Okay.	09:39
11	(Whereupon, Vantage Exhibit 1005,	09:40
12	Gale Business Insight Global Article,	09:40
13	"Trans Isomers in Cosmetics," 5-Pages was	09:40
14	marked for identification.)	09:40
15	BY MR. KANE:	09:40
16	Q. Dr. Rockstraw, I've handed you	09:40
17	what's been marked as Vantage Exhibit 10005.	09:40
18	Do you see that?	09:40
19	A. I do.	09:40
20	Q. And this is one of the documents you	09:40
21	relied upon in your opinion?	09:40
22	A. It is.	09:40
23	Q. And I believe you refer to this one	09:40
24	as Trans Isomers 1?	09:41
25	A. That's correct.	09:41

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And the date of publication of this 09:41
3 is 2001, correct? 09:41

4 A. Yes, I have May 2001 in my 09:41
5 Declaration. 09:41

6 Q. Okay. And Trans Isomers 1 does not 09:41
7 disclose any OSI values, correct? 09:41

8 A. That is correct. Trans Isomers 1 09:41
9 does not quantify OSI values. 09:41

10 Q. Okay. So it doesn't quantify OSI 09:42
11 values for the feedstock being used in the 09:42
12 reactions? 09:42

13 A. As far as I recall it does not 09:42
14 provide quantitative results of OSI for any 09:42
15 materials. 09:42

16 Q. Okay. And you agree that Trans 09:42
17 Isomers 1 does not disclose that the feedstock 09:42
18 has between 20 to 50 percent hydrogenated 09:42
19 jojoba wax esters? 09:42

20 A. I believe a person of skill in the 09:42
21 art would not use Trans 1 to identify the 09:42
22 feedstock composition. 09:42

23 Q. And Trans Isomers 1 also does not 09:43
24 disclose contacting the feedstock with a 09:43
25 lipase? 09:43

1 DAVID ROCKSTRAW, PhD, PE

2 A. I believe that is correct. 09:43

3 I believe that is found in Trans 09:43

4 Isomer 2. 09:43

5 MR. LUCAS: It's okay to look at 09:43

6 your Declaration. 09:43

7 THE WITNESS: Yeah, I'd like to make 09:43

8 sure I have that correct; I may have that 09:43

9 backwards. 09:44

10 This is not the document that I 09:44

11 spent most of my time with. There is a 09:44

12 version of this document where Trans 1 and 09:44

13 Trans 2 are combined, and so I'm more 09:44

14 familiar how to find content in that one. 09:44

15 (Whereupon, Vantage Exhibit 1014, 09:44

16 Soap & Cosmetics Publication June 2001, 09:44

17 8-Pages was marked for identification.) 09:44

18 BY MR. KANE: 09:44

19 Q. I'll hand you what was marked as 09:44

20 Vantage Exhibit 1014. 09:44

21 Is this the document that you were 09:44

22 thinking of? 09:44

23 A. It is. Thank you. So in Trans 09:44

24 Isomers 1 of Exhibit 1014 on page three, the 09:45

25 right-most column in the first paragraph, it 09:45

1 DAVID ROCKSTRAW, PhD, PE

2 recites — where is the beginning of the 09:45
3 sentence. I'm going to start in the middle 09:45
4 sentence. "Rozenaal discussed use of this 09:45
5 interesterification process to modify the 09:45
6 melting characteristics of triglycerides using 09:45
7 various catalysts, including enzymes." 09:45

8 So I'm changing my answer. The 09:46
9 answer is Trans 1 does identify the use of an 09:46
10 enzyme. 09:46

11 Q. But you said an enzyme on a 09:46
12 triglyceride, correct? 09:46

13 A. The use an enzyme on a triglyceride 09:46
14 for an interesterification, yes. 09:46

15 Q. Does it disclose the use of an 09:46
16 enzyme on jojoba wax esters? 09:46

17 A. It's the same category of chemical 09:46
18 reactions, so inherently it discloses that, 09:46
19 yes. 09:46

20 Q. But not explicitly? 09:46

21 A. It doesn't explicitly say OSI wax 09:46
22 ester, no, but a person of skill in the art 09:46
23 would recognize that those are the same classes 09:46
24 of reactions, so if an enzyme works on a 09:46
25 triglyceride, it will work on a wax ester also. 09:46

1	DAVID ROCKSTRAW, PhD, PE	
2	Q. Did you look for that Rozenaal	09:46
3	reference?	09:46
4	A. I did.	09:46
5	Q. Did you find it?	09:46
6	A. I did find it.	09:47
7	Q. Did you cite it on in your report?	09:47
8	A. I did not rely on it, so I did not	09:47
9	cite it.	09:47
10	Q. Why didn't you rely on it?	09:47
11	A. Because the content that I needed	09:47
12	was in Trans 1?	09:47
13	Q. And that sentence is referring to	09:47
14	the use of the enzyme to "modify the melting	09:47
15	characterize of the triglycerides."	09:47
16	Do you see that?	09:47
17	A. I do.	09:47
18	Q. Does Trans 1 say anything about how	09:47
19	the OSI of the transesterified product made with	09:47
20	the enzymes on triglycerides to modify the	09:48
21	melting characteristics relates to the	09:48
22	feedstock?	09:48
23	MR. LUCAS: Objection to form.	09:48
24	THE WITNESS: I'm not sure I	09:48
25	understand the question. Can you say it	09:48

1	DAVID ROCKSTRAW, PhD, PE	
2	again?	09:48
3	Q. I'm sorry. It was not a very good	09:48
4	question.	09:48
5	So this discussion is described in	09:48
6	Trans Isomers 1 as using an enzyme to modify	09:48
7	the melting characteristics of triglycerides,	09:48
8	correct?	09:48
9	A. That's correct.	09:48
10	Q. Okay. Does it say anything about	09:48
11	the impact on OSI of the modified triglycerides	09:48
12	versus the feedstock?	09:48
13	MR. LUCAS: Objection to form.	09:48
14	THE WITNESS: Throughout Trans 1	09:49
15	there is a discussion about stability of	09:49
16	the various molecules, which is a reference	09:49
17	to the oxidative stability.	09:49
18	So I don't recall that Trans 1	09:49
19	quantifies those, but they talk in relative	09:49
20	terms about stability of reactants and	09:49
21	products.	09:49
22	BY MR. KANE:	09:49
23	Q. Okay. But does this reference here	09:49
24	to Rozenaal does not describe anything with	09:49
25	respect to the properties of those products,	09:49

1	DAVID ROCKSTRAW, PhD, PE	
2	correct?	09:49
3	MR. LUCAS: Objection to form.	09:49
4	THE WITNESS: I don't understand the	09:49
5	question. Say it again.	09:49
6	Q. Well, you're pointing to Rozenaal as	09:49
7	the disclosure of using an enzymatic process,	09:49
8	correct?	09:49
9	MR. LUCAS: Objection to form.	09:49
10	THE WITNESS: I'm pointing to	09:49
11	Trans 1, which, in turn, recites Rozenaal.	09:49
12	Q. Right. And there is no discussion	09:49
13	of the impact that Rozenaal had on the OSI in	09:49
14	the modified triglycerides, correct?	09:49
15	MR. LUCAS: Objection to form.	09:50
16	THE WITNESS: I don't believe the	09:50
17	authors of Trans 1 cited Rozenaal for that	09:50
18	purpose, they cited Rozenaal to point out	09:50
19	that various catalysts can be used,	09:50
20	including enzymes, but they talk about	09:50
21	stability of reactants and products	09:50
22	throughout the article.	09:50
23	And when they talk about stability,	09:50
24	inherently they're talking about OSI.	09:51
25	BY MR. KANE:	09:51

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Okay. In the Rozenaal examples did 09:51
3 the OSI of the modified triglycerides increase 09:51
4 compared to the feedstock? 09:51

5 A. Are you asking about content of the 09:51
6 Rozenaal article? 09:51

7 Q. Yes. 09:51

8 A. I don't recall. 09:51

9 Q. And it's not in this article? 09:51

10 A. That's correct. 09:51

11 Q. Did the OSI of the triglycerides 09:51
12 modified using an enzyme in Rozenaal decrease 09:51
13 compared to feedstock? 09:51

14 A. Same answer, I don't recall. 09:51

15 Q. And it's not disclosed in this 09:51
16 article one way or the other? 09:51

17 MR. LUCAS: Objection to form. 09:51

18 THE WITNESS: Yeah. This article 09:51
19 does not discuss the results that Rozenaal 09:51
20 found, it simply identifies that Rozenaal 09:51
21 said you can use various catalysts; and in 09:52
22 that category of catalysts, enzymes is one 09:52
23 of them. 09:52

24 BY MR. KANE: 09:52

25 Q. Is OSI the only measure of 09:52

1	DAVID ROCKSTRAW, PhD, PE	
2	stability?	09:52
3	MR. LUCAS: Objection. Vague.	09:52
4	THE WITNESS: It's not --	09:52
5	MR. LUCAS: Go ahead.	09:52
6	THE WITNESS: I wouldn't expect it's	09:52
7	the only measure, it's the one that is most	09:52
8	commonly used in the fats and oils	09:52
9	analysis.	09:52
10	Q. What other measures might be used in	09:52
11	your experience?	09:52
12	A. I don't know, as I sit here today.	09:52
13	Q. So when the word "stability" is used	09:52
14	in Trans Isomers 1, you don't know what	09:53
15	measures the authors were referring to?	09:53
16	A. When they use the word "stability"	09:53
17	they're talking about how well the double bond	09:53
18	persists and whether or not that double bond	09:53
19	may be destroyed by some oxidative process.	09:53
20	Q. Can you show me in Trans Isomers 1	09:53
21	where they say that?	09:53
22	A. Where they say those words?	09:53
23	Q. Yes.	09:53
24	A. I think that's inherent knowledge of	09:53
25	a person of skill in the art.	09:53

1	DAVID ROCKSTRAW, PhD, PE	
2	Q. Do they use the word oxidative	09:53
3	stability?	09:53
4	A. They do.	09:53
5	Q. Where is that?	09:54
6	A. On page three, Column 1, the last	09:54
7	paragraph, "Partial hydrogenation of lipid	09:54
8	materials is routinely employed as a commercial	09:54
9	means of incrementally increasing the oxidative	09:54
10	stability of a lipid."	09:54
11	Q. Have you ever encountered the	09:54
12	concept of heat stability with respect to	09:54
13	lipids?	09:54
14	A. Please repeat that.	09:54
15	Q. Is heat stability also important for	09:54
16	lipids?	09:54
17	MR. LUCAS: Objection to form.	09:54
18	THE WITNESS: Well, I would refer to	09:55
19	it as thermal stability, and I would	09:55
20	consider thermal stability an important	09:55
21	property of any molecule you are	09:55
22	potentially selling as a product.	09:55
23	BY MR. KANE:	09:55
24	Q. Okay. If we continue on in	09:55
25	Exhibit 1014, we have "Trans Isomers in	09:55

1	DAVID ROCKSTRAW, PhD, PE	
2	Cosmetics, Part 2," starting on page five; is	09:55
3	that correct?	09:55
4	A. That's correct.	09:55
5	Q. And again, this was published in	09:55
6	2001?	09:55
7	A. That's correct.	09:55
8	Q. So that's 13 years before the	09:55
9	priority date for the '245 patent?	09:55
10	A. That's my understanding.	09:55
11	Q. Okay. If you look at the middle	09:55
12	column here, the last sentence in that middle	09:57
13	paragraph states, "This route to trans-free	09:57
14	oxidatively stable emollients with a broad	09:57
15	range of melting characteristics is	09:57
16	considerably less practiced and more expensive	09:57
17	than partial (or selective) hydrogenation	09:57
18	selective saturation or trans isomerization	09:57
19	reaction, all of which produced unwanted trans	09:57
20	isomers."	09:57
21	Do you see that?	09:57
22	A. I do.	09:57
23	Q. So Trans Isomer 2 is telling us this	09:58
24	is a less practiced — transesterification is a	09:58
25	less practiced reaction?	09:58

1 DAVID ROCKSTRAW, PhD, PE

2 MR. LUCAS: Objection to form. 09:58

3 THE WITNESS: Yeah. Less practiced 09:58

4 than the cited reaction, which is partial 09:58

5 or selective hydrogenation, selected 09:58

6 saturation, or trans isomerization. 09:58

7 Q. If we turn to the next page, there 09:58

8 is a table at the top labeled, "Table 2." 09:58

9 Do you see that? 09:58

10 A. Table 2 on page seven? 09:58

11 Q. Yes. 09:58

12 A. Yes. 09:58

13 Q. This is a description of chemical 09:58

14 and physical properties of jojoba esters, 09:58

15 right? 09:59

16 A. That's my understanding, yes. 09:59

17 Q. And these materials have been 09:59

18 transesterified? 09:59

19 A. Yes. They refer to them as jojoba 09:59

20 esters, which the authors have used as the 09:59

21 product of the reaction. 09:59

22 Q. And you'd agree that Table 4 does 09:59

23 not disclose the OSI of the feedstock for the 09:59

24 Jojoba Ester 30 or the Jojoba Ester 60? 09:59

25 A. Well, the Table 4 does not 09:59

1	DAVID ROCKSTRAW, PhD, PE	
2	explicitly disclose the OSI of the feedstock,	09:59
3	but it provides a person of skill in the art	09:59
4	with an understanding of what the level of the	09:59
5	OSI of that particular feedstock would be.	09:59
6	So a person of skill in the art	10:00
7	would look at the partially hydrogenated jojoba	10:00
8	oils and their oxidative stabilities and	10:00
9	recognize that a partially hydrogenated jojoba	10:00
10	oil is composed primarily of mono-unsaturated	10:00
11	molecules, as well as trans molecules. We see	10:00
12	37 percent in the last one.	10:00
13	And a person of skill in the art	10:00
14	would recognize that mono-unsaturated and trans	10:00
15	double bonds are more stable than the	10:00
16	polyunsaturated materials that are present in	10:00
17	jojoba oil.	10:00
18	And so a person of skill in the art	10:00
19	would then look at the iodine value that	10:00
20	quantifies the number of double bonds that are	10:00
21	in that particular material and would take that	10:00
22	last value, the last column, which has an OSI	10:01
23	of 49, and compare it to the Jojoba Esters 30,	10:01
24	and recognize that there's fewer double bonds	10:01
25	in that oil — that partially hydrogenated	10:01

1 DAVID ROCKSTRAW, PhD, PE

2 right there. 10:01

3 And so if a person of skill in the 10:01

4 art were to prepare a mixture of fully 10:01

5 hydrogenated oil with raw oil to a level of an 10:01

6 iodine value of 49, they would know for a fact 10:01

7 that it has a lower oxidative stability than 10:01

8 the 108 listed there; and therefore, that 10:01

9 feedstock that's used to make the Jojoba Esters 10:01

10 30 would have a lower oxidative stability than 10:01

11 the Jojoba Esters 30, which is at 165. 10:01

12 Q. So let's break that up. 10:02

13 You agree that the OSI for the 10:02

14 feedstock are not explicitly present? 10:02

15 A. The OSI for the feedstock is not 10:02

16 explicitly presented, but a cap for a 10:02

17 particular feedstock is shown in that figure. 10:02

18 Q. And when you say "cap," what do you 10:02

19 mean? 10:02

20 A. I mean, an upper bound on what the 10:02

21 oxidative stability would be for the feedstock 10:02

22 that makes Jojoba Esters 30. 10:02

23 Q. And where is the upper bound, for 10:02

24 instance, for Jojoba Esters 30? 10:02

25 A. Well, I know it's not going to be 10:02

1	DAVID ROCKSTRAW, PhD, PE	
2	higher than 108, because the partial	10:02
3	hydrogenate had an iodine value of 49, which is	10:02
4	lower than the iodine value of Jojoba Esters	10:03
5	30; meaning, there is fewer double bonds has an	10:03
6	OSI of 108.	10:03
7	So because of the logic that I just	10:03
8	described, a person of skill in the art who	10:03
9	creates a blend of fully hydrogenated with raw	10:03
10	jojoba oil would recognize that an iodine	10:03
11	valuable of 49, its oxidative stability has to	10:03
12	be less than 108.	10:03
13	Q. You understand that the catalyst	10:04
14	used in the generating materials, the	10:04
15	information in Figure 4 is a chemical catalyst?	10:04
16	A. Yeah. I understand the authors use	10:04
17	sodium methylate to catalyze the reaction.	10:04
18	Q. That's not an enzyme?	10:05
19	A. That's true.	10:05
20	Q. And if we look back at Table 4, you	10:05
21	were referring to the partial oil hydrogenate	10:05
22	at the bottom there with an OSI of 108,	10:05
23	correct?	10:05
24	A. That's correct.	10:05
25	Q. And it shows there that the percent	10:05

1	DAVID ROCKSTRAW, PhD, PE	
2	trans is 37 percent for that material?	10:05
3	A. That's correct.	10:05
4	Q. How does the amount of trans impact	10:05
5	the OSI?	10:05
6	A. Well, trans is known to be more	10:05
7	stable than cis. So as you add more trans	10:05
8	isomers to your blend, your OSI is going to go	10:05
9	up.	10:05
10	And so that was part of my point	10:05
11	earlier is that if a person of skill in the art	10:05
12	were to create a blend of fully hydrogenated	10:05
13	with the jojoba oil, which is the	10:05
14	polyunsaturated, that has zero trans isomers in	10:05
15	it, so they would recognize that its stability	10:06
16	is less, and it's oxidative stability index	10:06
17	would therefore be lower than 108.	10:06
18	And that even gives the benefit of,	10:06
19	what is that, 20 percent more — 20 percent	10:06
20	less double bonds compared to the Jojoba Esters	10:06
21	30, because it's over hydrogenated compared to	10:06
22	the Jojoba Esters 30.	10:06
23	Q. Okay. And your understanding is	10:06
24	that no double bonds are created or destroyed	10:06
25	during the transesterification process?	10:06

1	DAVID ROCKSTRAW, PhD, PE	
2	A. That's correct.	10:06
3	Q. The jojoba oil partial hydrogenate	10:06
4	has not been transesterified?	10:07
5	A. It has not been.	10:07
6	MR. KANE: We've been going about an	10:08
7	hour, do you want to take a break?	10:08
8	MR. LUCAS: Sounds great.	10:08
9	VIDEOGRAPHER: We're off the record.	10:08
10	The time is 10:07.	10:08
11	(Whereupon, proceedings recessed for	10:08
12	a short break and once again resumed.)	10:08
13	VIDEOGRAPHER: We're back on the	10:33
14	record. The time is 10:32.	10:33
15	BY MR. KANE:	10:33
16	Q. One question, Dr. Rockstraw, earlier	10:33
17	you mentioned a person at Vantage you met with	10:33
18	as a Michael S. Is it Savidakis?	10:33
19	A. That's correct. I believe he	10:33
20	pronounces it /Sav-a-dock-iss/ but I could be	10:33
21	wrong.	10:33
22	(Whereupon, Vantage Exhibit 1007, US	10:33
23	Patent Publication "Brown," 13-Pages was	10:33
24	marked for identification.)	10:33
25	BY MR. KANE:	10:34

1 DAVID ROCKSTRAW, PhD, PE

2 Q. I'll hand you Exhibit 1007. This 10:34
3 one of the references that you analyzed in your 10:34
4 opinions? 10:34

5 A. That's correct. 10:34

6 Q. And this patent was issued on 10:34
7 June 10, 2003, correct? 10:34

8 A. Please repeat that? Oh -- 10:34

9 Q. I said the patent was issued in 10:34
10 June 10, 2003? 10:34

11 A. Oh, yes. 10:34

12 Q. We talked earlier about three ways 10:34
13 to carry out a transesterification. 10:35

14 We talked about acidolysis, 10:35
15 alcoholysis, and ester-ester exchange? 10:35

16 A. I recall. 10:35

17 Q. And in Brown there's an alcoholysis 10:35
18 process described, isn't there? 10:35

19 A. Yes. In Brown, alcoholysis will be 10:36
20 one of the reactions that is recurring in his 10:36
21 reaction. 10:36

22 Q. Are there other reactions occurring? 10:36

23 A. Well, in Column 4 where Brown 10:36
24 describes his reactions he says starting 10:36
25 materials could include in items II and III, in 10:36

1 DAVID ROCKSTRAW, PhD, PE

2 Roman numerals, are the wax esters and the 10:36
3 fully hydrogenated jojoba wax esters, and these 10:36
4 would carry out an ester-ester interchange. 10:36

5 Q. Can you describe the alcoholysis 10:37
6 reaction? 10:37

7 A. Excuse me? 10:37

8 Q. Can you describe the alcoholysis 10:37
9 reaction? 10:37

10 A. The alcoholysis reaction is similar 10:37
11 to the ester-ester reaction; it just involves 10:37
12 an alcohol replacing one of the esters. 10:37

13 And so the alcohol group, the OH 10:37
14 group is separated from its organic group, 10:37
15 which is represented by the R4, and the R4 is 10:37
16 exchanged to the ester molecule. 10:37

17 Q. Is this process an enzymatic-based 10:37
18 process? 10:37

19 A. It's catalyzed so you would have to 10:37
20 identify the catalyst that you're going to use. 10:37
21 And based on what I've learned about this, I 10:37
22 would expect that an enzyme would carry out 10:37
23 this reaction, yes. 10:38

24 Q. What is disclosed in this document, 10:38
25 though? 10:38

1	DAVID ROCKSTRAW, PhD, PE	
2	MR. LUCAS: Objection. Vague.	10:38
3	THE WITNESS: So I presume you are	10:38
4	talking about what is disclosed concerning	10:38
5	catalysts?	10:38
6	Q. Yes.	10:38
7	A. At the bottom of Column 3, in the	10:38
8	last paragraph it says, "In the alcoholysis	10:38
9	reaction, examples of the base catalyst	10:38
10	materials include, but are not limited to metal	10:38
11	alkoxides, and especially alkali metal	10:38
12	alkoxides, inorganic hydroxides, especially	10:38
13	alkali metal hydroxides, and the like, such as	10:38
14	sodium methylate, sodium methoxide, sodium	10:38
15	ethoxide, potassium, calcium and lithium	10:38
16	counterparts, KOH and NaOH, eg, anhydrous	10:38
17	alkali metal hydroxides in alcohol solution,	10:38
18	with the alcohol of the solution being the	10:38
19	alcohol used in the reaction."	10:38
20	Q. And were of any those enzymatic?	10:39
21	A. No, that list does not include an	10:39
22	enzyme.	10:39
23	Q. Is there anywhere else in Brown	10:39
24	where it's disclosed using an enzyme in the	10:39
25	process?	10:39

1 DAVID ROCKSTRAW, PhD, PE

2 A. I don't believe Brown alone 10:39
3 discloses use of an enzyme. 10:39

4 Q. Does Brown disclose OSI values? 10:39

5 A. No. My recollection is that Brown 10:40
6 does not quantify changes in oxidative 10:40
7 stability. 10:40

8 Q. So it doesn't disclose an OSI for 10:40
9 the final product? 10:40

10 A. No. It does not provide 10:40
11 quantitative values for oxidative stability. 10:40

12 Q. And it doesn't provide an OSI for 10:40
13 the feedstock? 10:40

14 A. Not quantitatively, no. 10:40

15 (Whereupon, Vantage Exhibit 1008, 10:40
16 "Xu 1" Publication Dated 2003, 16-Pages was 10:40
17 marked for identification.) 10:40

18 BY MR. KANE: 10:40

19 Q. Dr. Rockstraw, handing you 10:40
20 Exhibit 1008. Have you seen this before? 10:40

21 A. I have. 10:40

22 Q. Is this one of the references you 10:40
23 relied upon? 10:40

24 A. Yes, it is. 10:40

25 Q. How would you pronounce the last 10:41

1	DAVID ROCKSTRAW, PhD, PE	
2	name here?	10:41
3	A. Xu.	10:41
4	Q. That is how I pronounced it; I	10:41
5	wanted to make sure.	10:41
6	You agree that this was published in	10:41
7	2003?	10:41
8	A. Yes, it was.	10:41
9	Q. More than a decade before the '245	10:41
10	patent?	10:41
11	A. Yes.	10:41
12	Q. And Xu does not disclose jojoba oils	10:41
13	for esters, does it?	10:41
14	A. Xu talks about a wide range of fats	10:42
15	and oils in the paper, but I don't believe	10:42
16	there is an explicit reference to jojoba as one	10:42
17	of them.	10:42
18	Q. So there is no reference to jojoba	10:42
19	wax esters at all, is there?	10:42
20	A. I'm sorry?	10:42
21	Q. There is no reference to jojoba wax	10:42
22	esters?	10:42
23	A. I don't believe there is.	10:42
24	Q. Are there OSI values provided?	10:42
25	A. No. Xu does not quantify changes in	10:42

1 DAVID ROCKSTRAW, PhD, PE

2 oxidative stability, just discusses relative 10:42

3 changes between reactants and products. 10:43

4 Q. Okay. Does it -- does Xu provide 10:43

5 information about the OSI in feedstock? 10:43

6 A. Again, I don't recall that Xu 10:43

7 quantifies oxidative stability anywhere, but it 10:43

8 discusses oxidative stability as a feature of 10:43

9 reactants in products. 10:43

10 Q. Does Xu disclose the use of an 10:43

11 enzyme catalyst? 10:43

12 A. I believe Xu does, and I believe 10:43

13 that's why I used it in my combinations. 10:43

14 Q. Okay. And are there examples 10:43

15 provided using an enzyme catalyst? 10:44

16 A. Well, Xu discusses a wide range of 10:44

17 reactions involving fats and oils where enzymes 10:44

18 or lipases are used to promote the reactions. 10:44

19 Q. And can you show me where the lipase 10:44

20 is being used to promote the reaction? 10:44

21 A. Figure 1 on the top of page two 10:44

22 shows the stoichiometry of a lipase-promoted 10:44

23 reaction involving triacylglycerols, 10:44

24 diacylglycerols, monoacylglycerols and free 10:44

25 fatty acids. 10:44

1 DAVID ROCKSTRAW, PhD, PE

2 Figure 5 on the top of page four 10:44

3 shows another enzymatic esterification promoted 10:45

4 by a lipase. 10:45

5 Figure 9 at the top of page six 10:45

6 illustrates an enzymatic acidolysis between a 10:45

7 fatty acids and a triacylglycerol. 10:45

8 Figure 11 shows an enzymatic acid 10:45

9 alcoholysis between what appears to be 10:45

10 triglycerides. 10:45

11 Figure 16 provides another. 10:45

12 Figure 18 provides another with fatty acids. 10:45

13 It looks like Figure 22 and 23 provide 10:46

14 additional. 10:46

15 And those are just the figures, 10:46

16 there may be discussions in the text about 10:46

17 specific reactions that are promoted by 10:46

18 enzymatic catalysis also. 10:46

19 Q. So let's look at page ten, it's 10:46

20 called, "Enzymatic Ester-Ester Exchange," and 10:46

21 that includes Figure 18 on the next page, which 10:46

22 is one of the figures that you identified. 10:46

23 And you'd agree with me Figure 18 is 10:47

24 showing an enzymatic ester-ester exchange 10:47

25 between two tria -- triglycerides? 10:47

1 DAVID ROCKSTRAW, PhD, PE

2 A. Yes. 10:47

3	Q. And it's with the sn-1,3 specific	10:47
4	lipase?	10:47

5 A. That is the catalyst, yes. 10:47

6 Q. And you understand that sn-1,3 is a 10:47

7 lipase that's specific to triglycerides? 10:47

8 A. I don't recall what the sn-1,3 10:47
9 represents in the name of the lipase. 10:47

10 Q. And in this section the only 10:48
11 examples given is a triglyceride, correct? 10:48

12 MR. LUCAS: Objection to form. 10:48

13	THE WITNESS: It's true in the	10:49
14	section the only example shown in the	10:49
15	figure is for a triglyceride, but the text	10:49
16	of the section begins with the language "an	10:50
17	ester-ester exchange is a reaction between	10:50
18	two esters," and so that is not limiting it	10:50
19	to triglycerides.	10:50

20 BY MR. KANE: 10:50

21 Q. The section doesn't mention 10:50
22 transesterifying jojoba wax esters, does it? 10:50

23 A. Well, you won't find the word 10:50
24 "jojoba" in there, but in the sentence that I 10:50
25 just read, "ester-ester exchange" is a reaction 10:50

1 DAVID ROCKSTRAW, PhD, PE

2 between two esters; that is general enough to 10:50

3 include the reaction between two jojoba esters. 10:50

4 And if we actually go on reading 10:50

5 that section, "Chemical ester-ester exchange 10:50

6 often referred to as chemical 10:50

7 interesterification is dominantly used for the 10:51

8 randomization of oils and fats, which has been 10:51

9 widely applied in the industry for oil and fat 10:51

10 modification. " 10:51

11 There is no limitation to 10:51

12 triglycerides in that discussion. 10:51

13 Q. But there is no example other than 10:51

14 triglycerides, correct? 10:51

15 A. No, the author choose to use the 10:51

16 triglycerides as an example. My guess is in 10:51

17 that timeframe, biodiesel was a big thing, and 10:51

18 triglycerides were receiving a lot of attention 10:51

19 in publications. 10:51

20 Q. Do you know if jojoba oil has sn-1 10:51

21 at three positions? 10:51

22 A. I don't understand the question. 10:51

23 Q. Well, you see the lipase is 10:51

24 identified as an sn-1,3? 10:51

25 A. I do. 10:52

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Do you know -- does jojoba have that 10:52
3 type of structure? 10:52

4 A. No. As I noted, I don't recall what 10:52
5 the sn-1,3 represents in the name of the 10:52
6 lipase. 10:52

7 (Whereupon, Vantage Exhibit 1009, 10:52
8 Sessa Article, "Derivation of a Cocoa 10:52
9 Butter Equivalent from Jojoba 10:52
10 Transesterified Ester via a Differential 10:52
11 Scanning Calorimetry Index," Dated 1996, 10:52
12 4-Pages was marked for identification.) 10:52

13 BY MR. KANE: 10:52

14 Q. Handing you what has been marked 10:52
15 Exhibit 1009, this is one of the references 10:52
16 that you relied upon in your opinion? 10:52

17 A. It is. 10:52

18 Q. And this was published in 1996? 10:52

19 A. Yes, it was. 10:53

20 Q. And you would agree that Sessa does 10:53
21 not disclose OSI information? 10:53

22 MR. LUCAS: Objection. Vague. 10:53

23 THE WITNESS: I would agree that 10:53
24 Sessa does not quantify OSI value, but 10:53
25 inherently talks about stability, which is 10:53

1	DAVID ROCKSTRAW, PhD, PE	
2	a discussion of the OSI, essentially.	10:53
3	BY MR. KANE:	10:53
4	Q. But it could be a discussion of	10:53
5	other types of stability as well?	10:54
6	A. Well, stability in general talks	10:54
7	about the persistence of the double bond.	10:54
8	Q. That's the only characteristic of	10:54
9	the material that's involved in stability?	10:54
10	MR. LUCAS: Objection to form.	10:54
11	THE WITNESS: When it comes to	10:54
12	esters used in foods and cosmetics, that is	10:54
13	the primary concern is the stability of	10:54
14	that double bond, because that is	10:54
15	inherently the first thing that breaks down	10:54
16	and causes over-acidity of the material.	10:54
17	Q. Does Sessa disclose the use of a	10:55
18	lipase catalyst?	10:55
19	A. My recollection is that it does not.	10:55
20	(Whereupon, Vantage Exhibit 1015, US	10:55
21	Patent Publication "Kodali" 22-Pages was	10:55
22	marked for identification.)	10:55
23	BY MR. KANE:	10:55
24	Q. I'll hand you what was marked as	10:55
25	Exhibit 1015.	10:55

1 DAVID ROCKSTRAW, PhD, PE

2 And this is one of the references 10:56
3 that you relied upon in your opinion? 10:56

4 A. It is. 10:56

5 Q. And this is a Patent Publication to 10:56
6 Kodali dated August 11, 2005? 10:56

7 A. That's correct. 10:56

8 Q. If we turn to paragraph five of the 10:57
9 specification under the heading "Summary. " 10:57
10 Do you see that? 10:57

11 A. I do. 10:57

12 Q. It says, "The invention is based on 10:57
13 transesterifying short saturated fatty acid 10:57
14 esters with a triacylglycerol containing oils 10:57
15 such as vegetable oils to obtain oils having 10:57
16 improved lubrication properties. " 10:57

17 Do you see that? 10:58

18 A. I do. 10:58

19 Q. So as described there, the focus of 10:58
20 the invention is to improve the lubrication 10:58
21 properties of triglycerides, such as vegetable 10:58
22 oils? 10:58

23 MR. LUCAS: Objection to form. 10:58

24 THE WITNESS: I'm sorry, repeat the 10:58
25 question. 10:58

1 DAVID ROCKSTRAW, PhD, PE

2 Q. So the invention as described here 10:58
3 is based on transesterifying triglycerides such 10:58
4 as vegetable oils, to improve their lubrication 10:58
5 properties? 10:58

6 MR. LUCAS: Same objection. 10:58

7 THE WITNESS: Well, that's one 10:58
8 feature. If we read on in the same 10:58
9 paragraph, Kodali goes on to explain that 10:58
10 the process also improves oxidative 10:58
11 stability. 10:58

12 Q. Does Kodali describe 10:59
13 transesterifying oils that are not 10:59
14 triglycerides? 10:59

15 A. It would appear in some of the early 11:00
16 embodiments Kodali includes fats and oils that 11:00
17 are not triglycerides. 11:00

18 Q. Where do you see that? 11:00

19 A. For example, paragraph 15 -- or 14. 11:00
20 "An alternative embodiment the invention 11:00
21 features an oil that includes a non-glycerol 11:00
22 polyol ester. The non-glycerol polyol ester is 11:00
23 characterized by the formula," and then we see 11:00
24 that formula is not a formula for a 11:00
25 triglyceride. 11:00

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Kodali uses chemical catalysts? 11:01

3 A. In the examples that Kodali presents 11:01

4 he uses, I believe, it's primarily sodium 11:01

5 methyrate or sulfuric acid as his catalyst. 11:01

6 Q. Does Kodali have any disclosures 11:01

7 with respect to using an enzymatic catalyst? 11:01

8 A. I don't believe Kodali does. But 11:01

9 Kodali was published two years after Xu, so a 11:01

10 person of skill in the art reading Kodali will 11:01

11 recognize that an enzymatic catalyst is an 11:01

12 alternative that could potentially be used. 11:01

13 Q. If you turn to example four, it 11:02

14 starts at paragraph 72. 11:02

15 And that's described in what's 11:02

16 titled, "Transesterification of Vegetable Oils 11:02

17 With Short Chain Fatty Esters." 11:02

18 Do you see that? 11:02

19 A. I do. 11:02

20 Q. And you would agree that is an 11:02

21 ester-ester reaction? 11:02

22 A. I would. 11:02

23 Q. And then example five starts with 11:02

24 paragraph 78 is titled, "Characterization of 11:02

25 Transesterified Oil Products." 11:02

1	DAVID ROCKSTRAW, PhD, PE	
2	Do you see that?	11:02
3	A. I do.	11:02
4	Q. And then the results of these two	11:02
5	examples appear on the next page, Table 1?	11:03
6	A. I see it.	11:03
7	Q. And you see paragraph 81 then	11:03
8	states, "The oxidative stabilities of the	11:03
9	transesterified products without added	11:03
10	antioxidants were lower than the starting oil,	11:03
11	which is thought to be due to the loss of	11:03
12	tocopherols from the canola oil during the	11:03
13	production of the transesterified products."	11:03
14	Do you see that?	11:03
15	A. I do.	11:03
16	Q. So in this case using this chemical	11:04
17	catalyst, the oxidative stability of the	11:04
18	resulting product was less than the feedstock,	11:04
19	correct?	11:04
20	MR. LUCAS: Objection to form.	11:04
21	THE WITNESS: That's true, but	11:04
22	Kodali does not attribute that to the	11:04
23	esterification itself.	11:04
24	If we read on in that paragraph	11:04
25	Kodali attributes that to the loss of the	11:04

1	DAVID ROCKSTRAW, PhD, PE	
2	antioxidants that were present in the	11:04
3	feedstock and suggests that this could be	11:04
4	fixed by improving the reaction method to	11:04
5	preserve the tocopherols during the	11:04
6	reaction.	11:04
7	(Whereupon, Vantage Exhibit 1017,	11:05
8	"Xu 2" Publication Dated 2006, 39-Pages was	11:05
9	marked for identification.)	11:05
10	BY MR. KANE:	11:05
11	Q. Handing you what's been marked as	11:05
12	Exhibit 1017.	11:05
13	This is another reference that you	11:05
14	relied upon?	11:05
15	A. It is.	11:05
16	Q. And this is again Dr. Xu.	11:05
17	So we refer to this as "Xu 2"?	11:06
18	A. That's correct.	11:06
19	Q. And this was published in 2006?	11:06
20	A. I don't see a publication on the	11:06
21	document itself. Let me reference my	11:06
22	Declaration here.	11:06
23	Yes.	11:06
24	Q. So roughly a decade before the date	11:06
25	of the '245 patent?	11:06

1	DAVID ROCKSTRAW, PhD, PE	
2	A. Correct.	11:06
3	Q. If we turn to page 245.	11:06
4	A. Okay.	11:08
5	Q. Do you see the bottom paragraph	11:08
6	there. It starts off with the sentence, "The	11:08
7	degree of conversion of enzymatic	11:08
8	interesterification has significant effects on	11:08
9	a triacylglycerol composition, crystallization	11:08
10	behavior, and storage stability of the	11:08
11	products. "	11:08
12	Do you see that?	11:08
13	A. I do.	11:08
14	Q. So this paragraph is talking about	11:08
15	triglycerides again?	11:08
16	A. It is.	11:08
17	Q. And then the -- kind of the last --	11:09
18	second sentence from the bottom starts off	11:09
19	with, "The margarines produced from	11:09
20	enzymatically interesterified produced from the	11:09
21	fats generally had much lower peroxide values	11:09
22	compared to the margarine produced from the	11:09
23	chemically randomized fats stored at 25	11:09
24	degrees C. "	11:09
25	Do you see that?	11:09

1	DAVID ROCKSTRAW, PhD, PE	
2	A. I see that.	11:09
3	Q. And then it continues to say, "That	11:09
4	this confirms that the enzymatic	11:09
5	interesterification has advantages for	11:09
6	oxidative stability of the products," right?	11:09
7	A. I see that.	11:09
8	Q. So that's -- it's comparing their --	11:09
9	the chemical process versus the enzymatic	11:09
10	process?	11:09
11	MR. LUCAS: Objection to form.	11:10
12	THE WITNESS: They are comparing	11:10
13	enzymatic process to chemical process	11:10
14	there, yes.	11:10
15	Q. But there is no comparison between	11:10
16	the OSI or oxidative stability of the product	11:10
17	versus the oxidative stability of the	11:10
18	feedstock, correct?	11:10
19	A. Not in this paragraph that you've	11:10
20	directed me to.	11:10
21	Q. Is there anywhere else in the	11:10
22	document that would have that kind of	11:10
23	information?	11:10
24	A. I would either have to go through my	11:10
25	Declaration to find where I cited this or read	11:10

1 DAVID ROCKSTRAW, PhD, PE

2 the document itself to recall. 11:10

3 Q. Well, why don't we look at your 11:10

4 Declaration then. 11:10

5 So I believe, Dr. Rockstraw you cite 11:11

6 this at page 12 of your Declaration, the very, 11:11

7 very bottom of Exhibit 1017. 11:11

8 There is some other citations I can 11:12

9 also give you. 11:12

10 A. Excuse me? 11:12

11 Q. There are other citations I can also 11:12

12 provide, if you are ready to move on. 11:12

13 A. Citations within this document? 11:12

14 Q. Yes, within your Declaration citing 11:12

15 to this document. 11:12

16 A. I believe the sentence that you did 11:13

17 not read to me that I cited in my report is "A 11:13

18 similar observation was also apparent in a pure 11:13

19 oil system," which I believe refers to the 11:13

20 feedstocks themselves. 11:13

21 They're not margarines, they haven't 11:13

22 been esterified or hydrogenated. 11:13

23 Q. Can you show me where that appears 11:13

24 in 1017? 11:13

25 A. It's in the sentence between the two 11:13

1	DAVID ROCKSTRAW, PhD, PE	
2	you read to me. The bottom of page two, two	11:13
3	sentences up.	11:13
4	Q. I must be having a problem here. I	11:15
5	can't find that sentence. Where is it?	11:15
6	A. Right here.	11:15
7	(Witness displays location to	11:15
8	attorney on page 12.)	11:15
9	Q. But wherein the paragraph?	11:15
10	MR. LUCAS: It's the sentence that	11:15
11	you omitted.	11:15
12	THE WITNESS: It's similar.	11:15
13	Q. Oh, I see?	11:15
14	MR. LUCAS: You omitted the sentence	11:15
15	when you read the quote.	11:15
16	MR. KANE: Oh, okay. All right.	11:15
17	Q. So -- but the pure oil -- and your	11:15
18	understanding is the pure oil system does not	11:15
19	have any hydrogenated material?	11:15
20	A. That would have been my	11:15
21	understanding, yes.	11:15
22	Q. So you agree with me, Dr. Rockstraw,	11:16
23	that you have not seen a single reference that	11:16
24	specifically discloses transesterifying jojoba	11:16
25	wax esters with a lipase, correct?	11:16

1 DAVID ROCKSTRAW, PhD, PE

2 A. No, I don't believe that's true. We 11:16
3 looked at Trans 1, which discusses just that. 11:16

4 Q. The Rozenaal reference we discussed 11:16
5 earlier? 11:16

6 A. I call it the Trans 1 reference. 11:16
7 They refer to Rozenaal, but Rozenaal says that 11:16
8 it can be carried out with enzymes, yes. 11:16

9 Q. It says that a triglyceride 11:16
10 conversion can be carried out with enzymes? 11:16

11 A. But a person of skill in the art 11:16
12 would never restrict their understanding of 11:16
13 that sentence to mean just triglycerides. 11:16

14 This is a discussion of fats and 11:17
15 oils, so something that works on triglycerides 11:17
16 is more than likely to work also on other fats 11:17
17 and oils. 11:17

18 Q. But in Trans 1 there is no explicit 11:17
19 disclosure of using -- there is no example 11:17
20 given -- 11:17

21 There is no example in any of the 11:17
22 references that you've cited of an ester-ester 11:17
23 exchange using a lipase with jojoba wax esters? 11:17

24 MR. LUCAS: Objection to form. 11:17

25 THE WITNESS: I'm sorry, say it one 11:17

1 DAVID ROCKSTRAW, PhD, PE

2 more time, it was a long question. 11:17

3 Q. Sure. There is no example in any of 11:17

4 the references that you have cited of an 11:17

5 ester-ester exchange using a lipase with jojoba 11:17

6 wax esters? 11:17

7 MR. LUCAS: Objection to form. 11:18

8 THE WITNESS: And I would disagree, 11:18

9 because I believe the Trans article says 11:18

10 just that. 11:18

11 Q. I asked for example, sir. 11:18

12 Is there an example of an 11:18

13 ester-ester exchange using a lipase with jojoba 11:18

14 wax esters? 11:18

15 MR. LUCAS: Objection. Vague. 11:18

16 THE WITNESS: That is Trans 1. 11:18

17 Q. Okay. But when I say "example" I 11:18

18 mean a chemical reaction illustrated and the 11:18

19 results of that reaction disclosed? 11:18

20 MR. LUCAS: Same objection. 11:18

21 THE WITNESS: Look the reaction is 11:18

22 disclosed in Trans 1; the results are 11:19

23 disclosed in Trans 2. 11:19

24 Q. The results of the lipase reaction 11:19

25 on jojoba wax esters? Can you show me that? 11:19

1 DAVID ROCKSTRAW, PhD, PE

2 A. No. That's correct, the results are 11:19
3 for use of sodium methylate. 11:19

4 Q. Correct. So you would agree then 11:19
5 that none of the references that you have cited 11:19
6 include an example; meaning, the results of the 11:19
7 chemical reaction of an ester-ester exchange 11:19
8 using lipase on jojoba wax esters? 11:19

9 MR. LUCAS: Objection to form. 11:19

10 THE WITNESS: The quantified 11:19
11 examples do not use the lipase as the basis 11:20
12 for a catalyst. 11:20

13 Q. So we've been talking about 11:20
14 triglycerides and the jojoba wax esters in the 11:20
15 prior art, but I want to discuss that in a 11:20
16 little more detail, if we could. 11:20

17 A. Okay. 11:20

18 Q. And we discussed earlier that the Xu 11:20
19 references that you refer to, refer to -- 11:20

20 We discussed earlier example six, I 11:20
21 believe in Xu that was the enzymatic schematic 11:20
22 ester-ester exchange involving triglycerides, 11:21
23 correct? 11:21

24 A. Can you direct me to the example 11:21
25 you're speaking about? 11:21

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Sure. Yes. So if you go to 11:21

3 Exhibit 1008, it begins on page ten? 11:21

4 A. Is that Xu 1 or Xu 2? 11:21

5 Q. Xu 1. Okay. Are you there? 11:21

6 A. Page ten of 1008? 11:22

7 Q. Right. And so as we discussed 11:22

8 earlier, that example is the use of an enzyme; 11:22

9 specifically, the sn-1,3 lipase for an 11:22

10 ester-ester exchange involving triglycerides, 11:22

11 correct? 11:22

12 A. The example shown in Figure 18 and 11:22

13 discussed later in Section 6, yes. 11:22

14 Q. And you believe jojoba wax esters 11:22

15 and triglycerides are different molecules, 11:23

16 right? 11:23

17 A. They are. 11:23

18 Q. And you'll agree that triglycerides 11:23

19 have a glycerol head? 11:23

20 A. They do. 11:23

21 Q. And three fatty acid chains? 11:23

22 A. That's correct. 11:23

23 Q. And those fatty acids chains tend to 11:23

24 be 12 to 18 carbons in length? 11:23

25 MR. LUCAS: Objection to form. 11:23

1 DAVID ROCKSTRAW, PhD, PE

2 THE WITNESS: It depends upon the 11:23
3 nature of the triglyceride you're speaking 11:23
4 about, but I believe -- I don't know that 11:23
5 it's notated in this particular example. 11:23

6 Q. But based on your experience, do you 11:23
7 have any understanding of what the typical 11:23
8 triglyceride carbon chain length is? 11:23

9 A. It depends on the source of the 11:23
10 triglyceride. 11:23

11 Q. You would agree that ester bond 11:23
12 forms from the reaction between the glycerol 11:23
13 head and the fatty acids groups? 11:23

14 MR. LUCAS: Objection to form. 11:24

15 THE WITNESS: Was that a complete 11:24
16 sentence? 11:24

17 Q. Yes. 11:24

18 A. Please stay it again. 11:24

19 Q. Sure. You would agree that the 11:24
20 ester bond forms from the reaction between the 11:24
21 glycerol head and the fatty acid groups in the 11:24
22 triglyceride? 11:24

23 A. Yes. 11:24

24 Q. And we saw earlier in one of the 11:24
25 references it said that jojoba oil was unique 11:24

1	DAVID ROCKSTRAW, PhD, PE	
2	because it is not a triglyceride, correct?	11:24
3	MR. LUCAS: Objection to form.	11:24
4	THE WITNESS: It is not a	11:24
5	triglyceride, that is correct.	11:24
6	Q. And jojoba wax esters do not have a	11:24
7	glycerol head, do they?	11:24
8	A. They have an ester head.	11:24
9	Q. Which is not a glycerol head?	11:24
10	A. It is not.	11:24
11	Q. And they do not have three fatty	11:24
12	acid chains?	11:24
13	A. No. A glycerol head is designed to	11:24
14	hold three fatty acids; the ester head is	11:24
15	designed to hold two.	11:24
16	Q. And the jojoba oil is a wax ester?	11:25
17	A. That's correct.	11:25
18	Q. And it results from the reaction	11:25
19	between a fatty acid and an alcohol?	11:25
20	A. Please repeat the question.	11:25
21	Q. The jojoba wax is a reaction between	11:25
22	the fatty acid and alcohol?	11:25
23	MR. LUCAS: Objection to form.	11:25
24	THE WITNESS: Jojoba oil is	11:25
25	extracted from the jojoba seed.	11:25

1	DAVID ROCKSTRAW, PhD, PE	
2	Q. Okay. It has a carbon at the C-9	11:25
3	position in the chain?	11:25
4	Oh, it has a double bond at the C-9	11:25
5	position? I'm sorry.	11:25
6	MR. LUCAS: Is that a question?	11:25
7	MR. KANE: Yes.	11:25
8	Q. Jojoba oil has a double bond at the	11:25
9	C-9 position?	11:25
10	MR. LUCAS: Objection to form.	11:25
11	THE WITNESS: Yeah. According to	11:27
12	Trans 1, that would be appear to be	11:27
13	correct.	11:27
14	Q. It typically has a carbon chain link	11:27
15	of roughly 20 to 24?	11:27
16	A. Again, you're talking about the	11:27
17	fatty acids in jojoba oil?	11:27
18	Q. Correct.	11:27
19	A. The Figure 2 in Cummings shows that	11:27
20	the length of the fatty acid chains are 18 to	11:27
21	24.	11:27
22	Q. So you agree with that?	11:27
23	A. 18 to 24.	11:27
24	Q. And so jojoba oil is both	11:28
25	structurally and sterically different from	11:28

1	DAVID ROCKSTRAW, PhD, PE	
2	triglyceride?	11:28
3	MR. LUCAS: Objection to form.	11:28
4	THE WITNESS: Well, it's a different	11:28
5	molecular structure, so, yes, it's	11:28
6	structurally different than a triglyceride.	11:28
7	Q. Okay. And in any ester-ester	11:28
8	transesterification process are double bonds	11:28
9	created or destroyed?	11:28
10	A. They are not.	11:28
11	Q. And you agree that a wax ester with	11:28
12	no double bonds is a fully saturated wax ester?	11:28
13	A. That's correct.	11:28
14	Q. And you agree that a fully saturated	11:28
15	wax ester is oxidatively stable?	11:28
16	MR. LUCAS: Objection to form.	11:29
17	THE WITNESS: It's oxidatively more	11:29
18	stable than the mono or polyunsaturated	11:29
19	equivalent.	11:29
20	Q. And that's because double bonds are	11:29
21	prone to oxidation?	11:29
22	A. That's correct.	11:29
23	Q. So when a number of double bond in	11:29
24	the material goes down, the material is less	11:29
25	prone to oxidation?	11:29

1 DAVID ROCKSTRAW, PhD, PE

2 A. I'm sorry, repeat the question. 11:29

3 Q. Sure. If during a -- would you 11:29

4 agree that if the number of double bonds stays 11:29

5 the same during an ester-ester exchange, the 11:29

6 oxidative stability should stay the same? 11:30

7 A. No. 11:30

8 Q. Why not? 11:30

9 A. Because it's not just the number of 11:30

10 double bonds that dictates oxidative stability, 11:30

11 it's their orientation in the blend of 11:30

12 molecules also. 11:30

13 And so as I discussed earlier when 11:30

14 we were discussing the table in Trans 2, a 11:30

15 molecule that is di-unsaturated is less stable 11:30

16 than a molecule that is mono-unsaturated. 11:30

17 Q. But if you -- when you measure the 11:30

18 oxidative stability of the feedstock before the 11:30

19 transesterification process? 11:30

20 A. Can you repeat that? 11:30

21 Q. Can you measure the oxidative 11:30

22 stability of feedstock before the 11:30

23 transesterification process? 11:30

24 A. Sure. 11:30

25 Q. And it has some number of double 11:30

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1 DAVID ROCKSTRAW, PhD, PE

2 Q. But don't you, in that process, lose 11:31

3 some of the fully saturated feedstock? 11:32

4 A. You do. 11:32

5 Q. Doesn't that make it more unstable? 11:32

6 A. It does not, because you're -- in 11:32

7 the process you're losing the di-unsaturated, 11:32

8 which are the least stable of the double bonds; 11:32

9 you're promoting them to mono-unsaturated, 11:32

10 which are more stable than the di-unsaturated. 11:32

11 So despite the fact that you have 11:32

12 the same number of double bonds, you've put 11:32

13 them in a molecule that is inherently more 11:32

14 stable. 11:32

15 Q. And why do you say it's inherently 11:32

16 more stable? 11:32

17 A. Because it's known in the general 11:32

18 literature that a mono-unsaturated species is 11:32

19 more oxidatively stable than a di-unsaturated 11:32

20 species. 11:32

21 Q. Do you cite anything for that in 11:32

22 your Declaration for that proposition? 11:32

23 A. I don't recall. 11:33

24 Q. In your Declaration you use iodine 11:33

25 values to determine the degree of saturation in 11:33

1	DAVID ROCKSTRAW, PhD, PE	
2	the material?	11:33
3	A. I do.	11:33
4	Q. And the iodine value correlates the	11:33
5	number of double bonds in the product?	11:33
6	A. That's correct.	11:33
7	Q. So let's look at that.	11:34
8	So I think that discussion starts on	11:34
9	page 47 of the paragraph 100?	11:34
10	A. Correct.	11:34
11	Q. Okay. Back to the discussion we	11:34
12	just had, you can measure the iodine value in	11:35
13	the feedstock, correct?	11:35
14	A. You can.	11:35
15	Q. Okay. And you can measure the	11:35
16	iodine value of the transesterified product,	11:35
17	correct?	11:35
18	A. Correct.	11:35
19	Q. Again, as we discussed, it will be	11:35
20	the same number of double bonds in both the	11:35
21	feedstock and the product?	11:35
22	A. Correct.	11:35
23	Q. Will the iodine value change?	11:35
24	A. No.	11:35
25	Q. It will be the same?	11:35

1	DAVID ROCKSTRAW, PhD, PE	
2	A. It will be.	11:35
3	Q. So unlike the oxidative stability	11:35
4	the iodine stays the same?	11:35
5	A. That's correct.	11:35
6	And if you'd like, I can point you	11:35
7	to a quantified example in the implicit record	11:36
8	of the case.	11:36
9	Q. Okay.	11:36
10	A. In the file wrapper for the '245	11:36
11	patent, Mr. Addy submitted a Declaration in	11:36
12	2021 whereby he carried out two	11:36
13	interesterifications; one using an enzyme	11:36
14	catalyst, and one using a chemical catalyst to	11:36
15	show changes in OSI.	11:36
16	He also quantified the iodine value	11:36
17	of all three: The feedstock and both of the	11:36
18	products, and all three iodine values are the	11:36
19	same.	11:36
20	Q. And would that be true for --	11:37
21	well --	11:37
22	So you are saying that the iodine	11:37
23	values are the same whether it's a chemical	11:37
24	catalyst or an enzymatic catalyst, correct?	11:37
25	MR. LUCAS: Objection to form.	11:37

1 DAVID ROCKSTRAW, PhD, PE

2 THE WITNESS: I'm saying that the 11:37

3 iodine values are the same because the 11:37

4 interesterification regardless of catalyst, 11:37

5 does not create or destroy double bonds. 11:37

6 Q. Okay. If we look at paragraph 104 11:37

7 in the equations that you generated in order to 11:38

8 estimate the ratio in the feedstock, do you 11:38

9 need to make assumptions in order to apply that 11:38

10 type of analysis? 11:38

11 MR. LUCAS: Objection. Vague. 11:38

12 THE WITNESS: I made no assumptions, 11:38

13 no. 11:38

14 Q. Do you have to know anything about 11:38

15 reaction time? 11:38

16 MR. LUCAS: Objection. Vague. 11:38

17 THE WITNESS: No. 11:38

18 Q. Do you have to know anything about 11:38

19 whether the products were further processed to 11:39

20 eliminate side reaction products? 11:39

21 A. No. The number of double bonds will 11:39

22 remain the same, regardless of the extent of 11:39

23 conversion, and regardless of the side 11:39

24 reactions. 11:39

25 Even if you cleave the esters to 11:39

1 DAVID ROCKSTRAW, PhD, PE

2 make fatty acids, the double bonds remain the 11:39
3 same. So when you titrate them with iodine, 11:39
4 you'll see that double bond. 11:39

5 Q. So what is your assumption with 11:39
6 regard to the fatty acid content of the 11:39
7 transesterified product? 11:39

8 MR. LUCAS: Objection. Misstates 11:39
9 testimony. 11:39

10 THE WITNESS: I'm not sure I 11:39
11 understand the question. I said earlier I 11:39
12 made no assumptions in this analysis. 11:39

13 Q. Okay. Are there different types of 11:39
14 fatty acid in the product? 11:39

15 MR. LUCAS: Objection to form. 11:39

16 THE WITNESS: Well, the product is 11:40
17 esters, and esters are composed of a pair 11:40
18 of fatty acids, and the potential fatty 11:40
19 acids are listed in Figure 2 of the 11:40
20 Cummings article. 11:40

21 So there are -- you can actually 11:40
22 count the number of different combinations 11:40
23 there are in Figure 2. 11:40

24 BY MR. KANE: 11:40

25 Q. In Cummings, those fatty acids were 11:40

1	DAVID ROCKSTRAW, PhD, PE	
2	generated using a chemical process — chemical	11:40
3	catalyst, correct?	11:40
4	A. That's correct.	11:40
5	Q. Would it be different if you used a	11:40
6	lipase-based process?	11:40
7	MR. LUCAS: Objection to form.	11:40
8	Vague.	11:40
9	THE WITNESS: The distribution of	11:40
10	components?	11:40
11	Q. Yes.	11:40
12	A. No.	11:40
13	Q. Isn't there a factor that's	11:40
14	associated with fatty acids?	11:40
15	A. I'm sorry, say that again?	11:40
16	Q. Aren't there factors that are	11:41
17	associated with specific fatty acids in making	11:41
18	this kind of analysis?	11:41
19	A. Are you talking about the factors	11:41
20	found in Exhibits 1025 and 1026 that I cite in	11:41
21	paragraph 102?	11:41
22	Q. Yes.	11:41
23	A. Yeah. Those are unnecessary for the	11:41
24	analysis I performed, because I was not	11:41
25	attempting to determine the iodine value of the	11:41

1 DAVID ROCKSTRAW, PhD, PE

2 jojoba ester mixture of products. I had that 11:41
3 value given to me, and so I didn't have to go 11:41
4 through that analysis. 11:41

5 I cited these two exhibits because 11:41
6 they demonstrate to me that the iodine value is 11:41
7 a simple linear combination of the iodine 11:41
8 values of the individual components summed up 11:41
9 weighted based on their weight fraction in 11:41
10 solution. 11:42

11 So if you can estimate the iodine 11:42
12 value based on the individual components by 11:42
13 linear combinations, that further suggests that 11:42
14 the iodine values of a blend can be quantified 11:42
15 by a linear combination of known iodine values 11:42
16 of existing blends. 11:42

17 VIDEOGRAPHER: We're off the record. 11:43

18 The time is 11:42. 11:43

19 (Whereupon, proceedings recessed for 11:43
20 a lunch break and once again resumed.) 11:43

21 VIDEOGRAPHER: We're back on the 12:34
22 record. The time is 12:33. 12:34

23 BY MR. KANE: 12:34

24 Q. Welcome back, Dr. Rockstraw. 12:34

25 A. Thank you. 12:34

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Now, I think before lunch there you 12:34
3 had stated that it was your opinion that you 12:34
4 get the same result in the transesterification 12:34
5 process, whether or not you're using a lipase 12:34
6 or a chemical catalyst? 12:35

7 MR. LUCAS: Objection. Misstates 12:35
8 testimony. 12:35

9 THE WITNESS: The same result? Are 12:35
10 you referring to iodine value measurement? 12:35

11 Q. Any characteristics. 12:35

12 A. No, I don't believe I said that or 12:35
13 expressed that opinion. 12:35

14 Q. Do you not agree with that? 12:35

15 A. The question is very vague. 12:35

16 In some cases, yes, the iodine value 12:35
17 is going to be the same, regardless. 12:35

18 Q. Okay. What about the OSI? 12:35

19 A. That's going to be depend upon the 12:35
20 nature of the materials being transesterified. 12:35

21 Q. If I take the same material and just 12:35
22 transesterify it; one with a chemical catalyst 12:35
23 and one with a lipase catalyst? 12:35

24 MR. LUCAS: Objection to form. 12:35

25 THE WITNESS: Well, I expect the OSI 12:35

1 DAVID ROCKSTRAW, PhD, PE

2 will increase after the esterification in 12:35
3 both cases; the magnitude of that increase 12:35
4 may not be the same. 12:35

5 Q. And why would the magnitude not be 12:35
6 the same? 12:36

7 A. Well, the reactions that occur in 12:36
8 the reactor are complex, and in some cases, 12:36
9 there are other things going on. 12:36

10 For instance, the presence of 12:36
11 tocopherols may be effected by one reaction 12:36
12 more than the other. And tocopherols known as 12:36
13 antioxidants, as you lose those, you'll have a 12:36
14 difference in the OSI, because of that loss of 12:36
15 tocopherols. 12:36

16 Q. Okay. And what's your reasoning for 12:36
17 the expectation that either process the OSI 12:36
18 would tend to increase? 12:36

19 A. I'm sorry, repeat the question. 12:36

20 Q. When I asked you a minute ago, you 12:36
21 said in either -- using a chemical catalyst or 12:36
22 a lipase catalyst, you would expect the OSI to 12:36
23 increase. 12:37

24 A. All other factors being equal, yes. 12:37

25 Q. And why is that? 12:37

1 DAVID ROCKSTRAW, PhD, PE

2 A. Well, because the esterification is 12:37
3 modifying the degree of homogeneity by 12:37
4 randomizing the various lipids on the wax 12:37
5 ester, and that is what leads to the increase 12:37
6 in oxidative stability. 12:37

7 Q. So we've been talking about 12:37
8 enzymatic catalysts. So what is an enzymatic 12:37
9 catalysts? 12:37

10 A. It's enzyme that promotes a 12:37
11 reaction. 12:37

12 Q. How do enzymes promote a reaction? 12:37

13 A. Well, catalysts in general promote a 12:37
14 reaction by changing the energy state of the 12:38
15 reactants to permit a transition to products; 12:38
16 and an enzyme catalyst works the same way as 12:38
17 any other catalyst. 12:38

18 Q. Would you agree with me that the 12:38
19 enzymes have reaction sites with specific 12:38
20 geometries? 12:38

21 A. There are a range of enzymes that 12:38
22 can be used to catalyze different reactions, 12:38
23 and so a person of skill in the art would seek 12:38
24 out that enzyme that optimizes their reaction 12:38
25 they're particularly interested in. 12:38

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Okay. But my question was whether 12:38
3 you agree that enzymes have reaction sites with 12:38
4 specific geometries? 12:38

5 A. Yeah, the question is not clear to 12:38
6 me. A catalyst theoretically have reaction 12:38
7 sites at which absorption occurs that causes 12:39
8 the change in the energy state of the molecule, 12:39
9 and so an enzyme is no different than any other 12:39
10 catalyst in that regard. 12:39

11 Q. So then do all catalysts have 12:39
12 specific geometries at the reaction site? 12:39

13 A. They do. 12:39

14 Q. Including enzymes? 12:39

15 MR. LUCAS: Objection of form. 12:39

16 THE WITNESS: Including enzymes. 12:39

17 Q. Okay. 12:39

18 A. And I would say that's true of solid 12:39
19 catalysts; they may not necessarily be true of 12:39
20 liquid catalysts. 12:39

21 Q. Why do you draw the distinction? 12:39

22 A. Well, liquid catalysts don't have 12:39
23 sites. 12:39

24 Q. Okay. What is the difference 12:39
25 between a lipase and an esterase? 12:39

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1 DAVID ROCKSTRAW, PhD, PE

2 Q. So you're agreeing then that the 12:40
3 esterase requires at least a microaqueous 12:40
4 environment? 12:40

5 A. I believe all enzymes require the 12:40
6 presence of some amount of water to function. 12:40

7 Q. And that would include esterases? 12:40

8 A. It is an enzyme, so it would require 12:40
9 water presence to function. 12:40

10 Q. Do you know if esterases have a 12:40
11 higher or lower specificity than lipases? 12:41

12 A. Specificity is reaction dependent. 12:41
13 So you would have to first pick a reaction and 12:41
14 then ask if it's specific to that reaction. 12:41

15 Q. In general do you know if esterases 12:41
16 have a lower specificity than the lipases? 12:41

17 A. I would say in general esterases are 12:41
18 more specific for some reactions than lipases, 12:41
19 and vice versa, lipases are more specific for 12:41
20 others than esterases. Again, it depends upon 12:41
21 the reaction you're trying to promote with the 12:41
22 catalyst. 12:41

23 Q. Do you agree that lipases are serine 12:42
24 hydrolases defined as triacylglycerol acyl 12:42
25 hydrolases? 12:42

1 DAVID ROCKSTRAW, PhD, PE

2 MR. LUCAS: Objection to form. 12:42

3 THE WITNESS: I don't know. 12:42

4 Q. Why is it the lipases require a 12:42

5 substrate to be a 1, 2, 3-triol with a triester 12:42

6 with three carbon hydroxyl in line that fits 12:42

7 into the reaction site? 12:42

8 MR. LUCAS: Objection. Lack of 12:42

9 foundation. Form. 12:42

10 THE WITNESS: I don't know. 12:42

11 Q. Do you have an understanding of what 12:42

12 types of reactions a lipase is suitable for? 12:42

13 MR. LUCAS: Objection. Vague. 12:43

14 THE WITNESS: They're suitable for 12:43

15 the reactions that they promote that the 12:43

16 engineer performing the reaction 12:43

17 engineering determines that the products 12:43

18 are appropriate from that particular 12:43

19 catalysis. 12:43

20 BY MR. KANE: 12:43

21 Q. Well, what would the engineer look 12:43

22 at to decide whether to use, for instance, a 12:43

23 lipase as opposed to a different type of 12:43

24 catalyst? 12:43

25 A. That depends upon the chemical 12:43

1 DAVID ROCKSTRAW, PhD, PE

2 system, the product that's being produced, the 12:43

3 characteristics of the product that are 12:43

4 important to its subsequent sale. 12:43

5 Further, there are a lot of factors 12:43

6 that go into that decision. 12:43

7 Q. Are there any factors that relate to 12:43

8 the structure of lipase? 12:43

9 A. I don't know. 12:43

10 Q. Will a lipase work in an aqueous 12:43

11 environment? 12:43

12 A. I would expect that some presence of 12:43

13 water is necessary. 12:43

14 Q. Would you expect the lipase to work 12:44

15 in an ester-ester exchange? 12:44

16 A. Well, the literature that we've 12:44

17 looked at today suggests that it does, so yes. 12:44

18 Q. Would it matter if there is not a 12:44

19 glycerol backbone? 12:44

20 MR. LUCAS: Objection. Vague. 12:44

21 Form. 12:44

22 THE WITNESS: A glycerol backbone; 12:44

23 you're talking about specifically 12:44

24 triglyceride reactions now? 12:44

25 Q. No, I'm talking about generally. 12:44

1 DAVID ROCKSTRAW, PhD, PE

2 Does a lipase -- would it matter -- 12:44

3 Would you expect the lipase to work 12:44

4 if there is not a glycerol backbone? 12:44

5 MR. LUCAS: Objection to form. 12:44

6 THE WITNESS: Well, there is not a 12:44

7 glycerol backbone in jojoba oil, and it 12:44

8 works to transesterify those, so I guess 12:44

9 the answer is yes, I expect it to work. 12:44

10 Q. Did you cite anything to support 12:45

11 that? 12:45

12 A. Well, I cited Xu 1 or Exhibit 1008 12:45

13 and in my Declaration. 12:45

14 And as we discussed in Section 6, 12:45

15 ester-ester exchange is a reaction between two 12:45

16 esters, and the example in that particular 12:45

17 section uses a lipase. 12:45

18 So, yeah, I expect it to work. 12:45

19 Q. Well, that example is a triglyceride 12:45

20 that has a glycerol backbone, correct? 12:46

21 A. That's true, but the authors could 12:46

22 not cite every example for which it works, and 12:46

23 they start off with a very general statement 12:46

24 which says, ester-ester exchange is a reaction 12:46

25 between two esters. 12:46

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Okay. What is the difference 12:46
3 between an esterase and a lipase? 12:46

4 MR. LUCAS: Objection. Lack of 12:46
5 foundation. 12:46

6 THE WITNESS: I don't know. 12:46

7 Q. Do lipases require a lipophilic 12:46
8 chain on the substrate? 12:46

9 A. I don't know that either. 12:46

10 Q. Would you agree with me that 12:46
11 esterases do not prefer substrates with 12:46
12 lipophilic chains? 12:46

13 MR. LUCAS: Objection to form. Lack 12:46
14 of foundation. 12:46

15 THE WITNESS: I don't know. 12:46

16 Q. Do you know whether esterases prefer 12:46
17 substrates with aliphatic chains? 12:46

18 MR. LUCAS: Same objections. 12:47

19 THE WITNESS: I don't know. 12:47

20 Q. I meant "aliphatic" chains, if I 12:47
21 said that wrong sorry. 12:47

22 Same answer? 12:47

23 A. Understood. 12:47

24 Q. You understand that jojoba wax 12:47
25 esters have lipophilic chains? 12:47

1 DAVID ROCKSTRAW, PhD, PE

3 Q. Why would a person of skill in the 12:47
4 art use a lipase instead of an esterase in the 12:47
5 context of the '245 patent? 12:47

7 Q. Why would a person of skill in the 12:47
8 art use a lipase instead of an esterase in the 12:47
9 context of the '245 patent? 12:47

11 that is looking for an enzyme that promotes a 12:47

13 characteristics of a broad range of enzymes, 12:48

15 the best potential opportunity for success. 12:48

17 which ones provide that success, and continue 12:48

19 the enzyme that works best in their particular 12:48

21 Q. Okay. Why wouldn't a person of 12:48

23 transesterify jojoba oil? 12:48

25 foundation. 12:48

1 DAVID ROCKSTRAW, PhD, PE

2 THE WITNESS: I don't know, I've not 12:48
3 studied esterase with regard to this 12:48
4 matter. 12:48

5 Q. Would you expect an esterase to work 12:48
6 better to transesterify jojoba oil than a 12:48
7 lipase? 12:48

8 MR. LUCAS: Same objections. 12:48

9 THE WITNESS: I don't know, I 12:48
10 haven't studied esterases in regard to this 12:48
11 matter. 12:49

12 Q. Are there any drawbacks to using an 12:49
13 esterase to transesterify jojoba oil? 12:49

14 MR. LUCAS: Objection. Lack of 12:49
15 foundation. Form. 12:49

16 THE WITNESS: I don't know. 12:49

17 Q. How does a lipase transesterify an 12:49
18 ester? 12:49

19 A. Are you asking me about the specific 12:49
20 chemical mechanism at the molecular level? 12:49

21 Q. Yes. 12:49

22 A. I don't know. 12:49

23 Q. Do you know what a non-specific 12:49
24 lipase? 12:49

25 A. I understand the word 12:49

1 DAVID ROCKSTRAW, PhD, PE

2 "non-specific." As it applies to a lipase, I 12:49
3 would expect that it catalyzes a series of 12:49
4 reactions, not necessarily that the one that 12:49
5 the engineer designing the reaction wants to 12:49
6 take place. 12:49

7 Q. Would you agree with me that these 12:49
8 specific non-specific lipases cleave 12:50
9 acylglycerol molecules randomly generating FFAs 12:50
10 and glycerol, as well as mono and diglycerides 12:50
11 as intermediates? 12:50

12 MR. LUCAS: Objection. Lack of 12:50
13 foundation. Form. 12:50

14 THE WITNESS: You're speaking of an 12:50
15 example that's specific to triglycerides 12:50
16 now, which is not something I've studied 12:50
17 with regard to this matter. 12:50

18 Q. Well, I'm not speaking of 12:50
19 triglycerides necessarily, I was asking about 12:50
20 non-specific lipases. 12:50

21 A. Okay. Repeat the question then. 12:50

22 Q. Sure. Would you agree that 12:50
23 non-specific lipases cleave acylglycerol 12:50
24 molecules randomly generating FFAs and 12:50
25 glycerol, as well as mono and diglycerides as 12:50

1	DAVID ROCKSTRAW, PhD, PE	
2	intermediates?	12:50
3	MR. LUCAS: Objection. Lack of	12:50
4	foundation.	12:50
5	THE WITNESS: Well, the example you	12:50
6	use is definitely a triglyceride, because	12:50
7	you start by talking about cleaving from	12:51
8	the glycerol, which isn't present in jojoba	12:51
9	oil.	12:51
10	And so I don't know, I haven't	12:51
11	studied triglyceride reactions with regard	12:51
12	to this matter.	12:51
13	BY MR. KANE:	12:51
14	Q. And we talked about earlier, jojoba	12:51
15	oil does not have a glycerol head, correct?	12:51
16	A. That's correct.	12:51
17	Q. What is an sn-1,3 specific lipase?	12:51
18	MR. LUCAS: Objection. Lack of	12:51
19	foundation.	12:51
20	THE WITNESS: Yeah, I believe you	12:51
21	asked this question earlier. I said I'm	12:51
22	not sure what the 1,3 means.	12:51
23	Q. Okay.	12:51
24	A. Typically when you have numbers like	12:51
25	that separated by commas and a dash in an	12:51

1 DAVID ROCKSTRAW, PhD, PE

2 organic chemistry name, they are specific to 12:51

3 locations on a carbon chain. 12:52

4 So I would assume that a 1,3, 12:52

5 sn-specific lipase effects the 1,3 positions of 12:52

6 the glycerol. 12:52

7 Q. And you agree that jojoba oil 12:52

8 doesn't have the 1, 3 positions on the 12:52

9 glycerol, right? 12:52

10 A. Well, jojoba oil does not have a 12:52

11 glycerol. 12:52

12 Q. So it does not have the 1,3 12:52

13 positions on the glycerol? 12:52

14 A. It does have the 1,3 positions on a 12:52

15 glycerol it does not have. 12:52

16 Q. So you would agree then that the 12:53

17 sn-1,3 specific lipase wouldn't be expected to 12:53

18 transesterify jojoba oil, right? 12:53

19 MR. LUCAS: Objection. Form. 12:53

20 THE WITNESS: I don't know that 12:53

21 that's necessarily true; it may promote the 12:53

22 esterification to some extent. 12:53

23 Q. How would it do that? 12:53

24 A. Again, are you asking about the 12:53

25 mechanism? 12:53

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1	DAVID ROCKSTRAW, PhD, PE	
2	A. Correct.	12:55
3	Q. What is a fatty acid specific	12:55
4	lipase?	12:55
5	MR. LUCAS: Objection. Lack of	12:55
6	foundation.	12:55
7	THE WITNESS: I'm not sure.	12:55
8	Q. Do you understand that fatty acid	12:55
9	specific lipases act specifically on the	12:55
10	hydrolysis of triglycerides which have long	12:55
11	chain fatty acids with double bonds on the	12:55
12	fifth position on carbon nine?	12:55
13	MR. LUCAS: Objection. Lack of	12:55
14	foundation.	12:55
15	THE WITNESS: No, that's not	12:55
16	something I'm familiar with.	12:55
17	Q. Would you agree that esters with	12:55
18	unsaturated fatty acids are without double bond	12:55
19	in a cis position on Carbon 9 are slowly	12:56
20	hydrolyzed by the fatty acid specific lipases?	12:56
21	MR. LUCAS: Objection to form.	12:56
22	THE WITNESS: I don't know that.	12:56
23	Q. Within the active site of a lipase	12:56
24	how does a triglyceride bind?	12:56
25	MR. LUCAS: Objection. Lack of	12:56

1	DAVID ROCKSTRAW, PhD, PE	
2	foundation.	12:56
3	THE WITNESS: Again, you're asking	12:56
4	me about the mechanism?	12:56
5	Q. I'm asking within the active site of	12:56
6	lipase, how does the triglyceride bind?	12:56
7	MR. LUCAS: Same objection.	12:56
8	THE WITNESS: I couldn't write out	12:56
9	the exact mechanism for you, but the way a	12:56
10	catalyst works is a particular piece of the	12:56
11	molecule binds or absorbs to the catalyst	12:56
12	surface. And in doing so. It changes the	12:56
13	energetics of the whole molecule. And that	12:56
14	-- that opens up other areas of the	12:57
15	molecule to attack, which cause a chemical	12:57
16	reaction.	12:57
17	So I would assume that a	12:57
18	lipase-binding glycerol acting as a	12:57
19	catalyst is going to work in the same way.	12:57
20	BY MR. KANE:	12:57
21	Q. Do you know if the active site of a	12:57
22	lipase contains an oxyanion void?	12:57
23	A. I don't know that.	12:57
24	Q. Do you know what an oxyanion void	12:57
25	is?	12:57

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1 DAVID ROCKSTRAW, PhD, PE

2 MR. LUCAS: Same objections. 12:58

3 THE WITNESS: I would be guessing, 12:58

4 which I prefer not to do, but I believe I 12:58

5 understand. 12:58

6 Q. Well, can you give me your best 12:58

7 understanding? 12:58

8 A. Well, I believe I did earlier. 12:59

9 The oxyanion has a partial negative 12:59

10 charge, and so a part of the binding molecule 12:59

11 that is partially positive would bind to that 12:59

12 partial negative charge. 12:59

13 Q. Do you understand that a lipase's 12:59

14 active site requires the substrate to have a 12:59

15 vicinal hydroxyl group to perform 12:59

16 transesterification? 12:59

17 MR. LUCAS: Objection to form. 12:59

18 THE WITNESS: I don't know that. 12:59

19 Q. Do you agree that triglycerides have 12:59

20 a vicinal CO structure? 12:59

21 MR. LUCAS: Objection. Lack of 12:59

22 foundation. 12:59

23 THE WITNESS: Can you please repeat 12:59

24 that. 12:59

25 Q. Do you agree that triglycerides have 12:59

1	DAVID ROCKSTRAW, PhD, PE	
2	a vicinal CO structure?	12:59
3	A. I'm not familiar with the term	12:59
4	"vicinal."	01:00
5	Q. You agree that the jojoba oil does	01:00
6	not have any vicinal hydroxyl group?	01:00
7	MR. LUCAS: Objection.	01:00
8	THE WITNESS: I know what a hydroxyl	01:00
9	group is; I'm not familiar with the term	01:00
10	"vicinal."	01:00
11	Q. Would you agree that the binding of	01:00
12	the lipase would be different if you had a	01:00
13	jojoba wax ester substrate instead of a	01:00
14	triglyceride substrate?	01:00
15	MR. LUCAS: Objection. Vague.	01:00
16	THE WITNESS: I don't know that.	01:00
17	Q. Do you know a beta sheet is in the	01:00
18	context of a lipase?	01:00
19	A. A what?	01:00
20	Q. A beta sheet?	01:00
21	A. I do not.	01:00
22	Q. Do you know how the beta sheet of	01:00
23	lipase interacts with the substrate?	01:00
24	MR. LUCAS: Objection. Lack of	01:00
25	foundation.	01:00

1	DAVID ROCKSTRAW, PhD, PE	
2	THE WITNESS: No.	01:00
3	Q. Let's turn to the '245 patent,	01:01
4	Dr. Rockstraw. Let's look at Figures 4, 5, 6,	01:01
5	and 7.	01:01
6	Are you there?	01:02
7	A. Yes.	01:02
8	Q. What do you understand these figures	01:02
9	to represent?	01:02
10	A. These are comparisons of species	01:02
11	distributions in jojoba wax esters for both	01:02
12	enzymatically catalyzed and chemically	01:02
13	catalyzed materials.	01:02
14	Q. Would you agree with me that the	01:02
15	distribution of the species are very close in	01:03
16	the enzymatic versus chemical — chemically	01:03
17	transesterified material?	01:03
18	MR. LUCAS: Objection. Vague.	01:03
19	THE WITNESS: I would agree that	01:03
20	they are similar, yes.	01:03
21	Q. And, in fact, if you look at	01:03
22	Column 14 of the patent describing the figures	01:04
23	starting at line 10. It says, "By observation	01:04
24	it is clear that the enzymatically catalyzed	01:04
25	process successfully randomizes the various	01:04

1	DAVID ROCKSTRAW, PhD, PE	
2	esters, very similarly to the chemically	01:04
3	catalyzed process. "	01:04
4	Do you see that?	01:04
5	A. I do.	01:04
6	Q. Do you agree with that?	01:04
7	A. I agree that the chemical and	01:04
8	enzymatic process for randomizing leads to	01:04
9	similar products.	01:04
10	Q. And, in fact, the patent says "very	01:04
11	similar," right?	01:04
12	A. I'm sorry?	01:05
13	Q. The patent says "very similar,"	01:05
14	right?	01:05
15	A. It does, "very similarly."	01:05
16	Q. So now if we look at Table 3 in the	01:05
17	patent which is in Column 9.	01:05
18	Do you see there the OSI values	01:05
19	being reported there for the chemically	01:05
20	catalyzed process and the enzymatically	01:05
21	catalyzed process, right?	01:05
22	A. In Table 3?	01:06
23	Q. Yes.	01:06
24	A. Yes.	01:06
25	Q. And you see the chemically catalyzed	01:06

1 DAVID ROCKSTRAW, PhD, PE

2 process had a reduction of about 19 — 01:06
3 18.87 percent? 01:06

4 A. I do see that. 01:06

5 Q. And the enzymatically catalyzed 01:06
6 process had an increase of 45.66 percent, 01:06
7 correct? 01:06

8 A. That's correct. 01:06

9 And in the description in the table, 01:06
10 much like Kodali, the author attributes this to 01:06
11 the destruction of the tocopherols, which are 01:06
12 the antioxidants which affect oxidative 01:06
13 stability. 01:06

14 Q. And where do you see that? 01:06

15 A. In the paragraph immediately under 01:06
16 Table 3 a few sentences in it reads, "The 01:06
17 results also indicate that the chemically 01:06
18 catalyzed reaction destroys the original amount 01:06
19 of tocopherols present in the feedstock, which 01:06
20 reduces the OSI of the transesterified 01:06
21 product. " 01:07

22 Q. Right, but then it continues. 01:07

23 It says, "Surprisingly however, the 01:07
24 OSI of the enzymatically catalyzed 01:07
25 transesterified product is greater than that of 01:07

1	DAVID ROCKSTRAW, PhD, PE	
2	the feedstock. "	01:07
3	Do you see that?	01:07
4	A. I do.	01:07
5	Q. And then he continues, "The result	01:07
6	indicates that the enzymatic catalyst has an	01:07
7	unexpected positive effect on the OSI that is	01:07
8	not explainable simply by the enzymatic	01:07
9	catalyst preserving the natural tocopherols	01:07
10	originally present in the feedstock during the	01:07
11	reaction," right?	01:07
12	A. That's what it reads.	01:07
13	Q. So it's not just the tocopherol	01:07
14	effect, right?	01:07
15	MR. LUCAS: Objection. Vague.	01:07
16	Form.	01:07
17	THE WITNESS: Well, that's the what	01:07
18	author of the patent states, but he	01:07
19	provides no evidence to support that.	01:07
20	BY MR. KANE:	01:08
21	Q. If you turn to Table 5, Column 11	01:08
22	you see it's describing two transesterified	01:08
23	product types in cream; one is chemically	01:08
24	catalyzed and one is enzymatically catalyzed?	01:08
25	A. I see that.	01:08

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And you see there is a difference in 01:08
3 the viscosity values for those products? 01:08

4 A. I'm sorry, repeat your question. 01:08

5 Q. You see there is a difference in the 01:08
6 viscosity? 01:08

7 A. I do. 01:08

8 Q. And then below the table it says, 01:08
9 "Table 5 indicates that the use of 01:09
10 enzymatically catalyzed transesterified jojoba 01:09
11 oil created a cream formulation that had a drop 01:09
12 in viscosity of 35 percent from the viscosity 01:09
13 of the chemically catalyzed cream. 01:09

14 This data indicates that the 01:09
15 enzymatically catalyzed transesterified jojoba 01:09
16 oil has a functional effect of lowering the 01:09
17 resulting product viscosity compared to the 01:09
18 chemically catalyzed product. " 01:09

19 Do you see that? 01:09

20 A. I do. 01:09

21 Q. Do you have any understanding as to 01:09
22 why the viscosity is lower in the two 01:09
23 transesterified products? 01:09

24 A. That is not an analysis I've 01:09
25 attempted to perform. 01:09

1 DAVID ROCKSTRAW, PhD, PE

2 Q. You also see that there's some 01:09
3 difference in the appearance described in 01:09
4 Table 5 between the two products? 01:10

5 A. I do. 01:10

6 Q. Do you have any understanding as to 01:10
7 why the appearance is different? 01:10

8 A. Again, that's not an analysis I've 01:10
9 attempted to perform. 01:10

10 Q. Does any of the art that you 01:10
11 reviewed to this point describe a difference in 01:10
12 the effect on the product's viscosity in using 01:10
13 chemically catalyzed -- or chemical catalysts 01:10
14 versus an enzymatic catalyst? 01:10

15 MR. LUCAS: Objection to form. 01:10

16 THE WITNESS: I don't recall 01:10
17 focusing on the viscosity of the articles 01:10
18 that I reviewed, the viscosity of the 01:10
19 products. 01:11

20 Q. If you turn to Column 15, do you see 01:11
21 there is a discussion there about the yield of 01:12
22 the process? 01:12

23 A. I do. 01:12

24 Q. Did you take into account the impact 01:12
25 on the yield resulting from the catalytic -- 01:13

1	DAVID ROCKSTRAW, PhD, PE	
2	excuse me, the enzymatic transesterification of	01:13
3	the jojoba oil in your analysis?	01:13
4	MR. LUCAS: Objection to form.	01:13
5	THE WITNESS: I don't understand the	01:13
6	question.	01:13
7	Q. You understand from this discussion	01:13
8	that when the lipase is used, the jojoba oil	01:13
9	exceeds the expectation for yield?	01:13
10	A. I did not consider economic	01:13
11	considerations in my analysis.	01:14
12	Q. So you didn't consider the lipase's	01:14
13	impact on yield?	01:14
14	A. Well, that's an economic	01:14
15	consideration; I did not consider the economic	01:14
16	considerations.	01:14
17	(Whereupon, Vantage Exhibit 1002,	01:14
18	Portion of File History of Materials	01:14
19	Considered, 243-Pages was marked for	01:14
20	identification.)	01:14
21	BY MR. KANE:	01:14
22	Q. Handing you what's been marked as	01:14
23	Exhibit 1002, Dr. Rockstraw, this is a portion	01:14
24	of the file history that is included in the	01:15
25	list of materials that you considered, correct?	01:15

1	DAVID ROCKSTRAW, PhD, PE	
2	A. I believe that is the case, yes.	01:15
3	Q. So I'd ask you to turn to page 838.	01:15
4	Do you recognize this as a	01:15
5	Declaration filed by Jeff Addy during the	01:15
6	prosecution?	01:15
7	A. I do.	01:15
8	Q. I don't know if you want to take a	01:16
9	minute to review it just to familiarize	01:16
10	yourself with this one, I know there are	01:16
11	multiple Declarations by Mr. Addy.	01:16
12	A. (Witness peruses document.)	01:16
13	Okay.	01:23
14	Q. So you see in this Declaration	01:23
15	Mr. Addy's reporting some experiments he ran to	01:23
16	duplicate one of the prior art references	01:24
17	Gunawan's process?	01:24
18	A. That's my understanding.	01:24
19	Q. And that Gunawan process utilizes	01:24
20	enzymes to catalyze the transesterification?	01:24
21	A. That's my understanding, yes.	01:24
22	Q. And the results of those experiments	01:24
23	are reported in paragraph 6 on page three?	01:24
24	A. I believe the results are on page	01:24
25	four.	01:24

1 DAVID ROCKSTRAW, PhD, PE

2 Q. Okay. Okay. I was just going by 01:25
3 the heading on paragraph 6 on page three. 01:25

4 A. Yeah, these are not results of -- 01:25

5 Q. Well, I understand, but it's under 01:25
6 the heading of "Results." 01:25

7 A. I see that. 01:25

8 Q. That's all I was trying to say. 01:25

9 Sorry. Yeah. 01:25

10 So let's look at page four. And you 01:25
11 see that in Experiment 1 where the sunflower 01:25
12 oil was transesterified, the OSI of the product 01:25
13 was higher than the OSI of the feedstock? 01:25

14 A. I see that. 01:25

15 Q. And in contrast, in Experiment 2, 01:25
16 when jojoba oil was used the OSI of the product 01:25
17 was lower than the OSI of the feedstock, 01:25
18 correct? 01:25

19 A. I see that also. 01:25

20 Q. So this is an example where using an 01:25
21 enzymatic process could actually lower the OSI 01:26
22 of a feedstock? 01:26

23 MR. LUCAS: Objection. Vague. 01:26

24 THE WITNESS: Are you stating that 01:26
25 as a factor are you asking me if I agree? 01:26

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1	DAVID ROCKSTRAW, PhD, PE	
2	THE WITNESS: That's what the single	01:27
3	experiment number showed, yes.	01:27
4	Q. Is that consistent with some of the	01:27
5	earlier discussion we had where you testified	01:27
6	that the OSI would always be expected to go up	01:27
7	when there is a transesterification process?	01:28
8	MR. LUCAS: Object to form.	01:28
9	THE WITNESS: I don't understand the	01:28
10	question.	01:28
11	Q. Well, you testified earlier in terms	01:28
12	of a transesterification process, and you	01:28
13	indicated that -- no, withdraw the question.	01:28
14	MR. KANE: Why don't we take a	01:28
15	break?	01:28
16	VIDEOGRAPHER: Off the record. The	01:28
17	time is 1:27.	01:28
18	(Whereupon, proceedings recessed for	01:28
19	a short break and once again resumed.)	01:28
20	VIDEOGRAPHER: We're back on the	01:43
21	record. The time is 1:42.	01:43
22	BY MR. KANE:	01:43
23	Q. Dr. Rockstraw, at any point at any	01:43
24	of the breaks have you talked with counsel	01:43
25	about the substance of your testimony?	01:43

1	DAVID ROCKSTRAW, PhD, PE	
2	A. I have not.	01:43
3	Q. Now, you have a PhD in chemical	01:43
4	engineering, right?	01:43
5	A. Correct.	01:43
6	Q. Not in organic chemistry?	01:43
7	A. That is correct.	01:43
8	Q. Do you have an understanding of what	01:43
9	the personal care product industry is?	01:43
10	A. I do.	01:43
11	Q. What is that?	01:43
12	A. Cosmetics, soaps, things of that	01:43
13	nature, products that people put on their body.	01:44
14	Q. Have you ever been -- in your	01:44
15	employment history have you ever involved in	01:44
16	products in the personal care product industry?	01:44
17	A. Not that I recall.	01:44
18	Q. So you've never been involved in	01:44
19	formulating personal care products?	01:44
20	A. I have not.	01:44
21	Q. Have you been involved in evaluating	01:44
22	chemicals for use in personal care products?	01:44
23	A. I've been involved in evaluating	01:44
24	similar chemicals from the same class of	01:44
25	materials.	01:44

1 DAVID ROCKSTRAW, PhD, PE

2 Q. But not in the personal care product 01:44
3 industry? 01:44

4 A. I've been involved in analyzing food 01:44
5 products, which use the same class of 01:44
6 chemicals. 01:44

7 Q. And what was your involvement with 01:44
8 food products? 01:45

9 A. I spent time working for Kraft 01:45
10 Foods, and so I did research on edible oils, 01:45
11 cheeses, things of that nature that involve 01:45
12 similar fats and oils. 01:45

13 Q. Have you ever consulted on lipid 01:45
14 chemistry? 01:45

15 A. I don't recall. I'd have to go 01:45
16 through my resume. There is a lot of entries 01:45
17 in there. I have that here. 01:45

18 (Witness peruses document.) 01:45

19 This does not include that 01:45
20 particular content, so... 01:45

21 I would say probably not, but I 01:46
22 can't rule it out. 01:46

23 Q. Okay. Just so -- 01:46

24 A. Oh, wait. I have done quite a bit 01:46
25 of consulting to the biodiesel industry, which 01:46

1	DAVID ROCKSTRAW, PhD, PE	
2	uses triglycerides and fats and oils of a	01:46
3	similar nature.	01:46
4	Q. Okay. And in that work were you	01:46
5	involved in lipid chemistry?	01:46
6	A. Well, to the extent there are lipids	01:46
7	on a triglyceride that results in a biodiesel,	01:46
8	I would say yes.	01:46
9	Q. Does that work involve lipases?	01:46
10	A. No. No. The industry used	01:46
11	primarily chemical catalysis.	01:46
12	Q. So it also didn't include esterases?	01:46
13	A. That would be correct.	01:47
14	Q. Have you ever done any work in	01:47
15	connection with the jojoba wax esters?	01:47
16	A. I have not.	01:47
17	Q. So you haven't ever formulated	01:47
18	jojoba wax esters?	01:47
19	A. That's correct.	01:47
20	Q. Now you've mentioned that you've	01:47
21	done some work in oils in the food industry?	01:47
22	A. Correct.	01:47
23	Q. Did you work on -- what was your	01:47
24	work generally?	01:47
25	A. I worked at Kraft's R&D facility in	01:47

1 DAVID ROCKSTRAW, PhD, PE

2 Glenview, Illinois, so I was involved in the 01:47
3 formulation of food stuffs made from various 01:47
4 edible oils. 01:47

5 Q. And did those processes involve 01:47
6 transesterification? 01:47

7 A. Not that I recall; I think that was 01:48
8 primarily blending operations to achieve 01:48
9 particular physical properties. 01:48

10 Q. And you said cheeses was one of the 01:48
11 products you worked on? 01:48

12 A. Yeah, that would be a subcategory of 01:48
13 edible oils. There was a division at Kraft 01:48
14 called Edible Oils that made food products from 01:48
15 corn oils, canola oils, and various fats and 01:48
16 oils. 01:48

17 Q. And what timeframe were you working 01:48
18 at Kraft on those oils? 01:48

19 A. I started at Kraft in '81, and I 01:48
20 finished at Kraft in '86. 01:48

21 Q. After '86, did you have any 01:48
22 involvement in the edible oil industry? 01:48

23 A. I did not. 01:48

24 Q. As part of your work in that space 01:48
25 did you measure oxidative stability? 01:48

1 DAVID ROCKSTRAW, PhD, PE

2 A. I was not the one that was 01:49
3 performing those experiments at the time; we 01:49
4 had an analyst that did that work. 01:49

5 Q. Did that type of data influence the 01:49
6 work that you were doing? 01:49

7 MR. LUCAS: Objection. Vague. 01:49

8 THE WITNESS: Yeah. I mean, that 01:49
9 was a parameter of concern, because food 01:49
10 products go on a shelf or a refrigerator, 01:49
11 so the duration that it takes them to 01:49
12 become rancid was of interest. 01:49

13 BY MR. KANE: 01:49

14 Q. But I believe you said you were 01:49
15 primarily involved in blending operations? 01:49

16 A. That's correct. 01:49

17 Q. And how did oxidative stability 01:49
18 impact your choices on blending operations? 01:49

19 A. Well, if we made a blend for which 01:49
20 the oxidative stability was lower or had 01:49
21 decreased, it was a blend that we didn't want 01:49
22 to use. We were looking for long shelf lives 01:49
23 of our products. 01:49

24 Q. And did the blending operations that 01:50
25 you were conducting or studying impact 01:50

1	DAVID ROCKSTRAW, PhD, PE	
2	oxidative stability?	01:50
3	A. They would.	01:50
4	Q. In what way?	01:50
5	A. Well, depending upon what you loaded	01:50
6	into the oils, you could affect the oxidative	01:50
7	stability.	01:50
8	Q. When you say "loaded into the oils,"	01:50
9	what do you mean?	01:50
10	A. Well, if I were to make a food	01:50
11	product, let's say something simple like an	01:50
12	Italian dressing, you add flavors, and	01:50
13	additives, and vinegar, and things that can	01:50
14	affect the oxidative stability of the oil that	01:50
15	is also part of the dressing.	01:50
16	Q. As part of that work were you	01:50
17	measuring the iodine values of the oils?	01:50
18	A. I don't recall whether we were doing	01:50
19	that or not.	01:50
20	Q. I'm assuming none of that work	01:51
21	related to jojoba oil?	01:51
22	A. It did not.	01:51
23	Q. And you mentioned in your CV that	01:51
24	you have experience with commodity chemicals,	01:51
25	right?	01:51

1	DAVID ROCKSTRAW, PhD, PE	
2	A. I do, yes.	01:51
3	Q. And how do you describe commodity	01:51
4	chemicals?	01:51
5	A. High volume chemicals.	01:51
6	Q. Are you familiar with the term	01:51
7	"specialty chemicals"?	01:51
8	A. I am.	01:51
9	Q. And what does that mean?	01:51
10	A. Specialty chemicals are somewhat the	01:51
11	opposite of commodity, they're not necessarily	01:51
12	in high volumes, they have niche markets, and	01:51
13	my experience is they are somewhat complex to	01:51
14	make.	01:52
15	Q. More complex than the commodity	01:52
16	chemicals?	01:52
17	A. I don't think that I can put a	01:52
18	generality on that.	01:52
19	Q. Did you ever do any work in the	01:52
20	space that you would consider specialty	01:52
21	chemicals?	01:52
22	A. I did.	01:52
23	Q. In what way?	01:52
24	A. While I was at Ethyl Corporation, I	01:52
25	was involved in research on the manufacture of	01:52

1	DAVID ROCKSTRAW, PhD, PE	
2	ibuprofen.	01:52
3	At Conoco Dupont I was involved in	01:52
4	the manufacture of refrigerant chemicals, as	01:52
5	well as a number of herbicides for the	01:52
6	agricultural products group.	01:52
7	Q. And did any of those involve oils?	01:52
8	A. I don't believe so.	01:53
9	Q. Are you retired now?	01:53
10	A. Obviously not.	01:53
11	Q. Well, have you retired from New	01:53
12	Mexico State?	01:53
13	A. I have left the university, yes.	01:53
14	Q. So your full-time employment now is	01:53
15	consulting?	01:53
16	A. That's correct.	01:53
17	Q. And roughly speaking, how much of	01:53
18	that time is acting as an expert witness versus	01:53
19	consulting on projects?	01:53
20	A. I have a number of clients that I'm	01:53
21	consulting with, as well as a Phase II small	01:53
22	business innovative research grant that I'm	01:53
23	executing with colleagues in Santa Fe; I would	01:54
24	say those take about 25 percent of my time.	01:54
25	Q. And the other 75 percent is	01:54

1	DAVID ROCKSTRAW, PhD, PE	
2	testifying as an expert -- or acting as an	01:54
3	expert witness?	01:54
4	A. That's correct.	01:54
5	Q. So in the roughly 40 depositions	01:54
6	that you mentioned, those were all in the role	01:54
7	of expert witness?	01:54
8	A. I'm not sure what other role I could	01:54
9	testify in, so I would say yes.	01:54
10	Q. Well, you can be an inventor.	01:54
11	A. I have never testified based on my	01:54
12	inventions, no.	01:54
13	Q. How many times have you testified at	01:54
14	trial, approximately?	01:54
15	A. If I can include arbitration panels,	01:54
16	I would put that number at 12 or less.	01:54
17	Q. At New Mexico State did you teach?	01:54
18	A. Oh, yeah.	01:55
19	Q. Did you teach classes on organic	01:55
20	chemistry?	01:55
21	A. No, I taught primarily chemical	01:55
22	reaction engineering and chemical separations,	01:55
23	material and energy balances, process, design,	01:55
24	and simulation. They were courses in the	01:55
25	chemical engineering curriculum, not in the	01:55

1	DAVID ROCKSTRAW, PhD, PE	
2	chemistry curriculum.	01:55
3	Q. Did you teach any classes on	01:55
4	formulating personal care products?	01:55
5	A. I don't think we even offered those	01:55
6	classes.	01:55
7	Q. And before you were at New Mexico	01:55
8	State you were at Dupont?	01:55
9	A. Correct.	01:55
10	Q. And maybe you already covered this,	01:55
11	but at Dupont did you work on personal care	01:55
12	products?	01:55
13	A. I worked on a lot of things at	01:55
14	Dupont, but I don't recall any personal care	01:56
15	products.	01:56
16	Q. You also were a visiting scientist	01:56
17	at Los Alamos National Laboratory, correct?	01:56
18	A. Correct.	01:56
19	Q. Generally, what was the nature of	01:56
20	that work?	01:56
21	A. I was involved in plutonium	01:56
22	processing at Los Alamos; primarily, wastewater	01:56
23	treatment from the plutonium production	01:56
24	process.	01:56
25	Q. Have you ever published any papers	01:56

1	DAVID ROCKSTRAW, PhD, PE	
2	relating to personal care products?	01:56
3	A. Not that I recall, no.	01:56
4	Q. Have you ever published any papers	01:56
5	relating to jojoba wax esters?	01:56
6	A. No. Jojoba wax esters has not been	01:56
7	a subject of any of the papers that I've	01:56
8	published.	01:56
9	Q. Have any of the papers relate to the	01:56
10	transesterification processes?	01:56
11	A. I don't believe I published any of	01:57
12	the research that I did in the area of	01:57
13	transesterification.	01:57
14	Q. What kind of research did you do in	01:57
15	that area?	01:57
16	A. When biodiesel was a thing back in	01:57
17	around 2000 or so, I had students in my	01:57
18	laboratory carrying out transesterifications on	01:57
19	various types of triglycerides.	01:57
20	Q. And what kind of catalysts were	01:57
21	being used?	01:57
22	A. We were using a chemical catalyst.	01:57
23	Q. Did any of that work ever involve a	01:57
24	lipase catalyst?	01:57
25	A. No.	01:57

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And you said you don't recall 01:57
3 publishing any of that work? 01:57

4 A. No, I know we didn't publish that 01:57
5 work. 01:57

6 Q. And when did you leave the 01:57
7 university, was it in 2012? 01:57

8 A. No, I left the university September 01:57
9 1st of 2021; two years ago, roughly. 01:57

10 Q. In looking at your CV it appears 01:58
11 that maybe the last publication listed was 01:58
12 2012. Were you in a different role from 2012 01:58
13 to 2021? 01:58

14 A. Yeah. In 2014 I accepted the role 01:58
15 of the department head, and I was an 01:58
16 administrator at that point. 01:58

17 Q. And you weren't running a lab, a 01:58
18 research lab at that point? 01:58

19 A. No, I was still running a lab, but 01:58
20 our focus was more on intellectual property 01:58
21 than on fundamental research. 01:58

22 Q. What do you mean "intellectual 01:58
23 property"? 01:58

24 A. Excuse me? 01:58

25 Q. What do you mean by "intellectual 01:58

1	DAVID ROCKSTRAW, PhD, PE	
2	property"?	01:58
3	A. Well, we're developing a method to	01:58
4	separate lithium isotopes, and it's not	01:58
5	necessarily something we want to publish and	01:58
6	end up in general circulation at this point.	01:58
7	Q. Got you. Okay. Have you ever made	01:58
8	any presentations of personal care products?	01:58
9	A. I don't believe so.	01:58
10	Q. Have you ever made a presentation on	01:58
11	jojoba wax esters?	01:59
12	A. No.	01:59
13	Q. Transesterification?	01:59
14	A. They wouldn't be public	01:59
15	presentations. I would have presented the	01:59
16	topic of transesterification in both my	01:59
17	chemical reaction engineering class, as well as	01:59
18	in front of the researchers that were doing	01:59
19	transesterifications in my laboratory.	01:59
20	Q. And did any of those discussions or	01:59
21	presentations involve the use of lipases in	01:59
22	transesterification?	01:59
23	A. I don't recall. It's possible that	01:59
24	I would have mentioned that, because the intent	01:59
25	was to educate students of all the	01:59

1	DAVID ROCKSTRAW, PhD, PE	
2	possibilities for transesterification.	01:59
3	So I had done a thorough literature	01:59
4	review to try to capture all of the different	01:59
5	ways that it could be done, but I don't recall	02:00
6	as I sit here whether that was included or not.	02:00
7	I try to be pretty thorough when I put my	02:00
8	lectures together.	02:00
9	Q. When did you start working as an	02:00
10	expert witness in litigation?	02:00
11	A. I believe the first time I was	02:00
12	approached to do that was 1997.	02:00
13	Q. Generally, what was that related to?	02:00
14	A. That particular case involved an	02:00
15	explosion at a refinery in Grants, New Mexico.	02:00
16	Q. Okay. How many times have you been	02:00
17	an expert witness in patent-related matters?	02:00
18	A. I would put that number upwards in	02:00
19	the range of 20 to 30 times.	02:01
20	Q. Okay. When did that work begin?	02:01
21	A. I honestly don't recall the first	02:01
22	case I worked on a patent. It would have been	02:01
23	some time ago. I would put it somewhere around	02:01
24	2000.	02:01
25	Q. Do you recall the technical areas	02:01

1 DAVID ROCKSTRAW, PhD, PE

2 you've been involved in as an expert witness in 02:01

3 the realm of patent litigation? 02:01

4 A. Without the list of cases that I've 02:01

5 supported in front of me, I could throw some of 02:01

6 them at you. 02:01

7 Q. Okay. 02:01

8 A. I was involved in a case that 02:01

9 related to the use of activated carbon to 02:01

10 absorb gasoline vapors from a fuel tank to 02:02

11 avoid releases into the environment. That was 02:02

12 both an infringement and IPR case, and there 02:02

13 was a PGR thrown in there also. 02:02

14 I have to be careful not to talk 02:02

15 about some of the ones that -- 02:02

16 Q. Yeah, we don't want to have any 02:02

17 confidential information. So we appreciate 02:02

18 that. 02:02

19 A. There has been a number of them that 02:02

20 involve activated carbon, because I did quite a 02:02

21 bit of research on activated carbon during my 02:02

22 years at New Mexico State University. 02:02

23 There has been a number that involve 02:02

24 explosions or spontaneous combustion fires. 02:02

25 There is a number that involve 02:02

1	DAVID ROCKSTRAW, PhD, PE	
2	issues with chemical process design where one	02:02
3	party designed a process and patented it, and	02:02
4	then they sold the patent and it failed.	02:03
5	Those are the general areas that	02:03
6	involve patent.	02:03
7	Q. Okay. At least if we look at your	02:03
8	CV we have a list of your testimony, at least	02:03
9	from December of 2018, right?	02:03
10	A. Yeah. We see in the first one, it's	02:03
11	an activated carbon case.	02:03
12	Q. So it looks like here you've listed	02:03
13	-- the law firm that has engaged you as an	02:03
14	expert witness for each one of these matters?	02:04
15	A. I did. And I tried also to include	02:04
16	the legal definition of the case; and whenever	02:04
17	there was a patent involved, the patent that	02:04
18	was at issue.	02:04
19	Q. Okay. Who contacted you to get	02:04
20	involved in this dispute?	02:04
21	A. I believe I was matched through a	02:04
22	third-party.	02:04
23	Q. Do you have a consulting service	02:04
24	that you utilize?	02:04
25	A. Yeah, there is a number of them out	02:04

1 DAVID ROCKSTRAW, PhD, PE

2 there, I don't remember which one. I believe 02:04

3 it was IMS. I'm not sure if it was IMS or 02:04

4 Forensic Group or Rubin Anders; I'd have to 02:05

5 look at my invoices to be sure. 02:05

6 Q. And you believe that was sometime in 02:05

7 the fall of 2022? 02:05

8 A. It was either 2022 or late 2021. I 02:05

9 don't recall when I started, no. Since I left 02:05

10 the university, life has been somewhat of a 02:05

11 blur. 02:05

12 Q. And in looking at your CV it looks 02:05

13 like you completed -- on page 116 you completed 02:05

14 a course called "biomass oil analysis"? 02:05

15 A. I did. 02:05

16 Q. Do you recall that? And that was in 02:05

17 December of 2022? 02:06

18 A. Correct. 02:06

19 Q. What was your reason for taking that 02:06

20 class? 02:06

21 A. I see these are listed under 02:06

22 "Continuing Education." To maintain my 02:06

23 professional engineering license, I have to 02:06

24 demonstrate a certain level of education each 02:06

25 year. 02:06

1 DAVID ROCKSTRAW, PhD, PE

2 Q. And how did you pick that class as 02:06
3 one you were interested in meeting those 02:06
4 requirements? 02:06

5 A. The subject matter interested me. 02:06

6 Q. Because you were involved in this 02:06
7 dispute? 02:06

8 MR. LUCAS: Objection. 02:06

9 THE WITNESS: No, I don't think I 02:06
10 picked any of them based on a dispute or 02:06
11 anything that I'm doing. 02:06

12 I'm required to take a course in 02:06
13 ethics for every renewal of my license. 02:06
14 And then the other ones were simply from 02:06
15 the listing of courses available that the 02:06
16 company had to offer from which I was 02:06
17 taking the ethics course, I picked the ones 02:06
18 that captured my interest. 02:07

19 BY MR. KANE: 02:07

20 Q. What do you recall about that 02:07
21 biomass oil analysis course? 02:07

22 A. I don't recall anything about it. 02:07

23 Q. Did it have to do with -- well, 02:07
24 process of transesterification of oils? 02:07

25 A. I don't believe it involved in 02:07

1	DAVID ROCKSTRAW, PhD, PE	
2	chemical reactions. The intent of the course	02:07
3	was to understand the analytical techniques for	02:07
4	measuring the characteristics of biomass,	02:07
5	biomass oils.	02:07
6	Oh, I do recall what my interest was	02:07
7	in it. I started a brewery engineering program	02:07
8	at the university, and that sort of morphed	02:07
9	into a support for local hemp farmers.	02:07
10	And so one of the things that we	02:07
11	were asked to do was characterize the essential	02:07
12	oils from the hemp plant, which lead to the	02:07
13	flavors of the beer.	02:07
14	MR. KANE: Why don't we take a short	02:08
15	break?	02:08
16	VIDEOGRAPHER: We're off the record.	02:08
17	The time is 2:07.	02:08
18	(Whereupon, proceedings recessed for	02:08
19	a short break and once again resumed.)	02:08
20	VIDEOGRAPHER: We're back on the	02:15
21	record. The time is 2:14.	02:15
22	MR. KANE: We have no further	02:15
23	questions at this point.	02:15
24	Thank you, Dr. Rockstraw.	02:15
25	THE WITNESS: Thank you.	02:15

1 DAVID ROCKSTRAW, PhD, PE

2 MR. LUCAS: A couple of re-direct 02:15
3 questions from me, Dr. Rockstraw. Thank 02:15
4 you for testifying today. 02:15

5 THE WITNESS: You're welcome. 02:15

6 EXAMINATION BY 02:15

7 MR. LUCAS: 02:15

8 Q. Do you recall when you were given an 02:15
9 opportunity to correct a typographical mistake 02:16
10 in your Declaration? 02:16

11 A. I do. 02:16

12 Q. And that was on page 49 in paragraph 02:16
13 104, right? 02:16

14 A. That's correct, 104. 02:16

15 Q. Did that typographical error in the 02:16
16 equation have any effect on the results of your 02:16
17 calculations that you recorded in the 02:16
18 subsequent tables of your Declaration, such as 02:16
19 Table A? 02:16

20 A. No, I did the calculations 02:16
21 correctly. When I copied the equation from 02:16
22 paragraph 103 and rearranged it to create the 02:16
23 equation in paragraph 104, I simply re-arranged 02:16
24 it improperly. 02:16

25 Q. So are the numbers in the tables 02:16

1	DAVID ROCKSTRAW, PhD, PE	
2	correct?	02:16
3	A. They are.	02:16
4	Q. Do you recall when Mr. Kane was	02:16
5	asking you questions related to stability	02:16
6	referenced in Trans Isomers in Cosmetics, Parts	02:16
7	1 and 2?	02:17
8	A. Yes, I believe I do.	02:17
9	Q. Are there any references to thermal	02:17
10	stability in Trans Isomers 1 or 2?	02:17
11	A. I don't recall seeing any references	02:17
12	to thermal stability.	02:17
13	Q. What would a person of ordinary	02:17
14	skill in the art reading Trans Isomers 1 and 2	02:17
15	have understood about the references of	02:17
16	stability?	02:17
17	A. That they were oxidative in nature;	02:17
18	it was an oxygen attack on a double bond.	02:17
19	Q. I'd like to direct your attention to	02:17
20	Exhibit 1004, which is Cummings.	02:17
21	Dr. Rockstraw, do you recall when	02:17
22	Mr. Kane was asking you some questions about	02:17
23	the sentence, "Jojoba esters demonstrate	02:17
24	remarkable stability with OSI values of all	02:17
25	jojoba esters greater than 100 hours and as	02:17

1	DAVID ROCKSTRAW, PhD, PE	
2	high as 675 hours"?	02:17
3	A. I do.	02:17
4	Q. Is there anything else about	02:17
5	Cummings that you'd like to discuss today that	02:17
6	you didn't have a chance to?	02:18
7	MR. KANE: Counsel, I'm going to	02:18
8	object. That's, I think, outside the	02:18
9	scope.	02:18
10	MR. LUCAS: You can object, and you	02:18
11	can still answer.	02:18
12	That's how objections work.	02:18
13	THE WITNESS: Okay. That particular	02:18
14	sentence relates to the OSI of the esters	02:18
15	themselves.	02:18
16	If you go on and continue reading,	02:18
17	it describes the OSI of the refined jojoba	02:18
18	oil as being 35 hours.	02:18
19	So the Cummings reference gives me	02:18
20	the OSI of both feedstocks and products in	02:18
21	that particular sentence.	02:18
22	BY MR. LUCAS:	02:18
23	Q. What, if anything, would a person of	02:18
24	ordinary skill in the art understand from those	02:18
25	two sentences in Cummings related to the OSI in	02:18

1 DAVID ROCKSTRAW, PhD, PE

2 the feedstock increasing or decreasing with 02:18
3 respect to the feedstock to transesterified 02:18
4 products? 02:19

5 A. Well, I would expect a person of 02:19
6 skill in the art would recognize that, based on 02:19
7 the nature of the OSI device, that the OSI 02:19
8 described here for refined jojoba oil feedstock 02:19
9 would be similar or the same as the OSI of a 02:19
10 feedstock that replaces part of that oil with 02:19
11 hydrogenated oil. 02:19

12 If you consider the way OSI is 02:19
13 measured, it's a pretty simple experiment. You 02:19
14 put your oil in a reservoir, and you bubble 02:19
15 oxygen or air through that sample. The oxygen 02:19
16 in the air degrades the material, it breaks the 02:19
17 double bonds and it creates side reactions. 02:19

18 And the products of those side 02:19
19 reactions are carried over with the air and 02:19
20 captured in a second reservoir that contains 02:19
21 water. That second reservoir has a 02:19
22 connectivity probe in it that measures changes 02:20
23 in connectivity. 02:20

24 So as your sample begins to break 02:20
25 down and you degrade those double bonds, you 02:20

1 DAVID ROCKSTRAW, PhD, PE

2 see a corresponding change in the connectivity 02:20

3 in the second reservoir. 02:20

4 A person of skill in the art would 02:20

5 recognize that the 5 grams of material that 02:20

6 they put in there, if you were to replace some 02:20

7 fraction of that with fully hydrogenated 02:20

8 material, because that fully hydrogenated 02:20

9 material has no -- has no effect on the 02:20

10 stability of the oil that's there, it not like 02:20

11 a tocopherol that's going to stabilize those 02:20

12 double bonds, a person of skill in the art 02:20

13 would expect to get about the same result, 02:20

14 regardless of whether it's pure jojoba oil or 02:20

15 some fraction of jojoba oil replaced with 02:20

16 hydrogenated material. 02:20

17 MR. LUCAS: We'd like to reserve the 02:20

18 right to review and sign the transcript. 02:20

19 MR. KANE: I have just one follow-up 02:21

20 question on that. 02:21

21 EXAMINATION BY 02:21

22 MR. KANE: 02:21

23 Q. How does the OSI of the hydrogenated 02:21

24 material relate to the refined oil, the 02:21

25 unsaturated material? 02:21

1 DAVID ROCKSTRAW, PhD, PE

2 A. I'm sorry, repeat the question. 02:21

3 Q. You were talking about both 02:21

4 hydrogenated materials of a jojoba oil and 02:21

5 unhydrogenated, right? 02:21

6 A. Correct. 02:21

7 Q. What is the relationship of the OSI 02:21

8 between those two materials? 02:21

9 A. Are you asking for relative values? 02:21

10 Q. Yes. 02:21

11 A. I would expect that the hydrogenated 02:21

12 material has a higher OSI, but its presence 02:21

13 with the unsaturated material would not change 02:21

14 the OSI of a blend of those materials. 02:21

15 Q. So the -- if I am understanding you 02:21

16 correctly, you are saying that the OSI of a 02:21

17 blend is dictated by the OSI of the unsaturated 02:22

18 material? 02:22

19 A. Yeah. I think you call that "the 02:22

20 weakest link." 02:22

21 So, for instance, if I took -- the 02:22

22 OSI device takes 5 grams of material, that's 02:22

23 what the standard calls for you to put in it. 02:22

24 If instead of 5 grams of refined 02:22

25 oil, I put 4 grams of refined oil and 1 gram of 02:22

1 DAVID ROCKSTRAW, PhD, PE

2 fully hydrogenated wax in it, I would expect to 02:22

3 get the same or similar result from that OSI. 02:22

4 And in the intrinsic record I found 02:22

5 evidence of that, so a person of skill in the 02:22

6 art would recognize that, and it's confirmed or 02:22

7 corroborated by the intrinsic record. 02:22

8 Q. And just to go a little bit further 02:22

9 on that example; so if you had the 5 grams of 02:22

10 material, if you put 4 grams of hydrogenated 02:22

11 material and 1 gram of unhydrogenated, you 02:22

12 would still expect to get similar OSIs? 02:22

13 A. I would. Your weakest link is still 02:23

14 the oil, and I would expect that it may delay 02:23

15 the onset a bit, but I would still expect it to 02:23

16 be a similar result. 02:23

17 MR. KANE: Okay. Nothing further. 02:23

18 Thank you. 02:23

19 MR. LUCAS: Thank you very much, 02:23

20 Dr. Rockstraw. 02:23

21 VIDEOGRAPHER: This concludes 02:23

22 today's deposition. We're off the record. 02:23

23 The time is 2:22. 02:23

24 - oOo -

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(Time Noted: 2:22 p.m.)

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DAVID ROCKSTRAW, Ph.D., P.E.

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Subscribed and sworn to before me

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this _____ day of _____ 2023.

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C E R T I F I C A T E

STATE OF NEW YORK)

) ss. :

COUNTY OF ONONDAGA)

I, Mary Agnes Drury, a Notary Public
within and for the State of New York, do
hereby certify:

That DAVID ROCKSTRAW, Ph.D., P.E., the
witness whose deposition is hereinbefore
set forth, was duly sworn by me and that
such deposition is a true record of the
testimony given by such witness.

I further certify that I am not
related to any of the parties to this
action by blood or marriage; and that I am
in no way interested in the outcome of this
matter.

IN WITNESS WHEREOF, I have hereunto
set my hand this 20th day of November,
2023.



Mary Agnes Drury

1

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VANTAGE EXHIBITS

10

NUMBER

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Exhibit 1001

US Patent 11,248,245 Dated

9

12

2/15/22, 17-Pages

13

Exhibit 1003

Rockstraw Declaration Dated

10

14

2/23/23, 124-Pages

15

Exhibit 1004

Cummings Article, "A Natural

23

16

Alternative," 4-Pages

17

Exhibit 1005

"Trans Isomers in

32

18

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19

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Soap & Cosmetics Publication

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20

June 2001, 8-Pages

21

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22

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23

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"Xu 1" Publication Dated

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24

2003, 16-Pages

25

1	VANTAGE EXHIBITS		
2	NUMBER	DESCRIPTION	PAGE
3	Exhibit 1009	Sessa Article, "Derivation	58
4		of a Cocoa Butter Equivalent	
5		from Jojoba Transesterified	
6		Ester via a Differential	
7		Scanning Calorimetry Index,"	
8		Dated 1996, 4-Pages	
9	Exhibit 1015	US Patent Publication	59
10		"Kodali" 22-Pages	
11	Exhibit 1017	"Xu 2" Publication Dated	64
12		2006, 39-Pages	
13	Exhibit 1002	Portion of File History of	113
14		Materials Considered,	
15		243-Pages	

* * * * *

1 ERRATA SHEET FOR THE TRANSCRIPT OF:

2

3 Case Name: Vantage v Cargill
 4 Dep. Date: November 17, 2023
 5 Deponent: DAVID ROCKSTRAW, Ph.D., P.E.

6 CORRECTIONS:

7	8	9	10	11	12
Pg.	Ln.	Now Reads	Should Read	Reason	
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20 DAVID ROCKSTRAW, Ph.D., P.E.

21 SUBSCRIBED AND SWORN BEFORE ME

22 THIS ___ DAY OF _____ 2023.

23

24

25 (Notary Public) MY COMMISSION EXPIRES: _____