

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT6228640

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT

**CONVEYING PARTY DATA**

Name	Execution Date
DUPONT INDUSTRIAL BIOSCIENCES USA, LLC	07/24/2020

**RECEIVING PARTY DATA**

<b>Name:</b>	REFINING TECHNOLOGY SOLUTIONS, LLC
<b>Street Address:</b>	6363 COLLEGE BOULEVARD
<b>Internal Address:</b>	SUITE 300
<b>City:</b>	OVERLAND PARK
<b>State/Country:</b>	KANSAS
<b>Postal Code:</b>	66211

**PROPERTY NUMBERS Total: 42**

Property Type	Number
Patent Number:	8084655
PCT Number:	US2008067072
Application Number:	60934710
Patent Number:	8119847
Patent Number:	9139782
PCT Number:	US2012024863
Patent Number:	10144882
PCT Number:	US2011058031
Patent Number:	8926826
PCT Number:	US2012035817
Patent Number:	8894838
PCT Number:	US2012035823
Patent Number:	9365781
PCT Number:	US2013041921
Patent Number:	8945372
PCT Number:	US2012052005
Patent Number:	9212323
PCT Number:	US2015039001
Patent Number:	9139783

PATENT

Property Type	Number
Patent Number:	9365782
Patent Number:	8721871
PCT Number:	US2013068208
Patent Number:	10005971
Patent Number:	9617485
Application Number:	61881597
PCT Number:	US2014056868
Application Number:	61781438
Patent Number:	9783746
Patent Number:	9499750
PCT Number:	US2014024190
Patent Number:	10077219
Patent Number:	9580366
Application Number:	61816373
PCT Number:	US2014035593
Patent Number:	10669490
Application Number:	62286562
PCT Number:	US2017012763
Application Number:	62560752
Application Number:	62552496
PCT Number:	US2018051075
PCT Number:	US2018048803
PCT Number:	US2018048810

**CORRESPONDENCE DATA**

**Fax Number:** (314)863-9388

*Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.*

**Phone:** 314.863.0800

**Email:** stl.uspatents@stinson.com

**Correspondent Name:** STINSON LLP

**Address Line 1:** 7700 FORSYTH BLVD., SUITE 1100

**Address Line 4:** ST. LOUIS, MISSOURI 63105

<b>ATTORNEY DOCKET NUMBER:</b>	3516617.0001 (AXJ)
<b>NAME OF SUBMITTER:</b>	ANITA JURIC
<b>SIGNATURE:</b>	/anita juric/
<b>DATE SIGNED:</b>	07/31/2020

**Total Attachments: 24**

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## PATENT ASSIGNMENT

This PATENT ASSIGNMENT (this "Assignment"), effective as of April 1, 2020 (the "Effective Date"), is by and between DuPont Industrial Biosciences USA, LLC, a Delaware limited liability company whose principal place of business is located at 974 Centre Road, Wilmington, Delaware 19805 ("Assignor"), and Refining Technology Solutions, LLC, a Delaware limited liability company whose principal place of business is located at 6363 College Boulevard, Suite 300, Overland Park, Kansas 66211 ("Assignee"), (each a "Party" and collectively, the "Parties").

WHEREAS, Assignor owns the issued patents and patent applications set forth on Schedule A hereto (the foregoing, including all patents issuing from any patent applications, collectively, the "Assigned Patents"); and

WHEREAS, the Parties hereto agree that the Assignor contributes, transfers, assigns, and conveys to the Assignee all of its right, title, and interest in and to the Assigned Patents and that the Assignee accepts such contribution, transfer, assignment, and conveyance of such Assigned Patents;

NOW, THEREFORE, in consideration of the foregoing and the covenants and agreements contained in this Assignment, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. Conveyance. Assignor hereby assigns, transfers, and conveys to Assignee all of Assignor's right, title, and interest in and to the Assigned Patents, together with any and all (a) related continuations, continuations-in-part, divisionals, reissues, reexaminations, substitutions, extensions, and foreign equivalents thereof and (b) priority rights derived from any of the Assigned Patents, or the items described in the foregoing subsection (a), by virtue of the International Convention for the Protection of Industrial Property and any other rights provided under applicable treaties or conventions, including rights in any and all provisional applications, together with all rights and remedies against past, present, and future infringement, misappropriation, or other violation thereof, including the right to enforce the foregoing and to sue for and recover profits and damages for any and all infringements, misappropriations, or violations thereof, whether past, present, or future, to the full end of the term or terms for which said patents may be granted, as fully and entirely as the same would have been held and enjoyed by Assignor without this assignment (the rights transferred under this Section 1 cumulatively, the "Assigned Rights").

2. Recordation; Further Assurances. Assignor and Assignee shall each take any and all additional actions as may be reasonably necessary to effect the transactions contemplated hereby, including Assignor's execution of individual assignment documentation prepared by Assignee at Assignee's expense for filing with the authorities of each individual country. In furtherance of the foregoing, Assignor agrees that with respect to the Assigned Patents it will enter into an assignment agreement suitable for filing with the authorities of each individual country (each a "Recordal Instrument"). The Parties agree that any Recordal Instrument shall give no greater rights or remedies in respect of the transaction completed in such Recordal Instrument than those provided for herein and Section 4 of this Assignment shall apply to any

Recordal Instrument as if fully set forth therein. As between the Parties, the responsibility to file assignments with the national patent offices of each country for the Assigned Patents shall be on the Assignee and the Assignee shall bear the cost of filing such assignments (unless, as of the Effective Date, the patent registration or application is not properly recorded in the name of the Assignor or an Affiliate of Assignor, in which case, at the request of Assignee, the Parties shall reasonably cooperate to make the necessary corrective filings and recordals of the documents that are available to them and shall split evenly any expenses in connection with the foregoing corrections and each Party shall provide any receipts and expense documentation to the other Party for the purposes of splitting such expenses).

3. Prosecution and Maintenance. For the avoidance of doubt but without limiting the obligations set forth in Section 2 hereof, as of and following the Effective Date, Assignor will have no responsibility to take any action to maintain any of the patents included in the Assigned Rights or further prosecute or seek issuance of any patent applications included in the Assigned Rights, including payment of fees, responses to any office action, or other inquiries from agents of governmental entities or registrars, or otherwise.

4. No Claims. Except with respect to Section 2 of this Assignment, neither Party nor any of their respective affiliates or representatives will have, or be subject to, any liability or indemnification obligation under this Assignment to the other Party, any of its affiliates or representatives or any other entity or person resulting from, or in connection with, this Assignment or the transactions contemplated hereby. Except with respect to Section 2, each of the Parties hereby agrees (a) not to bring any claim or Action (as defined herein) under this Assignment against the other Party, its affiliates or representatives and (b) to cause its respective affiliates and representatives to comply with this Section 4. "Action" shall mean any claims, actions, suits, inquiries, proceedings, or investigations by or before any governmental authority or arbitral tribunal.

5. Disclaimer of Representations and Warranties. ASSIGNEE (ON BEHALF OF ITSELF AND ITS AFFILIATES) UNDERSTANDS AND AGREES THAT NO PARTY TO THIS ASSIGNMENT IS REPRESENTING OR WARRANTING IN ANY WAY IN THIS ASSIGNMENT, AND HEREBY EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, AS TO THE ASSIGNED PATENTS AND THE OTHER ASSIGNED RIGHTS, AS TO ANY CONSENTS OR APPROVALS (INCLUDING APPROVALS FROM ANY GOVERNMENTAL ENTITIES) REQUIRED IN CONNECTION HEREWITH OR THEREWITH, AS TO THE VALUE OR FREEDOM FROM ANY SECURITY INTERESTS OF OR THE NON-INFRINGEMENT OR ABSENCE OF OTHER VIOLATION, VALIDITY OR ENFORCEABILITY OR ANY OTHER MATTER CONCERNING THE ASSIGNED PATENTS AND OTHER PATENTS AND PATENT APPLICATIONS INCLUDED IN THE ASSIGNED RIGHTS, AND ALL OF THE ASSIGNED PATENTS AND OTHER ASSIGNED RIGHTS ARE BEING TRANSFERRED ON AN "AS IS, WHERE IS" AND "WITH ALL FAULTS" BASIS.

6. Successors and Assigns. The provisions of this Assignment and the obligations and rights hereunder shall be binding upon, inure to the benefit of, and be enforceable by (and against) the Parties and their respective successors and permitted transferees and assigns.

7. Counterparts. This Assignment may be executed in more than one counterpart, all of which shall be considered one and the same agreement, and shall become effective when

one or more such counterparts have been signed by each of the Parties and delivered to each of the Parties.

8. Title and Headings. Titles and headings to sections herein are inserted for the convenience of reference only and are not intended to be a part of or to affect the meaning or interpretation of this Assignment.

9. Governing Law. This Assignment and dispute arising out of, in connection with, or relating to this Assignment shall be governed by and construed in accordance with the Laws of the State of Delaware, without giving effect to the conflicts of laws principles thereof.

*[Signature Page Follows]*

IN WITNESS WHEREOF, Assignor and Assignee have duly executed this Assignment as of the date first written above.

ASSIGNOR:

DuPont Industrial Biosciences USA, LLC

By: Jessica Sinnott

Name: Jessica Sinnott

Title: Associate General Counsel – Intellectual Property

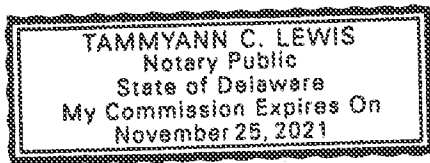
THE STATE OF DELAWARE

County of New Castle

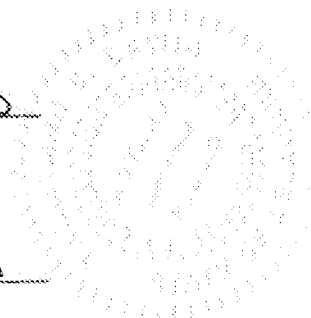
This instrument was executed before me on this 24<sup>th</sup> day of July, 2020 by Jessica Sinnott the Associate General Counsel (title) of DuPont Industrial Biosciences USA, LLC, a Delaware limited liability company, on behalf of said company.

Tammyann C. Lewis  
Notary Public in and for The State of Delaware

Tammyann C. Lewis  
Printed or Typed Name of Notary



My commission expires 11-25-2021



Acknowledged and Accepted:

ASSIGNEE:

Refining Technology Solutions, LLC

By: *Linda Colby*  
Name: Linda Colby  
Title: Vice President

THE STATE OF Missouri

County of St. Louis

This instrument was executed before me on this 29<sup>th</sup> day of July,  
2020 by Linda Colby, the Vice President  
(title) of Refining Technology Solutions, LLC, a Delaware limited liability company, on behalf of  
said company.



**J. A. RILEY**  
My Commission Expires  
March 14, 2023  
St. Charles County  
Commission #15380404

*Julie A. Riley*  
Notary Public in and for The State of Missouri

Julie A. Riley  
Printed or Typed Name of Notary

My commission expires 3/14/2023



SCHEDULE A TO PATENT ASSIGNMENT

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3189-BR-PCT	BRAZIL	UTL	6/16/2008	PI0811661.0			CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3189-C-PCT	CHINA	UTL	6/16/2008	200880020224.1	5/7/2014	200880020224.1	CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3189-IN-PCD	INDIA	UTL	6/16/2008	10758/DELNP/2015			CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3189-IN-PCT	INDIA	UTL	6/16/2008	8018/DELNP/2009	9/25/2017	287707	CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3189-US-NP	UNITED STATES	UTL	6/13/2008	12/138,764	12/27/2011	8084655	CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3189-WO	WIPO	UTL	6/16/2008	PCT/US2008/067072			CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3189-US-PSP	UNITED STATES	PRV	6/15/2007	60/934710			CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3224-BR-PCT	BRAZIL	UTL	6/23/1998	PI9810061.0	11/30/2010	PI9810061.0	TWO PHASE HYDROPROCESSING
CH3225-BR-PCT	BRAZIL	UTL	3/23/2006	PI0612172.1	2/10/2016	PI0612172.1	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3225-CA-PCT	CANADA	UTL	3/23/2006	2601995	8/13/2013	2601995	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3225-CN-PCT	CHINA	UTL	3/23/2006	200680018017.3	3/13/2013	200680018017.3	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3225-IN-PCT	INDIA	UTL	3/23/2006	7368/DELNP/07	10/17/2015	269365	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3225-KR-PCT	SOUTH KOREA	UTL	3/23/2006	10-2007-7024344	2/28/2014	1371913	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3325-MX-PCD	MEXICO	UTL	3/23/2006	MX/a/2011/007365	3/11/2019	363126	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3325-MX-PCT	MEXICO	UTL	3/23/2006	MX/A/07/011809	9/6/2011	289968	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3325-RU-PCT	RUSSIA	UTL	3/23/2006	2007137780	2/10/2011	241285	CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3325-WO	WIPO	UTL	3/23/2006	PCT/US2006/010639			CONTROL SYSTEM METHOD AND APPARATUS FOR CONTINUOUS LIQUID PHASE HYDROPROCESSING
CH3326-US-NP	UNITED STATES	UTL	6/13/2008	12/138,872	2/21/2012	8119847	CATALYTIC PROCESS FOR CONVERTING RENEWABLE RESOURCES INTO PARAFFINS FOR USE AS DIESEL BLENDING STOCKS
CH3328-BR-PCT	BRAZIL	UTL	2/13/2012	BR112013018931-2			TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328-CA-PCT	CANADA	UTL	2/13/2012	2,825,775			TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328-CN-PCT	CHINA	UTL	2/13/2012	201280008412.9	8/10/2016	201280008412.9	TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3328- IN-PCT	INDIA	UTL	2/13/2012	6576/DELNP/2013	3/1/2019	308416	TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328- KR-PCT	SOUTH KOREA	UTL	2/13/2012	10-2013-7023913	11/23/2018	10-1923752	TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328- RU-PCT	RUSSIA	UTL	2/13/2012	2013141535	8/10/2016	2593758	TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328- SA-DIV	SAUDI ARABIA	UTL	2/13/2012	115360463			TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328- US-NP	UNITED STATES	UTL	11/2/2011	13/025,427	9/22/2015	9139782	TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3328- WO	WIPO	UTL	2/13/2012	PCT/US2012/024863			TARGETED PRETREATMENT AND SELECTIVE RING OPENING IN LIQUID-FULL REACTORS
CH3329- BR-PCT	BRAZIL	UTL	10/27/2011	BR1120130098864			HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- CA-PCT	CANADA	UTL	10/27/2011	2,815,656			HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- CN-PCT	CHINA	UTL	10/27/2011	201180052065.5	12/7/2016	201180052065.5	HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3329- IN-PCT	INDIA	UTL	10/27/2011	3440/OELNP/2013			HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- KR-PCT	SOUTH KOREA	UTL	10/27/2011	10-2013-7013496	1/11/2019	10-1939854	HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- RU-PCT	RUSSIA	UTL	10/27/2011	2013124394	1/19/2016	2575120	HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- SA-NP	SAUDI ARABIA	UTL	10/29/2011	111320886	5/6/2015	4016	HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- US-NP	UNITED STATES	UTL	10/28/2010	12/914,061	12/4/2018	10144882	HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3329- WO	WIPO	UTL	10/27/2011	PCT/US2011/058031			HYDROPROCESSING OF HEAVY HYDROCARBON FEEDS IN LIQUID-FULL REACTORS
CH3340- CA-PCT	CANADA	UTL	4/30/2012	2834302	9/24/2019	2834302	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3340-CN-PCT	CHINA	UTL	4/30/2012	201280020700.6	3/30/2016	201280020700.6	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-IN-PCT	INDIA	UTL	4/30/2012	8853/DELNP/2013	12/24/2018	304878	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-KR-PCT	SOUTH KOREA	UTL	4/30/2012	10-2013-7031155	1/24/2019	10-1944130	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-RU-PCT	RUSSIA	UTL	4/30/2012	2013152813	4/4/2017	2615133	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-SA-NP	SAUDI ARABIA	UTL	5/9/2012	112330504	3/28/2016	4739	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-US-NP	UNITED STATES	UTL	4/28/2011	13/096,309	1/6/2015	8926826	LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS
CH3340-WO	WIPO	UTL	4/30/2012	PCT/US2012/035817			LIQUID-FULL HYDROPROCESSING TO IMPROVE SULFUR REMOVAL USING ONE OR MORE LIQUID RECYCLE STREAMS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3341-CA-PCT	CANADA	UTL	4/30/2012	2834305	12/3/2019	2834305	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-CN-PCT	CHINA	UTL	4/30/2012	201280020793.2	6/29/2016	201280020793.2	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-IN-PCT	INDIA	UTL	4/30/2012	8821/DELNP/2013	9/26/2018	301438	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-KR-PCT	SOUTH KOREA	UTL	4/30/2012	10-2013-7031301	12/21/2018	10-1933733	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-RU-PCT	RUSSIA	UTL	4/30/2012	2013153110	2/3/2017	2612218	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-SA-NP	SAUDI ARABIA	UTL	4/30/2012	112330485	8/17/2015	4277	HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS

Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3341-US-NP	UNITED STATES	UTL	4/29/2011	13/097,694	11/25/2014	8894838	HYDROPROCESSING PROCESS USING UNEVEN CATALYST VOLUME DISTRIBUTION AMONG CATALYST BEDS IN LIQUID-FULL REACTORS
CH3341-WO	WIPO	UTL	4/30/2012	PCT/US2012/035823			HYDROPROCESSING PROCESS USING INCREASING CATALYST VOLUME ALONG SUCCESSIVE CATALYST BEDS IN LIQUID-FULL REACTORS
CH3342-BR-PCT	BRAZIL	UTL	5/21/2013	BR112014029236-1			PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-CA-PCT	CANADA	UTL	5/21/2013	2,873,940			PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-CN-PCT	CHINA	UTL	5/21/2013	201380026891.1	8/24/2016	201380026891.1	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-IN-PCT	INDIA	UTL	5/21/2013	9167/DELNP/2014	3/8/2019	308837	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-KR-PCT	SOUTH KOREA	UTL	5/21/2013	10-2014-7035908	12/18/2019	10-2058958	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS



Case Ref.	Country	Filing Type	Filing Date	Filing Number	Grant Date	Grant Number	Internal Title
CH3342-RU-PCT	RUSSIA	UTL	5/21/2013	2014152817	12/5/2017	2637553	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-SA-NP	SAUDI ARABIA	UTL	5/25/2013	113340581	7/23/2015	4201	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-US-NP	UNITED STATES	UTL	5/25/2012	13/480,574	6/14/2016	9365781	PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3342-WO	WIPO	UTL	5/21/2013	PCT/US2013/041921			PROCESS FOR DIRECT HYDROGEN INJECTION IN LIQUID FULL HYDROPROCESSING REACTORS
CH3383-CA-PCT	CANADA	UTL	8/23/2012	2847798	5/7/2019	2847798	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-CN-PCT	CHINA	UTL	8/23/2012	201280044467.5	12/23/2015	201280044467.5	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-IN-PCT	INDIA	UTL	8/23/2012	1359/DELNP/2014	7/2/2019	315403	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS

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CH3383-KR-PCT	SOUTH KOREA	UTL	8/23/2012	10-2014-7009520	3/20/2019	10-1962496	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-RU-PCT	RUSSIA	UTL	8/23/2012	2014114843	5/31/2017	2621043	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-SA-NP	SAUDI ARABIA	UTL	9/15/2012	112330853	12/6/2015	4527	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-US-NP	UNITED STATES	UTL	9/15/2011	13/233,093	2/3/2015	8945372	TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3383-WO	WIPO	UTL	8/23/2012	PCT/US2012/052005			TWO PHASE HYDROPROCESSING PROCESS AS PRETREATMENT FOR THREE-PHASE HYDROPROCESSING PROCESS
CH3388-CN-PCT	CHINA	UTL	7/2/2015	201580038993.4			LIQUID-FULL HYDROTREATING AND SELECTIVE RING OPENING PROCESSES
CH3388-US-NP	UNITED STATES	UTL	7/18/2014	14/335,058	12/15/2015	9212323	LIQUID-FULL HYDROTREATING AND SELECTIVE RING OPENING PROCESSES
CH3388-WO	WIPO	UTL	7/2/2015	PCT/US2015/039001			LIQUID-FULL HYDROTREATING AND SELECTIVE RING OPENING PROCESSES

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CH3429- BR-PCT	BRAZIL	UTL	11/4/2013	BR122019026593-3			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- BR-PCT	BRAZIL	UTL	11/4/2013	BR112015009859-2			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- CA-PCT	CANADA	UTL	11/4/2013	2888675			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- CN-PCT	CHINA	UTL	11/4/2013	201710265989-2	12/18/2018	201710265989-2	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- CN-PCT	CHINA	UTL	11/4/2013	201380058008-7	6/9/2017	201380058008-7	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- IN-PCT	INDIA	UTL	11/4/2013	3200/DELNP/2015			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- KR-PCT	SOUTH KOREA	UTL	11/4/2013	2015-7011506			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- RU-PCT	RUSSIA	UTL	11/4/2013	2015121709	7/26/2018	2662434	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- SA-PCT	SAUDI ARABIA	UTL	11/4/2013	515360385			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- US-CIP	UNITED STATES	UTL	10/11/2013	14/051,495	9/22/2015	9139783	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS

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CH3429- US-CNT	UNITED STATES	UTL	8/3/2015	14/816,287	6/14/2016	9365782	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- US-NP	UNITED STATES	UTL	11/6/2012	13/669,540	5/13/2014	8721871	HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3429- WO	WIPO	UTL	11/4/2013	PCT/US2013/068208			HYDROPROCESSING LIGHT CYCLE OIL IN LIQUID-FULL REACTORS
CH3430- BR-PCT	BRAZIL	UTL	9/23/2014	BR112016006371-6			HYDROPROCESSING OF GAS OIL WITH INTEGRATION OF HYDROCRACKING AND REFINING ZONES
CH3430- CA-PCT	CANADA	UTL	9/23/2014	2925239			GAS OIL HYDROPROCESS
CH3430- CN-PCT	CHINA	UTL	9/23/2014	201711360458.8			GAS OIL HYDROPROCESS
CH3430- CN-PCT	CHINA	UTL	9/23/2014	201480064069.9	1/12/2018	201480064069.9	GAS OIL HYDROPROCESS
CH3430- IN-PCT	INDIA	UTL	9/23/2014	201617009841			GAS OIL HYDROPROCESS
CH3430- KR-PCT	SOUTH KOREA	UTL	9/23/2014	10-2016-7010309			GAS OIL HYDROPROCESS

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CH3430- RU-PCT	RUSSIA	UTL	9/23/2014	201615768	8/22/2018	2664798	HYDROPROCESSING OF GAS OIL WITH INTEGRATION OF HYDROCRACKING AND REFINING ZONES
CH3430- SA-PCT	SAUDI ARABIA	UTL	9/23/2014	516370802	1/22/2018	5712	GAS OIL HYDROPROCESS
CH3430- US-CNT	UNITED STATES	UTL	2/28/2017	15/444,363	6/26/2018	10005971	GAS OIL HYDROPROCESS
CH3430- US-NP	UNITED STATES	UTL	9/10/2014	14/481,952	4/11/2017	9617485	GAS OIL HYDROPROCESS
CH3430- US-PRO	UNITED STATES	PRV	9/24/2013	61/881,597			HYDROPROCESSING OF GAS OIL WITH INTEGRATION OF HYDROCRACKING AND REFINING ZONES
CH3430- WO	WIPO	UTL	9/23/2014	PCT/US2014/056868			HYDROPROCESSING OF GAS OIL WITH INTEGRATION OF HYDROCRACKING AND REFINING ZONES
CH3431	UNITED STATES	PRV	3/14/2013	61/781,438			PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- BR-PCT	BRAZIL	UTL	3/12/2014	112015022510-1			PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF

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CH3431- CA-PCT	CANADA	UTL	3/12/2014	2904172			MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- CN-PCT	CHINA	UTL	3/12/2014	201710945975.5			PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- CN-PCT	CHINA	UTL	3/12/2014	201480015304.3	10/13/2017	201480015304.3	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- IN-PCT	INDIA	UTL	3/12/2014	7718/DELNP/2015	2/12/2020	331840	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- KR-PCT	SOUTH KOREA	UTL	3/12/2014	10-2015-7024657			PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF

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CH3431- RU-PCT	RUSSIA	UTL	3/12/2014	2015143652	4/3/2018	2649389	MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- SA-PCT	SAUDI ARABIA	UTL	3/12/2014	517380812	5/28/2019	6498	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- SA-PCT	SAUDI ARABIA	UTL	3/12/2014	515361024	10/23/2017	5571	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- US-CNT	UNITED STATES	UTL	10/5/2016	15/285,803	10/10/2017	9783746	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3431- US-NP	UNITED STATES	UTL	3/13/2014	14/208,258	11/22/2016	9499750	PROCESS FOR IMPROVING COLD FLOW PROPERTIES AND INCREASING YIELD OF

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CH3431- WO	WIPO	UTL	3/12/2014	PCT/US2014/024190			MIDDLE DISTILLATE FEEDSTOCK THROUGH LIQUID FULL HYDROTREATING AND DEWAXING
CH3458- CN-PCT	CHINA	UTL	4/28/2014	201480023574.9	11/17/2017	201480023574.9	IMPROVED CONTINUOUS MIXING REACTOR AND METHOD OF USE
CH3458- US-CNT	UNITED STATES	UTL	1/10/2017	15/402,304	9/18/2018	10077219	IMPROVED CONTINUOUS MIXING REACTOR AND METHOD OF USE
CH3458- US-NP	UNITED STATES	UTL	4/25/2014	14/262,167	2/28/2017	9580366	IMPROVED CONTINUOUS MIXING REACTOR AND METHOD OF USE
CH3458- US-PRO	UNITED STATES	PRV	4/26/2013	61/816,373			CONTINUOUS MIXING REACTOR AND METHOD OF USE
CH3458- WO	WIPO	UTL	4/28/2014	PCT/US2014/035593			IMPROVED CONTINUOUS MIXING REACTOR AND METHOD OF USE
CH3534- CN-PCT	CHINA	UTL	1/9/2017	201780015952.2			PROCESS FOR PRODUCING DIESEL WITH LOW LEVELS OF SULFUR
CH3534- IN-PCT	INDIA	UTL	1/9/2017	201817027826			PROCESS FOR PRODUCING DIESEL WITH LOW LEVELS OF SULFUR



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CH3534-US-NP	UNITED STATES	UTL	1/9/2017	15/401,400	6/2/2020	10,669,490	PROCESS FOR PRODUCING DIESEL WITH LOW LEVELS OF SULFUR
CH3534-US-PRO	UNITED STATES	PRV	1/25/2016	62/286,562			PROCESS FOR PRODUCING DIESEL WITH LOW LEVELS OF SULFUR
CH3534-WO	WIPO	UTL	1/9/2017	PCT/US2017/012763			PROCESS FOR PRODUCING DIESEL WITH LOW LEVELS OF SULFUR
CH3543-CN-PCT	CHINA	UTL	9/14/2018	201880059572.3			ALKYLATION WITH OLEFIN MIXTURES
CH3543-US-PCT	UNITED STATES	UTL	3/16/2020	16/647,554			ALKYLATION WITH OLEFIN MIXTURES
CH3543-WO	WIPO	UTL	9/14/2018	PCT/US2018/051075			ALKYLATION WITH OLEFIN MIXTURES
CH3543-US-PSP	UNITED STATES	PRV	9/20/2017	62/560752			ALKYLATION WITH OLEFIN MIXTURES
CH3546-US-PCT	UNITED STATES	UTL	2/25/2020	16/641,823			CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT AND APPARATUS UTILIZED THEREIN
CH3546-WO	WIPO	UTL	8/30/2018	PCT/US2018/048803			CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID

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CH3546-US-PSP	UNITED STATES	PRV	8/31/2017	62/552496			CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT AND APPARATUS UTILIZED THEREIN
CH3553-CN-PCT	CHINA	UTL	8/30/2018	201880063920.4			SULFURIC ACID ALKYLATION REACTOR SYSTEM AND CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT
CH3553-US-PCT	UNITED STATES	UTL	2/25/2020	16/641,827			SULFURIC ACID ALKYLATION REACTOR SYSTEM AND CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT
CH3553-WO	WIPO	UTL	8/30/2018	PCT/US2018/048810			SULFURIC ACID ALKYLATION REACTOR SYSTEM AND CONVERSION OF A HYDROGEN FLUORIDE ALKYLATION UNIT TO A SULFURIC ACID ALKYLATION UNIT

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