

Search history

Search PN=(WO2016079575) (Results 1)

1:

Search [SP]: 1. a non-azeotropic fluid mixture for air conditioning devices, comprising: a mixture of the following gases: 0.5 percent -5 percent 2-methylpropane (isobutane) CH_3CH_3 , commercially known as (r-600a), 1 percent -3 percent pentafluoroethane, commercially known as (r-125), 93 percent -95 percent 1,1,1,2-tetrafluoroethane, commercially known as (r-134a), and 2 percent -3 percent difluoromethane, commercially known as (r-32), wherein the mixture of gases further comprises 0.03-3 parts in weight of a polymerisation inhibitor for each 100 parts of the mixture of gases, and wherein the non-azeotropic fluid mixture is not miscible with mineral oils and it is used with polyester oils. 2. the non-azeotropic fluid mixture as set forth in claim 1, wherein the polymerisation inhibitor is principally hydroquinone, benzotriazole or dimethyl-t-butylphenol. 3. the non-azeotropic fluid mixture as set forth in claim 1, wherein the energy classification of the mixture obtained by these means as refrigerant fluid is a+++ . (Results 0)

Search [SP]: cross-reference to related applications not applicable statement regarding federally sponsored research or development not applicable the names of the parties to a joint research agreement not applicable incorporation-by-reference of material submitted on a compact disc not applicable background of the invention technical field the field of the invention is that of the chemical industry, and more specifically the gas production industry and the industry for the manufacture of air conditioning devices. description of the related art there are many precedents in the use of gases for various purposes. there are also some precedents in connection with fluid mixture for the air conditioning industry. examples of these precedents may be reflected in the patent document. 47 refrigerant composition. publication number: es2354043 t3 (9 mar. 2011) also published as: ep1765953 a1 (28 mar. 2007) ep1765953 b1 (6 oct. 2010) wo2005083028 a1 (9 sep. 2005) applicant: rpl holdings limited (gb) cip: co9k5/04 (2006.01) abstract: a refrigerant composition consisting in weight essentially of: 53.2 r134a at 39 percent r125 45-55 percent 0.6 isopentane at 1 percent 0.6 butane at 3 percent 0.6 isobutane at 2 percent. it does indeed offer substantial differences from the composition of the invention proposed. 75 composition of a working fluid for a refrigerating machine. publication number: es2082148 t3 (16 mar. 1996) also published as: ep0475751 a1 (18 mar. 1992) ep0475751 b1 (6 dec. 1995) applicant: kao corporation (jp) cip: co9k5/00 (2006.01) this invention describes a composition for the operating fluid of a refrigerating machine comprising: a hydrofluorocarbon and an ester formed between a neopentilpoliol and a branched, saturated aliphatic monocarboxylic acid, with carbon number from 7-9. the composition of the working fluid in this invention is excellent in terms of its compatibility, lubrication, thermal stability and insulating properties. the characteristics of this invention are however new and are not all anticipated in unified form, for the reasons set out below. the field of this invention refers to use of the mixture in the invention as refrigerant in air conditioning systems both for the production of cold and as heat pump. that mixture is applied to single cycle refrigerating circuits with a steam compression system. the mixture performance has been evaluated according to the refrigerating load, discharge temperature, the power used by the compressor and the cop, eer, scop and seer. the composition in the invention has a cyclic yield which is enhanced in comparison with conventional refrigerants available, such as r-410a or r-407c, when used both to produce cold and in a heat pump. after multiple trials, the refrigerant mixture which is the subject of this invention was placed in the highest energy classification, a+++ . the current trend in the field of refrigerants is to create less or zero environmental impact, so the elimination of chlorine from its composition yields a zero value for odp (ozone depletion potential), while working for maximum reduction of gwp (global warming potential), the most noble being natural refrigerants (NH_3 , CO_2) or hydrocarbons (hc), and finally hfc of low gwp, such as the mixture in this invention, its gdp index=0 and a very low gwp. there is not at this time, as authoritative value on the market, a composition such as that in this invention which is so energy-efficient compared with other existing mixtures, producing energy savings of between 40 percent and 60 percent, contributing indirectly to a reduction of CO_2 in electricity production. a further factor to be considered that existing less pollutant refrigerants have relatively high toxicity and inflammability values, making them less safe to handle. the mixture proposed in this invention is both thermally and chemically stable under severe conditions of both temperature and pressure. the ael (allowable exposure limit) value is 1000 ppm (8 hours twa). thus it is classified among high security refrigerants. the inventor is unaware of any forerunner which incorporates the provisions of this invention nor the benefits bestowed by such provisions. brief summary of the invention the invention promoted refers to a non-azeotropic fluid mixture for air conditioning devices, a fluid mixture used in such devices as the means for cooling them. to define the major parameters of this invention, exhaustive research was carried out on the ratios of the proportion of the mixture, resulting in physical-chemical and thermodynamic properties included in fig. 1. more specifically, the invention considers the mixture in terms of different proportions of the following refrigerant fluids (gases): 2-methylpropane (isobutane) CH_3CH_3 (r-600a), pentafluoroethane (r-125), tetrafluoroethane (r-134a), difluoromethane (r-32), the mixture (Results 0)

Search FT=(r-600a and r-125 and r-134a and r-32) (Results 45)

4:

Search FT=(r-134a and (hydroquinone or benzotriazole or dimethyl-t-butylphenol)) (Results 168)

5:

Search FT=((4 and (hydroquinone or benzotriazole or dimethyl-t-butylphenol))) (Results 12)

6:

1) Family number: 47930612 (US2010326062A)

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Title: COMPRESSED AIR ENERGY STORAGE SYSTEM UTILIZING TWO-PHASE FLOW TO FACILITATE HEAT EXCHANGE

Abstract: Source: US2010326062A [EN] A compressed-air energy storage system according to embodiments of the present invention comprises a reversible mechanism to compress and expand air, one or more compressed air storage tanks, a control system, one or more heat exchangers, and, in certain embodiments of the invention, a motor-generator. The reversible air compressor-expander uses mechanical power to compress air (when it is acting as a compressor) and converts the energy stored in compressed air to mechanical power (when it is acting as an expander). In certain embodiments, the compressor-expander comprises one or more stages, each stage consisting of pressure vessel (the "pressure cell") partially filled with water or other liquid. In some embodiments, the pressure vessel communicates with one or more cylinder devices to exchange air and liquid with the cylinder chamber(s) thereof. Suitable valving allows air to enter and leave the pressure cell and cylinder device, if present, under electronic control.

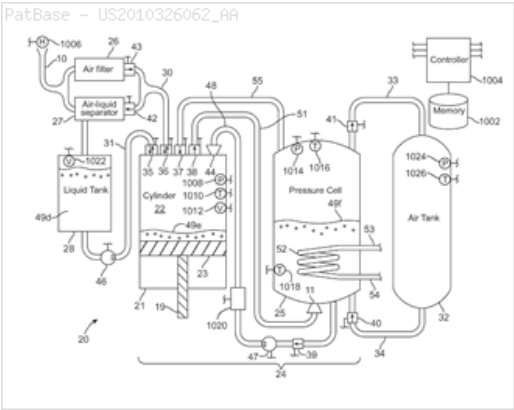
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F03C1/00 F15B1/02 F28D20/00 H02J1/10 (Advanced/Non-invention)
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Designated states:
AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2749975 AA	20110120	LSPB	+	published / reissued	
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ANNUAL FEE					
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EP2449259 A4	20141022	LSRE	RIC1	CLASSIFICATION (CORRECTION)	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : F03G 7/00 20060101AFI20140917BHEP

EP2449259 A4	20141022	LSRE	RIC1	CLASSIFICATION (CORRECTION)	CLASSIFICATIONSCHEME : IPC CLASSIFICATIONSYMBOL : F01B 9/02 20060101ALI20140917BHEP
EP2449259 A4	20150805	LSGT	+INTG	ANNOUNCEMENT OF INTENTION TO GRANT	EFFECTIVE DATE : 20150707
EP2449259 A4	20151230	LSGT	+INTG	ANNOUNCEMENT OF INTENTION TO GRANT	EFFECTIVE DATE : 20151120
EP2449259 B1	20160113	LSGT	+	granted / extensions (spc, cpc, pte)	
EP2449259 B1	20160113	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : GB REF LEGAL EVENT CODE : FG4D
EP2449259 B1	20160115	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : EP
EP2449259 B1	20160210	LSGT	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : FG4D
EP2449259 B1	20160215	LSNP	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : REF REF DOCUMENT NUMBER : 770708 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20160215
EP2449259 B1	20160303	LSPB	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R096 REF DOCUMENT NUMBER : 602010030221 COUNTRY OF REF DOCUMENT : DE
EP2449259 B1	20160510	LSRV	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : LT REF LEGAL EVENT CODE : MG4D
EP2449259 B1	20160516	LSFE	REG	REFERENCE TO A NATIONAL CODE	COUNTRY OF REF DOCUMENT : FR REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 7
EP2449259 B1	20160615	LSRV	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : AT REF LEGAL EVENT CODE : MK05 REF DOCUMENT NUMBER : 770708 COUNTRY OF REF DOCUMENT : AT KIND CODE OF REF DOCUMENT : T DESIGNATED STATE(S) : EFFECTIVE DATE : 20160113
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : IT NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : HR NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : ES NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING	COUNTRY OF REF DOCUMENT : FI

				STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : GR NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160414
EP2449259 B1	20160729	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : NO NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160413
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : IS NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160513
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : LT NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : LV NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : PT NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160513
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : AT NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : PL NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20160831	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : SE NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113

EP2449259 B1	20161014	LSRE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : DE REF LEGAL EVENT CODE : R097 REF DOCUMENT NUMBER : 602010030221 COUNTRY OF REF DOCUMENT : DE
EP2449259 B1	20161031	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : EE NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161031	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : DK NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : CZ NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : SM NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : SK NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161130	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : RO NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20161221	LSGT	+26N	NO OPPOSITION FILED	EFFECTIVE DATE : 20161014
EP2449259 B1	20161230	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : BE NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20170131	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : MC NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20170131	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : CH REF LEGAL EVENT CODE : PL
EP2449259 B1	20170228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT	COUNTRY OF REF DOCUMENT : BG NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE

				INFORM. FROM NAT. OFFICE TO EPO	DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160413
EP2449259 B1	20170228	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : SI NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF FAILURE TO SUBMIT A TRANSLATION OF THE DESCRIPTION OR TO PAY THE FEE WITHIN THE PRESCRIBED TIME-LIMIT LAPSED DATE : 20160113
EP2449259 B1	20170322	LSLE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : IE REF LEGAL EVENT CODE : MM4A
EP2449259 B1	20170428	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : LI NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20160630
EP2449259 B1	20170428	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : CH NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20160630
EP2449259 B1	20170511	LSFE	REG	REFERENCE TO A NATIONAL CODE	REF COUNTRY CODE : FR REF LEGAL EVENT CODE : PLFP YEAR OF FEE PAYMENT : 8
EP2449259 B1	20170531	LSLE	-PG25	LAPSED IN A CONTRACTING STATE ANNOUNCED VIA POSTGRANT INFORM. FROM NAT. OFFICE TO EPO	COUNTRY OF REF DOCUMENT : IE NOTIFICATIONOFLAPSE : LAPSE BECAUSE OF NON-PAYMENT OF DUE FEES LAPSED DATE : 20160628
EP2449259 B1	20170731	LSFE	+PGFP	POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : FR PAYMENT DATE : 20170511 YEAR OF FEE PAYMENT : 8
EP2449259 B1	20170731	LSFE	+PGFP	POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : GB PAYMENT DATE : 20170628 YEAR OF FEE PAYMENT : 8
EP2449259 B1	20170831	LSFE	+PGFP	POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : NL PAYMENT DATE : 20170614 YEAR OF FEE PAYMENT : 8
EP2449259 B1	20171031	LSFE	+PGFP	POSTGRANT: ANNUAL FEES PAID TO NATIONAL OFFICE	COUNTRY OF REF DOCUMENT : DE PAYMENT DATE : 20170621 YEAR OF FEE PAYMENT : 8
EP2449259 B1	20300628	PEXP		Calculated Patent Term Expiry	
EP2665895 A2	20131127	LSPB	+	published / reissued	
EP2665895 A2	20131127	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20130219
EP2665895 A4	20180411	LSES	+A4	DESPATCH OF SUPPLEMENTARY SEARCH REPORT	EFFECTIVE DATE : 20180314
IN01544MN2011 A	20120727	LSPB	+	published / reissued	
IN02544MN2012 A	20140620	LSPB	+	published / reissued	
JP2012523514 T2	20121004	LSPB	+	published / reissued	
JP2012523514 T2	20130227	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20130226
JP2012523514 T2	20131030	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20131029

JP2012523514 T2	20131220	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20131219
JP2012523514 T2	20140324	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2012523514 T2	20140402	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20140401
JP2012523514 T2	20140501	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20140425
JP2012523514 T2	20140509	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 5537572 COUNTRY OF REF DOCUMENT : JP
JP2014185640 A2	20141002	LSPB	+	published / reissued	
JP2014185640 A2	20150325	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20150324
JP2014185640 A2	20150520	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20150520
JP2014185640 A2	20150609	LSGT	+TRDD	DECISION OF GRANT OR REJECTION WRITTEN	
JP2014185640 A2	20150617	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20150616
JP2014185640 A2	20150723	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES (DURING GRANT PROCEDURE)	TEXT : JAPANESE INTERMEDIATE CODE: A61 EFFECTIVE DATE : 20150714
JP2014185640 A2	20150724	LSGT	+R150	CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 5781192 COUNTRY OF REF DOCUMENT : JP
JP2014509359 T2	20140417	LSPB	+	published / reissued	
JP2014509359 T2	20141106	LSES	+A621	WRITTEN REQUEST FOR APPLICATION EXAMINATION	TEXT : JAPANESE INTERMEDIATE CODE: A621 EFFECTIVE DATE : 20141105
JP2014509359 T2	20160210	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20160209
JP2014509359 T2	20160427	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20160427
JP2014509359 T2	20160531	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20160531
JP2014509359 T2	20170110	LSGT	+A01	WRITTEN DECISION TO GRANT A PATENT OR TO GRANT A REGISTRATION (UTILITY MODEL)	TEXT : JAPANESE INTERMEDIATE CODE: A01 EFFECTIVE DATE : 20170110
JP2014509359 T2	20170315	LSRV	-R155	NOTIFICATION BEFORE DISPOSITION OF DECLINING OF APPLICATION	TEXT : JAPANESE INTERMEDIATE CODE: R155
JP2014509359 T2	20170406	LSFE	+A61	FIRST PAYMENT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: A61

JP2014509359 T2	20170414	LSGT	+R150	(DURING GRANT PROCEDURE) CERTIFICATE OF PATENT OR REGISTRATION OF UTILITY MODEL	EFFECTIVE DATE : 20170330 TEXT : JAPANESE INTERMEDIATE CODE: R150 REF DOCUMENT NUMBER : 6124349 COUNTRY OF REF DOCUMENT : JP
JP2016008613 A2	20160118	LSPB	+	published / reissued	
JP2016008613 A2	20160531	LSES	-A131	NOTIFICATION OF REASONS FOR REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A131 EFFECTIVE DATE : 20160531
JP2016008613 A2	20160825	LSRE	A521	WRITTEN AMENDMENT	TEXT : JAPANESE INTERMEDIATE CODE: A523 EFFECTIVE DATE : 20160825
JP2016008613 A2	20161108	LSRV	-A02	DECISION OF REFUSAL	TEXT : JAPANESE INTERMEDIATE CODE: A02 EFFECTIVE DATE : 20161108
JP5537572 B2	20140702	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5537572 B2	20140403	LSGT	+A01	特許査定書 Decision of patent grant	
JP5537572 B2	20140428	LSFE	R100	特許料納付書 Patent fee payment form	
JP5537572 B2	20140509	LSGT	+R150	特許証 Patent certificate	
JP5537572 B2	20170427	LSFE	R20	特許料納付書 Patent fee payment form	
JP5537572 B2	20170509	LSFE	+R250	RECEIPT OF ANNUAL FEES	TEXT : JAPANESE INTERMEDIATE CODE: R250
JP5537572 B2	20300628	PEXP		Calculated Patent Term Expiry	
JP5781192 B2	20150916	LSGT	+	granted / extensions (spc, cpc, pte)	
JP5781192 B2	20340425	PEXP		Calculated Patent Term Expiry	
JP6124349 B2	20170510	LSGT	+	granted / extensions (spc, cpc, pte)	
JP6124349 B2	20170112	LSGT	+A01	特許査定書 Decision of patent grant	
JP6124349 B2	20170315	LSRV	R155	出願却下処分前通知 Notice before dismissal of application	
JP6124349 B2	20170404	LSFE	R100	特許料納付書 Patent fee payment form	
JP6124349 B2	20170414	LSGT	+R150	特許証 Patent certificate	
JP6124349 B2	20320119	PEXP		Calculated Patent Term Expiry	
KR101533371 B1	20150702	LSGT	+	granted / extensions (spc, cpc, pte)	
KR101533371 B1	20300628	PEXP		Calculated Patent Term Expiry	
KR101533372 B1	20150703	LSGT	+	granted / extensions (spc, cpc, pte)	
KR101533372 B1	20300628	PEXP		Calculated Patent Term Expiry	
KR20120112363 A	20121011	LSPB	+	published / reissued	
KR20120112363 A	20131121	LSES	A201	REQUEST FOR EXAMINATION	
KR20120112363 A	20141113	LSES	-E902	NOTIFICATION OF REASON FOR REFUSAL	
KR20120112363 A	20150401	LSGT	+E701	DECISION TO GRANT OR	

KR20120112363 A	20150626	LSGT	+GRNT	REGISTRATION OF PATENT RIGHT WRITTEN DECISION TO GRANT
KR20140015334 A	20140206	LSPB	+	published / reissued
KR20140015334 A	20170220	LSDW	-WITN	WITHDRAWAL DUE TO NO REQUEST FOR EXAMINATION
KR20150023737 A	20150305	LSPB	+	published / reissued
KR20150023737 A	20150113	LSES	A201	REQUEST FOR EXAMINATION
KR20150023737 A	20150401	LSGT	+E701	DECISION TO GRANT OR REGISTRATION OF PATENT RIGHT
KR20150023737 A	20150626	LSGT	+GRNT	WRITTEN DECISION TO GRANT
US2010326062 AA	20101230	LSPB	+	published / reissued
US2010326064 AA	20101230	LSPB	+	published / reissued
US2010326066 AA	20101230	LSPB	+	published / reissued
US2010326068 AA	20101230	LSPB	+	published / reissued
US2010326069 AA	20101230	LSPB	+	published / reissued
US2010326075 AA	20101230	LSPB	+	published / reissued
US2010329891 AA	20101230	LSPB	+	published / reissued
US2010329903 AA	20101230	LSPB	+	published / reissued
US2010329909 AA	20101230	LSPB	+	published / reissued
US2011023488 AA	20110203	LSPB	+	published / reissued
US2011023977 AA	20110203	LSPB	+	published / reissued
US2011030359 AA	20110210	LSPB	+	published / reissued
US2011030552 AA	20110210	LSPB	+	published / reissued
US2011115223 AA	20110519	LSPB	+	published / reissued
US2011233934 AA	20110929	LSPB	+	published / reissued
US2011314800 AA	20111229	LSPB	+	published / reissued
US2011314804 AA	20111229	LSPB	+	published / reissued
US2012017580 AA	20120126	LSPB	+	published / reissued
US2012019009 AA	20120126	LSPB	+	published / reissued
US2012023919 AA	20120202	LSPB	+	published / reissued
US2012042772 AA	20120223	LSPB	+	published / reissued
US2012055147 AA	20120308	LSPB	+	published / reissued
US2012057996 AA	20120308	LSPB	+	published / reissued
US2012067036 AA	20120322	LSPB	+	published / reissued
US2012090314 AA	20120419	LSPB	+	published / reissued
US2012118137 AA	20120517	LSPB	+	published /

US2012119514 AA	20120517	LSPB	+	reissued published / reissued	
US2012255292 AA	20121011	LSPB	+	published / reissued	
US2012260645 AA	20121018	LSPB	+	published / reissued	
US2012269651 AA	20121025	LSPB	+	published / reissued	
US2012286522 AA	20121115	LSPB	+	published / reissued	
US2012291989 AA	20121122	LSPB	+	published / reissued	
US2013001958 AA	20130103	LSPB	+	published / reissued	
US2013009408 AA	20130110	LSPB	+	published / reissued	
US2013047597 AA	20130228	LSPB	+	published / reissued	
US2013104533 AA	20130502	LSPB	+	published / reissued	
US2013108480 AA	20130502	LSPB	+	published / reissued	
US2013111895 AA	20130509	LSPB	+	published / reissued	
US2013126014 AA	20130523	LSPB	+	published / reissued	
US2013168961 AA	20130704	LSPB	+	published / reissued	
US2013276440 AA	20131024	LSPB	+	published / reissued	
US2013276440 AA	20140702	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; SIGNING DATES FROM 20130612 TO 20130629; REEL/FRA:033234/0057
US2013291529 AA	20131107	LSPB	+	published / reissued	
US2013291960 AA	20131107	LSPB	+	published / reissued	
US2013294943 AA	20131107	LSPB	+	published / reissued	
US2013307269 AA	20131121	LSPB	+	published / reissued	
US2013333373 AA	20131219	LSPB	+	published / reissued	
US2014026549 AA	20140130	LSPB	+	published / reissued	
US2015033724 AA	20150205	LSPB	+	published / reissued	
US2015033724 AA	20170310	LSES	+NAM1	Notice of Allowance Mailed - - Application Received in Office of Publications	
US2015033724 AA	20170630	LSWD	-ABD2	Abandoned -- Failure to Pay Issue Fee	
US2015033724 AA	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRA:043634/0624 EFFECTIVE DATE : 20170719
US2015054291 AA	20150226	LSPB	+	published / reissued	
US2015184641 AA	20150702	LSPB	+	published / reissued	
US2016273529 AA	20160922	LSPB	+	published / reissued	

US2016273529 AA	20170308	LSES	+NAM1	Notice of Allowance Mailed - - Application Received in Office of Publications	
US2016273529 AA	20170628	LSWD	-ABD2	Abandoned -- Failure to Pay Issue Fee	
US2016356421 AA	20161208	LSPB	+	published / reissued	
US2016356421 AA	20170524	LSES	NFA1	Non Final Action Mailed	
US2016356421 AA	20171129	LSWD	-ABD3	Abandoned -- Failure to Respond to an Office Action	
US8037677 BB	20111018	LSGT	+	granted / extensions (spc, cpc, pte)	
US8037677 BB	20100205	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023911/0687 EFFECTIVE DATE : 20100127
US8037677 BB	20110928	LSGT	PAT1	Patented Case	
US8037677 BB	20150401	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8037677 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8037677 BB	20300205	PEXP		Calculated Patent Term Expiry	
US8037679 BB	20111018	LSGT	+	granted / extensions (spc, cpc, pte)	
US8037679 BB	20100205	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023911/0733 EFFECTIVE DATE : 20100127
US8037679 BB	20110928	LSGT	PAT1	Patented Case	
US8037679 BB	20150401	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8037679 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8037679 BB	20300205	PEXP		Calculated Patent Term Expiry	
US8061132 BB	20111122	LSGT	+	granted / extensions (spc, cpc, pte)	
US8061132 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024909/0019 EFFECTIVE DATE : 20100624
US8061132 BB	20111102	LSGT	PAT1	Patented Case	

US8061132 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0352 EFFECTIVE DATE : 20120613
US8061132 BB	20150506	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8061132 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8061132 BB	20300825	PEXP		Calculated Patent Term Expiry	
US8065873 BB	20111129	LSGT	+	granted / extensions (spc, cpc, pte)	
US8065873 BB	20100205	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023911/0731 EFFECTIVE DATE : 20100127
US8065873 BB	20111109	LSGT	PAT1	Patented Case	
US8065873 BB	20150520	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8065873 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8065873 BB	20300205	PEXP		Calculated Patent Term Expiry	
US8065874 BB	20111129	LSGT	+	granted / extensions (spc, cpc, pte)	
US8065874 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024908/0894 EFFECTIVE DATE : 20100624
US8065874 BB	20111109	LSGT	PAT1	Patented Case	
US8065874 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0316 EFFECTIVE DATE : 20120613
US8065874 BB	20150520	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8065874 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8065874 BB	20300825	PEXP		Calculated Patent Term Expiry	
US8087241 BB	20120103	LSGT	+	granted / extensions (spc, cpc, pte)	

US8087241 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:024913/0356 EFFECTIVE DATE : 20100127
US8087241 BB	20111214	LSGT	PAT1	Patented Case	
US8087241 BB	20150617	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8087241 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8087241 BB	20300825	PEXP		Calculated Patent Term Expiry	
US8146354 BB	20120403	LSGT	+	granted / extensions (spc, cpc, pte)	
US8146354 BB	20100128	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023867/0963 EFFECTIVE DATE : 20100127
US8146354 BB	20120314	LSGT	PAT1	Patented Case	
US8146354 BB	20150916	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8146354 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8146354 BB	20300423	PEXP		Calculated Patent Term Expiry (PTA 85 days)	
US8181456 BB	20120522	LSGT	+	granted / extensions (spc, cpc, pte)	
US8181456 BB	20120502	LSGT	PAT1	Patented Case	
US8181456 BB	20151104	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8181456 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8181456 BB	20311110	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8182240 BB	20120522	LSGT	+	granted / extensions (spc, cpc, pte)	
US8182240 BB	20100205	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023911/0735 EFFECTIVE DATE : 20100127
US8182240 BB	20120502	LSGT	PAT1	Patented Case	

US8182240 BB	20151104	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8182240 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8182240 BB	20300622	PEXP		Calculated Patent Term Expiry (PTA 137 days)	
US8191360 BB	20120605	LSGT	+	granted / extensions (spc, cpc, pte)	
US8191360 BB	20110825	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:026803/0346 EFFECTIVE DATE : 20100624
US8191360 BB	20120516	LSGT	PAT1	Patented Case	
US8191360 BB	20151119	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8191360 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8191360 BB	20310825	PEXP		Calculated Patent Term Expiry	
US8191361 BB	20120605	LSGT	+	granted / extensions (spc, cpc, pte)	
US8191361 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024909/0180 EFFECTIVE DATE : 20100624
US8191361 BB	20120516	LSGT	PAT1	Patented Case	
US8191361 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0370 EFFECTIVE DATE : 20120613
US8191361 BB	20151119	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8191361 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8191361 BB	20301209	PEXP		Calculated Patent Term Expiry (PTA 106 days and a terminal disclaimer has been filed)	
US8196395 BB	20120612	LSGT	+	granted / extensions (spc, cpc, pte)	
US8196395 BB	20100625	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.;

					CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024597/0881 EFFECTIVE DATE : 20100624
US8196395 BB	20120523	LSGT	PAT1	Patented Case	
US8196395 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0197 EFFECTIVE DATE : 20120613
US8196395 BB	20151125	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8196395 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8196395 BB	20300925	PEXP		Calculated Patent Term Expiry (PTA 92 days)	
US8196398 BB	20120612	LSGT	+	granted / extensions (spc, cpc, pte)	
US8196398 BB	20110902	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC, CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:026855/0642 EFFECTIVE DATE : 20100127
US8196398 BB	20120523	LSGT	PAT1	Patented Case	
US8196398 BB	20160612	LSLE	-LAPS	LAPSE FOR FAILURE TO PAY MAINTENANCE FEES	
US8196398 BB	20160711	LSLE	-PEX1	Patent Expired Due to NonPayment of Maintenance Fees Under 37 CFR 1.362	
US8196398 BB	20160802	LSLE	-FP	EXPIRED DUE TO FAILURE TO PAY MAINTENANCE FEE	EFFECTIVE DATE : 20160612
US8196398 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8196398 BB	20310831	PEXP		Calculated Patent Term Expiry	
US8201402 BB	20120619	LSGT	+	granted / extensions (spc, cpc, pte)	
US8201402 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024909/0297 EFFECTIVE DATE : 20100624
US8201402 BB	20120530	LSGT	PAT1	Patented Case	
US8201402 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0696 EFFECTIVE DATE : 20120613

US8201402 BB	20151202	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8201402 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8201402 BB	20301003	PEXP		Calculated Patent Term Expiry (PTA 39 days)	
US8201403 BB	20120619	LSGT	+	granted / extensions (spc, cpc, pte)	
US8201403 BB	20110720	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:026627/0232 EFFECTIVE DATE : 20100127
US8201403 BB	20120530	LSGT	PAT1	Patented Case	
US8201403 BB	20151202	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8201403 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8201403 BB	20310720	PEXP		Calculated Patent Term Expiry	
US8215105 BB	20120710	LSGT	+	granted / extensions (spc, cpc, pte)	
US8215105 BB	20100830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:024908/0715 EFFECTIVE DATE : 20100624
US8215105 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0263 EFFECTIVE DATE : 20120613
US8215105 BB	20120620	LSGT	PAT1	Patented Case	
US8215105 BB	20151223	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8215105 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8215105 BB	20301021	PEXP		Calculated Patent Term Expiry (PTA 57 days)	
US8215106 BB	20120710	LSGT	+	granted / extensions (spc, cpc, pte)	
US8215106 BB	20110830	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.;

					CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:026832/0251 EFFECTIVE DATE : 20100127
US8215106 BB	20120620	LSGT	PAT1	Patented Case	
US8215106 BB	20151223	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8215106 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8215106 BB	20310830	PEXP		Calculated Patent Term Expiry	
US8240142 BB	20120814	LSGT	+	granted / extensions (spc, cpc, pte)	
US8240142 BB	20110802	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:026685/0978 EFFECTIVE DATE : 20100624
US8240142 BB	20120613	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:STAHLKOPF, KARL; REEL/FRAME:028370/0503 EFFECTIVE DATE : 20120613
US8240142 BB	20120725	LSGT	PAT1	Patented Case	
US8240142 BB	20160127	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8240142 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8240142 BB	20310802	PEXP		Calculated Patent Term Expiry	
US8247915 BB	20120821	LSGT	+	granted / extensions (spc, cpc, pte)	
US8247915 BB	20100324	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:CRANE, STEPHEN E.; FONG, DANIELLE A.; BERLIN, EDWIN P., JR.; REEL/FRAME:024131/0954 EFFECTIVE DATE : 20100316
US8247915 BB	20120801	LSGT	PAT1	Patented Case	
US8247915 BB	20160203	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8247915 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8247915 BB	20301029	PEXP		Calculated Patent Term Expiry (PTA 219 days)	
US8299644 BB	20121030	LSGT	+	granted / extensions (spc, cpc, pte)	
US8299644 BB	20121010	LSGT	PAT1	Patented Case	

US8299644 BB	20160413	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8299644 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8299644 BB	20320123	PEXP		Calculated Patent Term Expiry	
US8353156 BB	20130115	LSGT	+	granted / extensions (spc, cpc, pte)	
US8353156 BB	20111029	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:027144/0132 EFFECTIVE DATE : 20100127
US8353156 BB	20121222	LSGT	PAT1	Patented Case	
US8353156 BB	20160630	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8353156 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8353156 BB	20311028	PEXP		Calculated Patent Term Expiry	
US8356478 BB	20130122	LSGT	+	granted / extensions (spc, cpc, pte)	
US8356478 BB	20121229	LSGT	PAT1	Patented Case	
US8356478 BB	20160707	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8356478 BB	20311110	PEXP		Calculated Patent Term Expiry	
US8387374 BB	20130305	LSGT	+	granted / extensions (spc, cpc, pte)	
US8387374 BB	20111010	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS; REEL/FRAME:027039/0085 EFFECTIVE DATE : 20100624
US8387374 BB	20130213	LSGT	PAT1	Patented Case	
US8387374 BB	20160825	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8387374 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8387374 BB	20311010	PEXP		Calculated Patent Term Expiry	
US8393148 BB	20130312	LSGT	+	granted / extensions (spc, cpc, pte)	
US8393148 BB	20111010	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; AND OTHERS;

					REEL/FRAME:027039/0387 EFFECTIVE DATE : 20100624
US8393148 BB	20130220	LSGT	PAT1	Patented Case	
US8393148 BB	20160901	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8393148 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC. ; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8393148 BB	20311010	PEXP		Calculated Patent Term Expiry	
US8436489 BB	20130507	LSGT	+	granted / extensions (spc, cpc, pte)	
US8436489 BB	20110120	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:STAHLKOPF, KARL E.; FONG, DANIELLE A.; CRANE, STEPHEN E.; AND OTHERS; SIGNING DATES FROM 20110110 TO 20110111; REEL/FRAME:025672/0576
US8436489 BB	20130417	LSGT	PAT1	Patented Case	
US8436489 BB	20130604	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:STAHLKOPF, KARL; FONG, DANIELLE A.; CRANE, STEPHEN E.; AND OTHERS; SIGNING DATES FROM 20130507 TO 20130513; REEL/FRAME:030543/0400
US8436489 BB	20161027	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8436489 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC. ; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8436489 BB	20310120	PEXP		Calculated Patent Term Expiry	
US8450884 BB	20130528	LSGT	+	granted / extensions (spc, cpc, pte)	
US8450884 BB	20130508	LSGT	PAT1	Patented Case	
US8450884 BB	20161117	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8450884 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC. ; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8450884 BB	20320720	PEXP		Calculated Patent Term Expiry	
US8468814 BB	20130625	LSGT	+	granted / extensions (spc, cpc, pte)	
US8468814 BB	20130605	LSGT	PAT1	Patented Case	
US8468814 BB	20161208	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8468814 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC. ; REEL/FRAME:043634/0624

EFFECTIVE DATE : 20170719					
US8468814 BB	20320222	PEXP		Calculated Patent Term Expiry	
US8468817 BB	20130625	LSGT	+	granted / extensions (spc, cpc, pte)	
US8468817 BB	20130605	LSGT	PAT1	Patented Case	
US8468817 BB	20161208	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8468817 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8468817 BB	20320129	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8482152 BA	20130709	LSGT	+	granted / extensions (spc, cpc, pte)	
US8482152 BA	20130619	LSGT	PAT1	Patented Case	
US8482152 BA	20161229	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8482152 BA	20330222	PEXP		Calculated Patent Term Expiry	
US8505288 BB	20130813	LSGT	+	granted / extensions (spc, cpc, pte)	
US8505288 BB	20130724	LSGT	PAT1	Patented Case	
US8505288 BB	20170202	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8505288 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8505288 BB	20330121	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8516809 BB	20130827	LSGT	+	granted / extensions (spc, cpc, pte)	
US8516809 BB	20130807	LSGT	PAT1	Patented Case	
US8516809 BB	20170216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8516809 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8516809 BB	20321025	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8516810 BB	20130827	LSGT	+	granted / extensions (spc, cpc, pte)	
US8516810 BB	20130807	LSGT	PAT1	Patented Case	
US8516810 BB	20170216	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8516810 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624

EFFECTIVE DATE : 20170719					
US8516810 BB	20320210	PEXP		Calculated Patent Term Expiry (PTA 21 days and a terminal disclaimer has been filed)	
US8561399 BB	20131022	LSGT	+	granted / extensions (spc, cpc, pte)	
US8561399 BB	20131002	LSGT	PAT1	Patented Case	
US8561399 BB	20170406	LSFE	+FPAY	FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8561399 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8561399 BB	20320727	PEXP		Calculated Patent Term Expiry	
US8723347 BB	20140513	LSGT	+	granted / extensions (spc, cpc, pte)	
US8723347 BB	20140423	LSGT	PAT1	Patented Case	
US8723347 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8723347 BB	20171107	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8723347 BB	20321021	PEXP		Calculated Patent Term Expiry (PTA 37 days)	
US8756928 BB	20140624	LSGT	+	granted / extensions (spc, cpc, pte)	
US8756928 BB	20140604	LSGT	PAT1	Patented Case	
US8756928 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8756928 BB	20171207	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8756928 BB	20321129	PEXP		Calculated Patent Term Expiry	
US8756929 BB	20140624	LSGT	+	granted / extensions (spc, cpc, pte)	
US8756929 BB	20140604	LSGT	PAT1	Patented Case	
US8756929 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8756929 BB	20171207	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8756929 BB	20320809	PEXP		Calculated Patent Term Expiry (PTA 34 days)	
US8769943 BB	20140708	LSGT	+	granted / extensions (spc, cpc, pte)	
US8769943 BB	20140618	LSGT	PAT1	Patented Case	
US8769943 BB	20150727	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : GIBRALTAR BUSINESS

US8769943 BB	20170728	LSAS	AS	ASSIGNMENT	CAPITAL, LLC, ILLINOIS OLDPARTY : SECURITY INTEREST; ASSIGNOR:NEWS DISTRIBUTION NETWORK, INC.; REEL/FRAME:036183/0336 EFFECTIVE DATE : 20150720 PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8769943 BB	20171228	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8769943 BB	20330820	PEXP		Calculated Patent Term Expiry	
US8793989 BB	20140805	LSGT	+	granted / extensions (spc, cpc, pte)	
US8793989 BB	20100205	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:FONG, DANIELLE A.; CRANE, STEPHEN E.; BERLIN, EDWIN P., JR.; REEL/FRAME:023911/0712 EFFECTIVE DATE : 20100127
US8793989 BB	20140716	LSGT	PAT1	Patented Case	
US8793989 BB	20180125	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8793989 BB	20310207	PEXP		Calculated Patent Term Expiry (PTA 367 days)	
US8806861 BB	20140819	LSGT	+	granted / extensions (spc, cpc, pte)	
US8806861 BB	20140730	LSGT	PAT1	Patented Case	
US8806861 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8806861 BB	20180208	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8806861 BB	20330610	PEXP		Calculated Patent Term Expiry	
US8844277 BB	20140930	LSGT	+	granted / extensions (spc, cpc, pte)	
US8844277 BB	20140910	LSGT	PAT1	Patented Case	
US8844277 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8844277 BB	20180315	LSFE	+MAFP	MAINTENANCE FEE PAYMENT	YEAR OF FEE PAYMENT : 4
US8844277 BB	20330913	PEXP		Calculated Patent Term Expiry (a terminal disclaimer has been filed)	
US8893486 BB	20141125	LSGT	+	granted / extensions (spc, cpc, pte)	
US8893486 BB	20141105	LSGT	PAT1	Patented Case	
US8893486 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624

EFFECTIVE DATE : 20170719					
US8893486 BB	20330108	PEXP		Calculated Patent Term Expiry (PTA 75 days)	
US8893487 BB	20141125	LSGT	+	granted / extensions (spc, cpc, pte)	
US8893487 BB	20141105	LSGT	PAT1	Patented Case	
US8893487 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8893487 BB	20330301	PEXP		Calculated Patent Term Expiry (PTA 92 days)	
US8912684 BB	20141216	LSGT	+	granted / extensions (spc, cpc, pte)	
US8912684 BB	20130604	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:STAHLKOPF, KARL E.; FONG, DANIELLE A.; CRANE, STEPHEN E.; AND OTHERS; SIGNING DATES FROM 20130507 TO 20130513; REEL/FRAME:030545/0544
US8912684 BB	20130605	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : LIGHTSAIL ENERGY, INC., CALIFORNIA OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:STAHLKOPF, KARL E.; FONG, DANIELLE A.; CRANE, STEPHEN E.; AND OTHERS; SIGNING DATES FROM 20130507 TO 20130513; REEL/FRAME:030549/0259
US8912684 BB	20141125	LSGT	PAT1	Patented Case	
US8912684 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8912684 BB	20330503	PEXP		Calculated Patent Term Expiry	
US8919112 BA	20141230	LSGT	+	granted / extensions (spc, cpc, pte)	
US8919112 BA	20141210	LSGT	PAT1	Patented Case	
US8919112 BA	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US8919112 BA	20330814	PEXP		Calculated Patent Term Expiry	
US9024458 BB	20150505	LSGT	+	granted / extensions (spc, cpc, pte)	
US9024458 BB	20150415	LSGT	PAT1	Patented Case	
US9024458 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US9024458 BB	20320914	PEXP		Calculated Patent	

					Term Expiry
US9382799 BB	20160705	LSGT	+	granted / extensions (spc, cpc, pte)	
US9382799 BB	20151019	LSES	NFA1	Non Final Action Mailed	
US9382799 BB	20160615	LSGT	PAT1	Patented Case	
US9382799 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US9382799 BB	20341105	PEXP		Calculated Patent Term Expiry	
US9385646 BB	20160705	LSGT	+	granted / extensions (spc, cpc, pte)	
US9385646 BB	20150930	LSES	NFA1	Non Final Action Mailed	
US9385646 BB	20160302	LSES	+NAM1	Notice of Allowance Mailed - - Application Received in Office of Publications	
US9385646 BB	20160615	LSGT	PAT1	Patented Case	
US9385646 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US9385646 BB	20330710	PEXP		Calculated Patent Term Expiry	
US9397600 BB	20160719	LSGT	+	granted / extensions (spc, cpc, pte)	
US9397600 BB	20151015	LSES	NFA1	Non Final Action Mailed	
US9397600 BB	20160629	LSGT	PAT1	Patented Case	
US9397600 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US9397600 BB	20330710	PEXP		Calculated Patent Term Expiry	
US9444378 BB	20160913	LSGT	+	granted / extensions (spc, cpc, pte)	
US9444378 BB	20151218	LSES	NFA1	Non Final Action Mailed	
US9444378 BB	20160824	LSGT	PAT1	Patented Case	
US9444378 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY, INC.; REEL/FRAME:043634/0624 EFFECTIVE DATE : 20170719
US9444378 BB	20330726	PEXP		Calculated Patent Term Expiry	
US9581140 BB	20170228	LSGT	+	granted / extensions (spc, cpc, pte)	
US9581140 BB	20170208	LSGT	PAT1	Patented Case	
US9581140 BB	20170728	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : SILICON VALLEY BANK, CALIFORNIA OLDPARTY : SECURITY INTEREST; ASSIGNOR:LIGHTSAIL ENERGY,

US9581140 BB	20350311	PEXP		Calculated Patent Term Expiry	
WO11008321 A2	20110120	LSPB	+	published / reissued	
WO11008321 A3	20120808	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 10800187 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO11008325 A2	20110120	LSPB	+	published / reissued	
WO11008325 A3	20120730	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO11008325 A3	20120808	LSNE	-122	EP: PCT APPLICATION NON-ENTRY IN EUROPEAN PHASE	REF DOCUMENT NUMBER : 10800191 COUNTRY OF REF DOCUMENT : EP KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) :
WO11008500 A2	20110120	LSPB	+	published / reissued	
WO11008500 A3	20110718	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2749975 COUNTRY OF REF DOCUMENT : CA
WO11008500 A3	20110905	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 2011553178 COUNTRY OF REF DOCUMENT : JP
WO11008500 A3	20120130	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 20127002515 COUNTRY OF REF DOCUMENT : KR KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO11008500 A3	20120820	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO12100094 A2	20120726	LSPB	+	published / reissued	
WO12100094 A3	20121106	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2798756 COUNTRY OF REF DOCUMENT : CA
WO12100094 A3	20130719	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2013550589 COUNTRY OF REF DOCUMENT : JP KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO12100094 A3	20130722	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO12100094 A3	20130819	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 20137021802 COUNTRY OF REF DOCUMENT : KR KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :

2) Family number: 59784350 (US2017002243A)

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Title: LUBRICANT FOR LOW GLOBAL WARMING POTENTIAL REFRIGERANT SYSTEMS

Abstract: Source: US2017002243A [EN] The disclosed technology relates to a working fluid for a low global warming potential (GWP) refrigeration system that includes a compressor, where the working fluid includes an ester based lubricant and a low GWP refrigerant, and where the ester based lubricant includes an ester of one or more branched carboxylic acids where said branched carboxylic acid contains 8 or less carbon atoms. The disclosed technology provides commercially useful low GWP working fluids (commercially useful working fluids based on low GWP refrigerants) that do not have the solubility

and/or miscibility problems commonly seen in low GWP fluids, including high viscosity fluids and applications.

Classifications:

International (IPC 8-9): C09K5/00 C09K5/04 C10M105/06 C10M105/32 C10M105/34 C10M105/38 C10M107/02 C10M107/34 C10M111/02 C10M111/04 C10M171/00 F25B1/00 (Advanced/Invention); C10M171/00 (Core/Invention)

CPC: C09K5/041 C09K5/042 C09K2205/126 C10M2205/0285 C10M2203/024 C09K2205/122 C09K5/045 C10M105/38 C10M111/02 C10M111/04 C10M171/008 C10M2203/065 C10M2207/2835 C10M2209/1033 C10N2220/028 C10N2220/302 C10N2240/30

US: 252/68

Family:

Publication number	Publication date	Application number	Application date
AR099069 AA	20160629	AR2015P100063	20150109
AU2015204789 AA	20150716	AU20150204789	20150108
CA2936340 AA	20160708	CA20152936340	20150108
CN106103641 A	20161109	CN201580012655	20150108
EP3092281 A1	20161116	EP20150703135	20150108
IN201617023780 A	20160831	IN201617023780	20160712
JP2017502155 T2	20170119	JP20160545922T	20150108
KR20160107214 A	20160913	KR20167020796	20150108
MX2016009046 A1	20161209	MX20160009046	20150108
SG11201605652Y A1	20160830	SG20161105652	20150108
TW201533232 A	20150901	TW20150100707	20150109
US2017002243 AA	20170105	US20150110463	20150108
WO15105933 A1	20150716	WO2015US10558	20150108

Priority:

US20140925704P 20140110 US20150110463 20150108 WO2015US10558 20150108

Probable Assignee: LUBRIZOL CORP

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Inventor(s): (std): BAKER MARK R ; FOSTER MICHAEL G ; JOSEPH A KARNAZ ; KARNAZ JOSEPH A ; KENNETH C LILJE ; LILJE KENNETH C ; MICHAEL G FOSTER ; MICHAEL I PORTER ; PORTER MICHAEL L ; PORTER MICHEAL I

Agent(s): HOULIHAN²; HOULIHAN² PTY LTD; RIDOUT AND MAYBEE LLP; D YOUNG AND CO LLP; DEMAS CHRISTOPHER P ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
AR099069 AA	20160629	LSPB	+	published / reissued	
AU2015204789 AA	20150716	LSPB	+	published / reissued	
AU2015204789 AA	20170817	LSLE	-MK1	APPLICATION LAPSED SECTION 142(2)(A) - NO REQUEST FOR EXAMINATION IN RELEVANT PERIOD	
CA2936340 AA	20160708	LSPB	+	published / reissued	
CN106103641 A	20161109	LSPB	+	published / reissued	
CN106103641 A	20161109	LSPB	+C06	PUBLICATION	
CN106103641 A	20170301	LSLI	EE01	ENTRY INTO FORCE OF RECORDATION OF PATENT LICENSING CONTRACT	
EP3092281 A1	20161116	LSPB	+	published / reissued	
EP3092281 A1	20161116	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20160810
EP3092281 A1	20170920	LSDW	-18D	APPLICATION DEEMED TO BE WITHDRAWN	EFFECTIVE DATE : 20170317
IN201617023780 A	20160831	LSPB	+	published / reissued	
JP2017502155 T2	20170119	LSPB	+	published / reissued	

KR20160107214 A	20160913	LSPB	+	published / reissued	
MX2016009046 A1	20161209	LSPB	+	published / reissued	
SG11201605652Y A1	20160830	LSPB	+	published / reissued	
TW201533232 A	20150901	LSPB	+	published / reissued	
US2017002243 AA	20170105	LSPB	+	published / reissued	
US2017002243 AA	20160726	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : THE LUBRIZOL CORPORATION, OHIO OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS:PORTER, MICHEAL I.; BAKER, MARK R.; KARNAZ, JOSEPH A.; AND OTHERS; SIGNING DATES FROM 20160706 TO 20160711; REEL/FRA:039256/0369
US2017002243 AA	20171011	LSES	NFA1	Non Final Action Mailed	
WO15105933 A1	20150716	LSPB	+	published / reissued	
WO15105933 A1	20160708	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2936340 COUNTRY OF REF DOCUMENT : CA
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WO15105933 A1	20160708	LSNP	+WWE	WIPO INFORMATION: ENTRY INTO NATIONAL PHASE	REF DOCUMENT NUMBER : 15110463 COUNTRY OF REF DOCUMENT : US
WO15105933 A1	20160711	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
WO15105933 A1	20160728	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2015204789 COUNTRY OF REF DOCUMENT : AU DATE OF REF DOCUMENT : 20150108 KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :
WO15105933 A1	20160728	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 20167020796 COUNTRY OF REF DOCUMENT : KR KIND CODE OF REF DOCUMENT : A DESIGNATED STATE(S) :

3) Family number: 62400724 (US2016137894A)

© PatBase

Title: NON-AZEOTROPIC FLUID MIXTURE FOR AIR CONDITIONING DEVICES

Abstract: Source: US2016137894A [EN] A non-azeotropic fluid mixture for air conditioning apparatus characterised because the mixture comprises the following refrigerant fluids (gases) in given proportions: 2-Methylpropane (Isobutane) CH(CH₃)₃ (**R-600a**), Pentafluoroethane (**R-125**), Tetrafluoroethane (**R-134a**) Difluoromethane (**R-32**). The composition of the mixture contains at least one polymerisation inhibitor agent (**hydroquinone**, **benzotriazole**, **dimethyl t-butylphenol**).

Classifications:

International (IPC 8-9): C09K C09K5/04 F25B1/00 F25B9/00 (Advanced/Invention)

CPC: C09K5/045 C09K2205/12 C09K2205/34 F25B9/002

US: 252/67

PatBase - US2016137894_AA

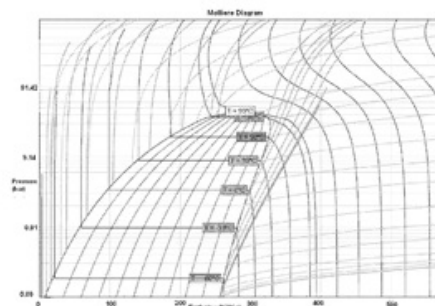


Figure 1

Family:

Publication number	Publication date	Application number	Application date
AU2014411530 AA	20160526	AU20140411530	20141125
BR112017010543 A2	20180403	BR20171110543	20141125
CA2968496 AA	20170519	CA20142968496	20141125
CL2017001294 A1	20180323	CL20170001294	20170519
CN107075352 A	20170818	CN201480063920	20141125
CO20170005919 A2	20170831	CO20170005919	20170615
CR20170252 A	20170912	CR20170000252	20141125
DOP2017000125 A	20170831	DO20170000125	20170522
EP3221415 A1	20170927	EP20140906458	20141125
GC5365 A	20170413	GC2015P029034	20150308
ID201800292 A	20180112	ID2017P0003976	20141125
IL252406 A0	20170731	IL20140252406	20141125
IN201727020797 A	20171006	IN201727020797	20170614
JP2018502208 T2	20180125	JP20170546054T	20141125
KR20170105491 A	20170919	KR20177016842	20141125
MA40659 A1	20171031	MA20140040659	20141125
PE10282017 A1	20170717	PE20170000884	20141125
PH2017500978 A	20171127	PH20170500978	20170526
US2016137894 AA	20160519	US20140547162	20141119
US9765250 BB	20170919	US20140547162	20141119
WO16079575 A1	20160526	WO20141B66321	20141125

Priority:

US20140547162 20141119 WO20141B66321 20141125

Probable Assignee: PSK RESEARCH LLC

Assignee(s): (std): PSK RES LLC ; PSK RESEARCH LLC ; VERA ALARCON SEBASTIAN

Inventor(s): (std): VERA ALARCON SEBASTIAN ; SEBASTIAN VERA ALARCON

Inventor(s): SEBASTIAN ; VERA ALARCON

Agent(s): BALDWIN INTELLECTUAL PROPERTY; ROBIC; LINEROS AND CIA; RUSSELL YADIR RAMIREZ RODRIGUEZ; LAHIDALGA DE CAREAGA JOSE LUIS; ABDULLAH MOHAMMED ABDULAZIZ AL AJALEEN; TONY R SIMBOLON SH; MIYOSHI HIDEKAZU; LUCAS AND MERCANTI LLP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

View legal status timeline

Patent	Date recorded	Event group	Code	Event	Details
AU2014411530 AA	20160526	LSPB	+	published / reissued	
CA2968496 AA	20170519	LSPB	+	published / reissued	
CL2017001294 A1	20180323	LSPB	+	published / reissued	
CN107075352 A	20170818	LSPB	+	published / reissued	
CN107075352 A	20170818	LSPB	PB01	PUBLICATION	
CO20170005919 A2	20170831	LSPB	+	published / reissued	
CR20170252 A	20170912	LSPB	+	published / reissued	
DOP2017000125 A	20170831	LSPB	+	published / reissued	
EP3221415 A1	20170927	LSPB	+	published / reissued	
EP3221415 A1	20170927	LSES	+17P	REQUEST FOR EXAMINATION FILED	EFFECTIVE DATE : 20170615
GC5365 A	20170413	LSGT	+	granted / extensions (spc, cpc, pte)	
GC5365 A	20350308	PEXP		Calculated Patent Term Expiry	
ID201800292 A	20180112	LSPB	+	published / reissued	
IN201727020797 A	20171006	LSPB	+	published / reissued	
JP2018502208 T2	20180125	LSPB	+	published / reissued	
JP2018502208 T2	20171121	LSES	+A621	WRITTEN REQUEST FOR APPLICATION	TEXT : JAPANESE INTERMEDIATE CODE: A621

				EXAMINATION	EFFECTIVE DATE : 20171121
KR20170105491 A	20170919	LSPB	+	published / reissued	
MA40659 A1	20171031	LSPB	+	published / reissued	
PE10282017 A1	20170717	LSPB	+	published / reissued	
PH2017500978 A	20171127	LSPB	+	published / reissued	
US2016137894 AA	20160519	LSPB	+	published / reissued	
US2016137894 AA	20160804	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : PSK RESEARCH, LLC, DELAWARE OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNOR:ALARCON, SEBASTIAN VERA; REEL/FRAME:039577/0730 EFFECTIVE DATE : 20160624
US2016137894 AA	20170117	LSWD	-PRS1	Prosecution Suspended	
US2016137894 AA	20170804	LSSES	+NAM1	Notice of Allowance Mailed -- Application Received in Office of Publications	
US2016137894 AA	20170814	LSFE	+PPR1	Publications -- Issue Fee Payment Received	
US2016137894 AA	20170816	LSFE	+PPV1	Publications -- Issue Fee Payment Verified	
US9765250 BB	20170919	LSGT	+	granted / extensions (spc, cpc, pte)	
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US9765250 BB	20341119	PEXP		Calculated Patent Term Expiry	
WO16079575 A1	20160526	LSPB	+	published / reissued	
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WO16079575 A1	20170519	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE
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WO16079575 A1	20180403	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 112017010543 COUNTRY OF REF DOCUMENT : BR KIND CODE OF REF DOCUMENT : A2 DESIGNATED STATE(S) : EFFECTIVE DATE : 20170519

Title: SEAL SWELL AGENTS FOR LUBRICATING COMPOSITIONS

Abstract: The invention relates to a seal swell agent which is a substituted sulfonyldibenzene compound, and lubricating compositions containing the seal swell agent. The substituents on the benzene rings may be hydrocarbyl groups of 4 to 20 carbon atoms or alkylene groups of 1-2 carbon atoms with further functional groups.

Classifications:

International (IPC 8-9): C10M135/08 (Advanced/Invention)

CPC: C10M135/08 C10M2203/1006 C10M2203/1025 C10M2205/0285 C10M2205/173 C10M2207/026 C10M2207/028 C10M2215/064 C10M2215/28 C10M2219/022 C10M2219/04 C10M2219/046 C10M2223/045 C10N2230/36 C10N2230/42 C10N2230/45 C10N2230/52 C10N2240/10 C10N2240/104

Family:

Publication number	Publication date	Application number	Application date
CA2993647 AA	20180124	CA20162993647	20160726
WO17019654 A1	20170202	WO2016US43973	20160726

Priority:

US20150197659P 20150728 US20150197668P 20150728 WO2016US43973 20160726

Probable Assignee: LUBRIZOL CORP

Assignee(s): (std): LUBRIZOL CORP

Assignee(s): MIATT PETER ; SHAMSZAD MARIAM ; ADAMS PAUL E ; HUSSAIN MAHMUD M

Inventor(s): (std): ADAMS PAUL E ; HUSSAIN MAHMUD M ; MIATT PETER ; SHAMSZAD MARIAM

Agent(s): RIDOUT AND MAYBEE LLP; SHOLD DAVID M ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
CA2993647 AA	20180124	LSPB	+	published / reissued	
WO17019654 A1	20170202	LSPB	+	published / reissued	
WO17019654 A1	20180124	LSNP	ENP	ENTRY INTO THE NATIONAL PHASE IN:	REF DOCUMENT NUMBER : 2993647 COUNTRY OF REF DOCUMENT : CA
WO17019654 A1	20180130	LSNE	NENP	NON-ENTRY INTO THE NATIONAL PHASE IN:	REF COUNTRY CODE : DE

Title: SEAL SWELL AGENTS FOR LUBRICATING COMPOSITIONS

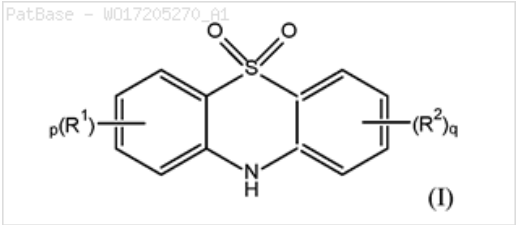
Abstract: A composition comprising an oil of lubricating viscosity and a compound represented by formula (I) wherein: R1 and R2 are each independently a hydrocarbyl group containing from about 4 to about 18 carbon atoms; p and q are each independently 0 or an integer from 1 to 3, and the sum of p and q is 1, 2, 3, 4, 5, or 6. The composition is effective at swelling seals.

Classifications:

International (IPC 8-9): C10M135/36

C10M169/04 (Advanced/Invention)

CPC: C10M135/36 C10M169/04 C10M2203/1025 C10M2205/0285 C10M2205/173 C10M2215/223 C10M2215/224 C10M2215/28 C10M2219/04 C10M2219/104 C10M2219/106 C10M2223/045 C10M2223/049 C10M2229/02 C10N2210/02 C10N2230/36 C10N2240/04 C10N2240/10 C10N2240/22 C10N2240/30



Family:

Publication number	Publication date	Application number	Application date
WO17205270 A1	20171130	WO2017US33797	20170522

Priority:

US20160340678P 20160524

Probable Assignee: LUBRIZOL CORP

Assignee(s): (std): LUBRIZOL CORP

Inventor(s): (std): HUSSAIN MAHMUD ; MIATT PETER

Agent(s): SANS IKEN S

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC

Legal status (INPADOC)[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
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6) Family number: 67662455 (WO17205271A1)

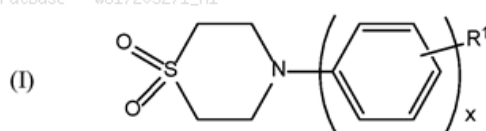
© PatBase

Title: SEAL SWELL AGENTS FOR LUBRICATING COMPOSITIONS

Abstract: A composition comprising an oil of lubricating viscosity and a compound represented by formula (I) wherein x is 0 or 1 and R¹ is a hydrocarbyl group containing about 4 to about 18 carbon atoms, which composition is effective at swelling seals.

Classifications:**International (IPC 8-9):** C10M135/36 (Advanced/Invention)**CPC:** C10M135/36 C10M2219/104 C10N2230/36 C10N2240/042 C10N2240/10 C10N2240/30

PatBase - WO17205271_A1

**Family:**

Publication number	Publication date	Application number	Application date
WO17205271 A1	20171130	WO2017US33801	20170522

Priority:

US20160340698P 20160524

Probable Assignee: LUBRIZOL CORP**Assignee(s):** (std): LUBRIZOL CORP**Inventor(s):** (std): HUSSAIN MAHMUD ; MIATT PETER**Agent(s):** SANS LKEN S

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
WO17205271 A1	20171130	LSPB	+	published / reissued	

7) Family number: 67662461 (WO17205274A1)

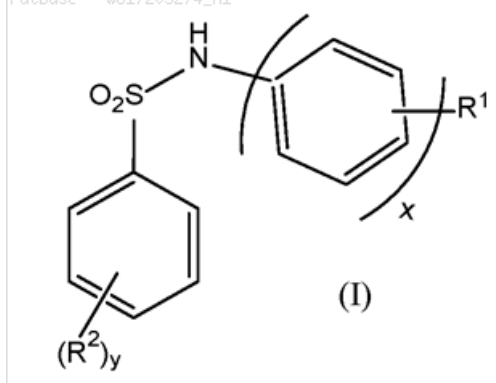
© PatBase

Title: SEAL SWELL AGENTS FOR LUBRICATING COMPOSITIONS

Abstract: A composition comprising an oil of lubricating viscosity and a compound represented by formula (I) wherein: x is 0 or 1; R¹ is a hydrocarbyl group containing about 4 or about 18 carbon atoms; R² is an aliphatic hydrocarbyl group containing about 1 to about 12 carbon atoms; and y is 0 or 1, which composition is effective at swelling seals.

Classifications:**International (IPC 8-9):** C10M135/10 (Advanced/Invention)**CPC:** C10M135/10 C10M2203/1025 C10M2205/0285 C10M2219/044 C10N2230/36 C10N2240/04 C10N2240/042 C10N2240/10 C10N2240/30

PatBase - WO17205274_A1

**Family:**

Publication number	Publication date	Application number	Application date
WO17205274 A1	20171130	WO2017US33804	20170522

Priority:
US20160340700P 20160524

Probable Assignee: LUBRIZOL CORP

Assignee(s): (std): LUBRIZOL CORP

Inventor(s): (std): HUSSAIN MAHMUD ; MIATT PETER

Agent(s): SANS IKEN S

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
WO17205274 A1	20171130	LSPB	+	published / reissued	

8) Family number: 68350014 (WO18017449A1) © PatBase

Title: ALKYL PHOSPHATE AMINE SALTS FOR USE IN LUBRICANTS

Abstract: A lubricant composition comprising an oil of lubricating viscosity and about 0.01 to about 5 percent by weight of a (thio)phosphoric acid salt ("phos-amine salt") of at least one hydrocarbyl amine. The hydrocarbyl amine may be a hindered hydrocarbyl amine, an aromatic hydrocarbyl amine, or a combination thereof.

Classifications:

International (IPC 8-9): C10M137/08 (Advanced/Invention)
CPC: C10M137/08 C10M2205/0285 C10M2215/224 C10M2215/28 C10M2219/022 C10M2219/106 C10M2223/043 C10M2223/047 C10N2220/022 C10N2230/02 C10N2230/06 C10N2230/36 C10N2240/04 C10N2240/044 C10N2240/10 C10N2240/12 C10N2240/30

Family:

Publication number	Publication date	Application number	Application date
WO18017449 A1	20180125	WO2017US42320	20170717

Priority:
US20160364523P 20160720

Probable Assignee: LUBRIZOL CORP

Assignee(s): (std): LUBRIZOL CORP

Inventor(s): (std): COOK STEPHEN J ; DELBRIDGE EWAN E ; DICKESS SHAWN ; SACCOMANDO DANIEL J ; SUTTON MICHAEL R ; VINCENT PAUL R ; ZHANG YANSHI ; BARTON WILLIAM R S

Inventor(s): BARTON WILLIAM RS

Agent(s): SANS IKEN S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)

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Patent	Date recorded	Event group	Code	Event	Details
WO18017449 A1	20180125	LSPB	+	published / reissued	

9) Family number: 68350017 (WO18017454A1) © PatBase

Title: ALKYL PHOSPHATE AMINE SALTS FOR USE IN LUBRICANTS

Abstract: A lubricant composition comprising an oil of lubricating viscosity and 0.01 to 5 percent by weight of a substantially sulfur-free alkyl phosphate amine salt, where at least 30 mole percent of the phosphorus atoms are in an alkyl pyrophosphate salt structure, exhibits good antiwear performance. In the phosphate amine salt, at least 80 mole percent of the alkyl groups are typically secondary alkyl groups of 3 to 12 carbon atoms.

Classifications:

International (IPC 8-9): C10M137/08 (Advanced/Invention)
CPC: C10M137/08 C10M2205/0285 C10M2215/224 C10M2215/28 C10M2219/022 C10M2219/106 C10M2223/043 C10N2220/022 C10N2230/02 C10N2230/06 C10N2230/36 C10N2240/04 C10N2240/044 C10N2240/10 C10N2240/12 C10N2240/30

Family:

Publication number	Publication date	Application number	Application date
WO18017454 A1	20180125	WO2017US42325	20170717

Priority:
US20160364603P 20160720

Probable Assignee: LUBRIZOL CORP
Assignee(s): (std): LUBRIZOL CORP
Inventor(s): (std): BLANAZS LISA ; COOK STEPHEN J ; DELBRIDGE EWAN E ; KASSIR JAMAL ; SACCOMANDO DANIEL J ; SUTTON MICHAEL R ; VINCENT PAUL R ; ZHANG YANSI ; ADAMS PAUL E ; BARTON WILLIAM R S
Inventor(s): BARTON WILLIAM RS
Agent(s): SANS IKEN S ET AL
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)
[View legal status timeline](#)

Patent	Date recorded	Event group	Code	Event	Details
WO18017454 A1	20180125	LSPB	+	published / reissued	

10) Family number: 68415290 (US2018030325A) © PatBase

Title: HEAT TRANSFER METHODS, SYSTEMS AND COMPOSITIONS

Abstract: Source: US2018030325A [EN] Disclosed are refrigerants comprising at least about 97 percent by weight of a blend of three compounds, said blend consisting of: from about 38 percent by weight to about 48 percent by weight difluoromethane (HFC-32), from about 6 percent by weight to about 12 percent by weight pentafluoroethane (HFC-125), from about 33 percent by weight to about 41 percent by weight trifluoroiodomethane (CF₃I) and from about 2 percent by weight to about 16 percent by weight 2,3,3,3-tetrafluoropropene (HFO-1234yf) wherein the percentages are based on the total weight of the three compounds in the blend, and methods and systems which use same.

Classifications:
International (IPC 8-9): B60H1/32 C09K5/04 C10M105/38 F25B31/00 F25B45/00 F25B9/00 (Advanced/Invention)
CPC: C09K5/044 F25B45/00 F25B31/002 C10M105/38 C09K2205/22 C09K2205/122 C09K2205/126 C10M2207/2835 C10N2240/30 B60H1/32 C09K5/04 C09K5/045 C09K2205/40 F25B1/00 F25B2400/121

Family:

Publication number	Publication date	Application number	Application date
US2018030325 AA	20180201	US20170662275	20170727
WO18022949 A2	20180201	WO2017US44265	20170727
WO18022949 A3	20180308	WO2017US44265	20170727

Priority:
US20160368537P 20160729 US20170662275 20170727 WO2017US44265 20170727

Probable Assignee: HONEYWELL INT INC
Assignee(s): (std): HONEYWELL INT INC
Inventor(s): (std): PETERSEN MICHAEL ; POTTKER GUSTAVO ; SETHI ANKIT ; SMITH GREGORY LAURENCE ; VERA BECERRA ELIZABET DEL CARMEN ; YANA MOTTA SAMUEL F ; ZOU YANG
Agent(s): POSILLICO JOSEPH F
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Legal status (INPADOC)
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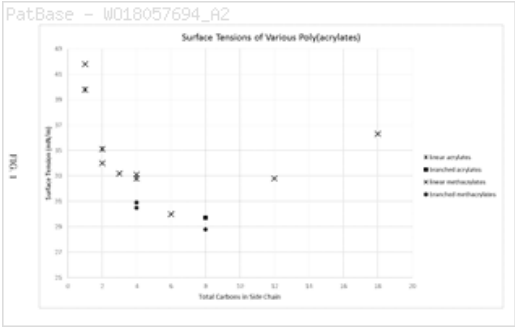
Patent	Date recorded	Event group	Code	Event	Details
US2018030325 AA	20180201	LSPB	+	published / reissued	
US2018030325 AA	20170727	LSAS	AS	ASSIGNMENT	PARTYTYPE : OWNER OWNER : HONEYWELL INTERNATIONAL INC., NEW JERSEY OLDPARTY : ASSIGNMENT OF ASSIGNORS INTEREST; ASSIGNORS: PETERSON, MICHAEL; VERA BECERRA, ELIZABET DEL CARMEN; YANA MOTTA, SAMUEL F; AND OTHERS; SIGNING DATES FROM 20170726 TO 20170727; REEL/FRAME: 043122/0570
WO18022949 A2	20180201	LSPB	+	published / reissued	

11) Family number: 69029633 (WO18057694A2) © PatBase

Title: POLYACRYLATE ANTIFOAM COMPONENTS FOR USE IN DIESEL FUELS

Abstract: There is disclosed an antifoam component which includes at least one poly(acrylate) copolymer for use in a diesel fuel. Poly(acrylate) polymers prepared by polymerizing a (meth)acrylate monomer comprising C1 to C30 alkyl esters of (meth)acrylic acid ("multifunctional monomer") are also disclosed. Other poly(acrylate) polymers prepared by polymerizing (i) a (meth)acrylate monomer comprising C1 to C4 alkyl esters of (meth)acrylic acid ("solubility monomer"); (ii) a (meth)acrylate monomer comprising C5 to C12 alkyl esters of (meth)acrylic acid ("surface tension monomer"); and (iii) optionally at least one additional monomer comprising a solubility monomer, a surface tension monomer, a monomer comprising C1 to C30 alkyl esters of (meth)acrylic acid ("multifunctional monomer"), or combinations thereof are also disclosed.

Classifications:
International (IPC 8-9): C10L1/196 C10L10/00 C10M145/14 C10M169/04 (Advanced/Invention)
CPC: C10L1/1963 C10L10/00 C10L2200/0446 C10L2230/082



Family:

Publication number	Publication date	Application number	Application date
WO18057675 A1	20180329	WO2017US52605	20170921
WO18057694 A2	20180329	WO2017US52646	20170921

Priority:

US20160397493P 20160921

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Inventor(s): BARTON WILLIAM RS

Agent(s): SANS IKEN S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

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Patent	Date recorded	Event group	Code	Event	Details
WO18057675 A1	20180329	LSPB	+	published / reissued	
WO18057694 A2	20180329	LSPB	+	published / reissued	

12) Family number: 69029635 (WO18057678A1) © PatBase

Title: FLUORINATED POLYACRYLATE ANTIFOAM COMPONENTS FOR LUBRICATING COMPOSITIONS

Abstract: There is disclosed an antifoam component for a mechanical device which includes a fluorinated poly(acrylate) copolymer. The antifoam component has improved foam performance and thermal stability in finished fluids, such as driveline fluids.

Classifications:
International (IPC 8-9): C10M169/04 (Advanced/Invention)
CPC: C10M169/041 C10M2209/084 C10M2213/04 C10M2219/08 C10M2219/106 C10N2220/021 C10N2230/18 C10N2240/04 C10N2240/08 C10N2240/10 C10N2240/14 C10N2240/30

Family:

Publication number	Publication date	Application number	Application date
WO18057678 A1	20180329	WO2017US52610	20170921

Priority:

US20160397500P 20160921

Probable Assignee: LUBRIZOL CORP

Assignee(s): (std): LUBRIZOL CORP

Inventor(s): (std): DISHONG DENNIS M ; HUGHES KEVIN J ; HUSTON MICHAEL E ; KNOBLOCH DONALD J ; NICKERSON DAVID M ; BARTON WILLIAM R S

Inventor(s): BARTON WILLIAM RS

Agent(s): SANS IKEN S ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JO JP KE KG KH KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

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Patent	Date recorded	Event group	Code	Event	Details
WO18057678 A1	20180329	LSPB	+	published / reissued	