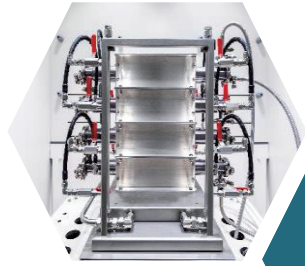


SOLVIONIC

革新力で世界をリードする

C
A
T
A
L
O
G
U
E

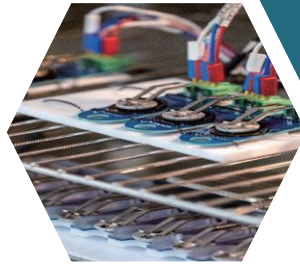
2
0
2
3

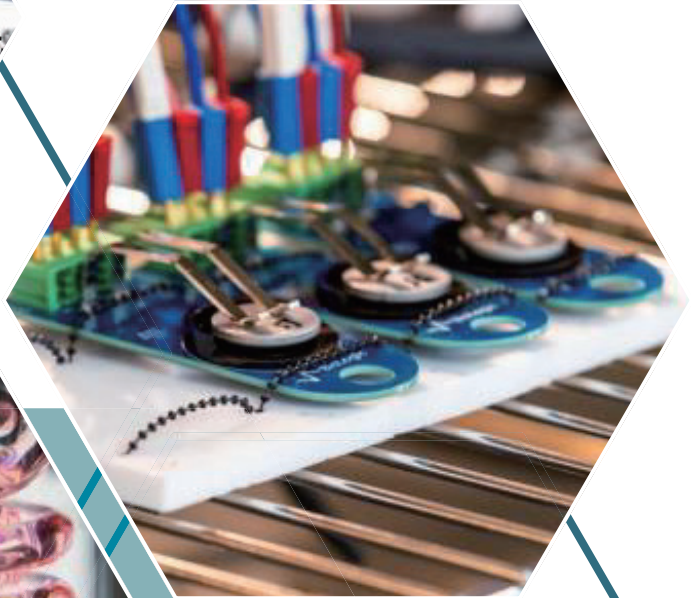
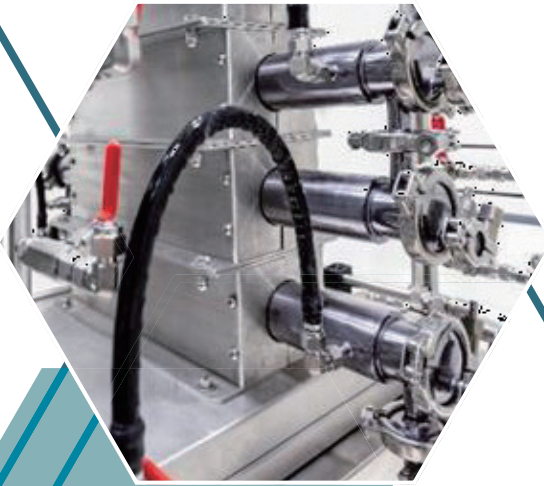


電解質

高品質

革新的





目次

用語集.....	3
Solvionicについて.....	4
高品質電解質・材料.....	5
次世代電解質.....	6
I.リチウムイオン電池.....	6
1)イオン液体ベースの電解質.....	6
2)ハイブリット電解質.....	9
II.ナトリウムイオン電池.....	10
III.スーパーキャパシタ.....	11
1)スーパーキャパシタ用共晶混合物.....	11
2)スーパーキャパシタ用イオン液体.....	12
IV.ゲル/ポリマー電解質.....	13
1)電池用膜剤.....	13
2)電気化学デバイスのための膜配合物.....	14
イオン液体.....	15
金属塩.....	17
モノマー・ポリマー.....	20

用語集

1- Ionic Liquids Cations

N,N-Diethyl-N-methyl-N-(2-methoxyethyl)ammonium	N122(201)
1-Ethyl-3-methylimidazolium	Emim
1-Butyl-3-methylimidazolium	Bmim
N-Methyl-N-propylpyrrolidinium	PYR13
1-Butyl-1-methylpyrrolidinium	PYR14
N-Methyl-N-propylpiperidinium	PII3
1-Methyl-1-(2-methoxyethyl)Pyrrolidinium	PYR1(201)
Poly[diallyldimethylammonium]	Poly[DDA]

2- Ionic Liquids Anions

Bis(trifluoromethanesulfonyl)imide	TFSI
Bis(fluorosulfonyl)imide	FSI

3- Salts

Lithium bis(trifluoromethanesulfonyl)	LiTFSI
Lithium Bis(fluorosulfonyl)imide	LiFSI
Lithium hexafluorophosphate	LiPF6
Sodium bis(fluorosulfonyl)imide	NaFSI
Lithium bis(trifluoromethanesulfonyl)imide	LiTFSI

4- Solvents

Diethyl carbonate	DEC
Dimethyl carbonate	DMC
Ethylene carbonate	EC
Ethyl methyl carbonate	EMC
Propylene carbonate	PC
Vinylene carbonate	VC
Fluoroethylene carbonate	FEC

Solvionicについて

Solvionic社は、イオン液体の特殊化学を開発する企業です。Solvionic社の主な市場は、電気化学デバイス、特に電気化学エネルギー貯蔵システムの市場です。

Solvionic社の生産設備と戦略は、産業界のニーズに応えるため、製品の迅速かつ確実なスケールアップを可能にしています。

イオン液体製品用に開発されたSolvionic社の品質管理手順は、イオン液体市場の最高純度標準の商業化を可能にするSolvionic社の重要なノウハウの一つです。

Solvionic社はまた、イオン液体製品の使用に基づく新しい材料及びプロセスの研究開発にも精通しています。Solvionic社の主な研究開発活動は、イオン液体製品（次世代金属イオン電池、スーパーキャパシタなど）の使用に基づく次世代電気化学エネルギー貯蔵システムの開発に専念しています。



高品質電解質・材料

高純度: 電気化学グレード99.9% - H₂O < 20ppm - ハロゲン化物< 1ppm - アミン化合物 < 10ppm.

包装: 当社製品は、アルゴンガス (H₂O < 0.5ppm, O₂< 0.5ppm)を充填したアルミニウム容器に包装されています。



Quality control



Custom made



Pack size: 50g to 200Kg

品質管理: イオンクロマトグラフィー、サイクリックボルタンメトリー、導電率、密度、カールフィッシャー（含水量）、示差走査熱量測定（DSC）、粘度などのいくつかの分析方法を使用する。

特注電解質・材料配分、分析方法、包装など、お客様の具体的なニーズについては、お気軽にご連絡ください。

次世代電解質

Solvionic社は電池やバッテリーやスーパーキャパシタなどの電気化学的用途に適した高品質の電解質を開発・生産しています。

電解液の開発は、リチウムイオン電池 (Li-ion)、ナトリウムイオン電池 (Na-ion)、リチウム硫黄電池 (Li-S) およびスーパーキャパシタに焦点を当て、現在も進行中です。

I. リチウムイオン電池

1) イオン液体ベースの電解質

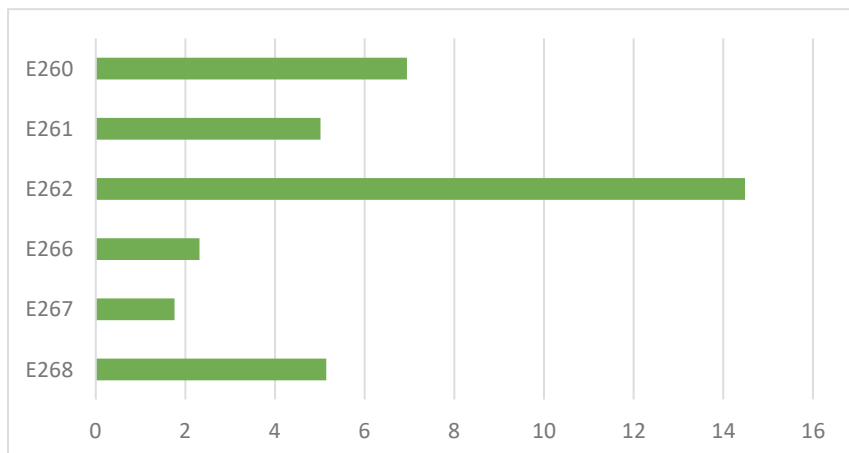


REF.	LiFSI based Formulations	Packaging
E260	LiFSI:PYR13FSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E261	LiFSI:PYR14FSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E262	LiFSI:EmimFSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E266	LiFSI:PYR13FSI (2:3 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E267	LiFSI:PYR14FSI (2:3 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E268	LiFSI:EmimFSI (2:3 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg

Customized electrolyte

BULK packaging or specific needs, please contact us.

Conductivity (mS.cm⁻¹) at 25°C:



LiFSI salt based Electrolytes

References :

Akihiko Sagara et al, "High-Rate Performance Solid-State Lithium Batteries with Silica-Gel Solid Nanocomposite Electrolytes using Bis(fluorosulfonyl)imide-Based Ionic Liquid" *J. Electrochem. Soc.* 167 070549 (2020).

Piper, D. et al., "Stable silicon-ionic liquid interface for next-generation lithium-ion batteries", *Nat Commun* 6, 6230 (2015).

G. B. Appetecchi, "Ionic Liquid-Based Electrolytes for High Energy, Safer Lithium Batteries", In *Ionic Liquids: Science and Applications*; Visser, A., et al.; ACS Symposium Series; ACS: Washington, DC, 2012.

Hong-Bo Han et Al, "Lithium bis(fluorosulfonyl)imide (LiFSI) as conducting salt for nonaqueous liquid electrolytes for lithium-ion batteries: Physicochemical and electrochemical properties", *Journal of Power Sources*, 2011, 196, 3623.



REF.	LiTFSI based Formulations	Packaging
E049	LiTFSI:PYR13 FSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E178	LiTFSI:PYR13 FSI (1:9 mol ratio) + 5%wt. VC + 5%wt. FEC – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E046	LiTFSI:PYR13 TFSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg

Customized electrolyte
BULK packaging or specific needs, please contact us

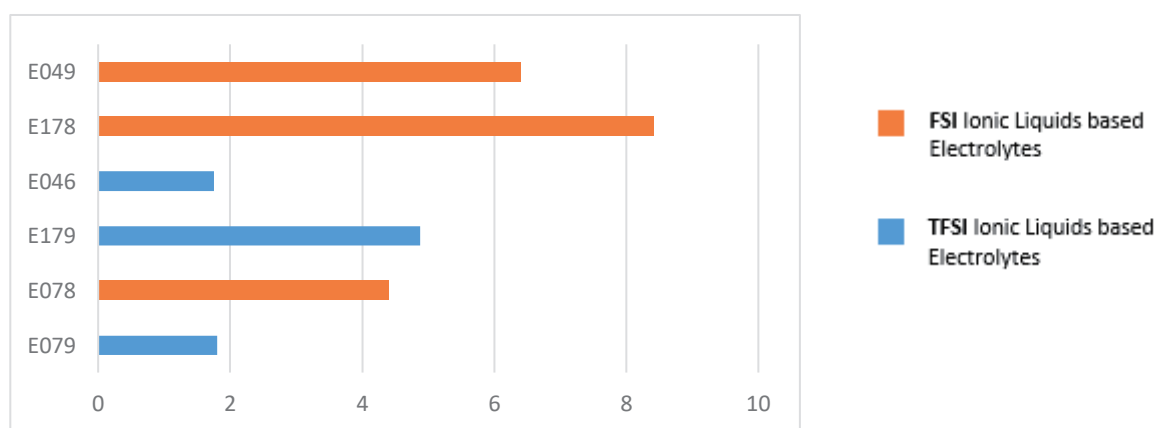
REF.	LiTFSI based Formulations	Packaging
E179	LiTFSI:PYR13 TFSI (1:9 mol ratio) + 5%wt. VC + 5%wt. FEC – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E078	LiTFSI:PYR14 FSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E079	LiTFSI:PYR14 TFSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg

Customized electrolyte

BULK packaging or specific needs, please contact us.

添加剤: 添加剤の性質は任意であり、システムで使用される活性材料に依存します。一方で、グラファイトが陽極として使用される場合には、添加剤が必須となります。

25°Cにおける導電率(mS.cm⁻¹)



References:

M. Moreno et al, 'Ionic Liquid Electrolytes for Safer Lithium Batteries', *Journal of The Electrochemical Society*, 2017, 164, A6026-A6031

Elia et al, 'Exceptional long-life performance of lithium-ion batteries using ionic liquid-based electrolytes', *Energy & Environmental Science*, 2016, 9, 3210-3220

Kim et al, 'Development of ionic liquid-based lithium battery prototypes', *Journal of Power Sources*, 2013, 199, p239-246

Sun et al, 'Electrochemical investigations of ionic liquids with vinylene carbonate for applications in rechargeable lithium ion batteries', *Electrochimica Acta*, 2010, 55, 4618-4626

Appetecchi et al, 'Lithium insertion in graphite from ternary ionic liquid-lithium salt electrolytes', *Journal of Power Sources*, 2009, 192, p599-605

2) ハイブリット電解質

Liイオン電池用の不燃性で安全で強力な電解質は、従来の電解質にイオン液体を添加することによって得ることができます。これにより、引火点がわずかに上昇し、自己消化時間が15s.g-1(40wt%添加、難燃化)または0s.g-1(50wt%添加、不燃化)に減少します。

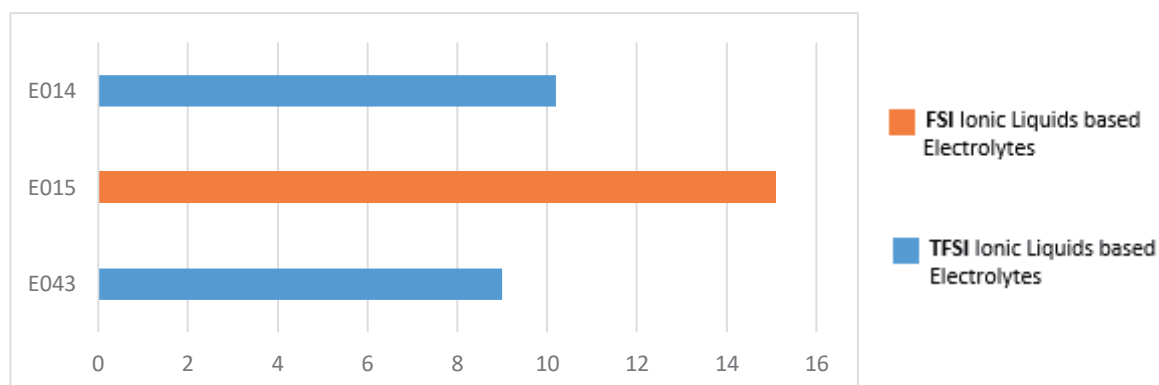
これは、純粋な有機溶媒をベースとした電解液に比べて、輸送や産業界での取扱いがより安全なものになります。

REF.	FORMULATIONS	Packaging
E014	Emim TFSI 40% wt. in [1M LiPF₆ in EC:DEC (1:1 vol.%)] – 99.9% H ₂ O < 20ppm – packed under argon	10g to 250g
E015	Emim FSI 40% wt. in [1M LiPF₆ in EC:DEC (1:1 vol.%)] – 99.9% H ₂ O < 20ppm – packed under argon	10g to 250g
E043	PYR13 TFSI 40% wt. in [1M LiPF₆ in EC:DEC (1:1 vol.%)] – 99.9% H ₂ O < 20ppm – packed under argon	10g to 250g

Customized electrolyte

BULK packaging or specific needs, please contact us.

Conductivity (mS.cm⁻¹) at 25°C :

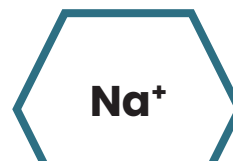


References:

Hess et al., 'Flammability of Li-Ion Battery Electrolytes: Flash Point and Self-Extinguishing Time Measurements', *Journal of The Electrochemical Society*, 2015, 162, A3084-A3097

Guerfi et al., 'Improved electrolytes for Li-ion batteries: Mixtures of ionic liquid and organic electrolyte with enhanced safety and electrochemical performance', *Journal of Power Sources*, 2010, 195, 845-852

II. ナトリウムイオン電池



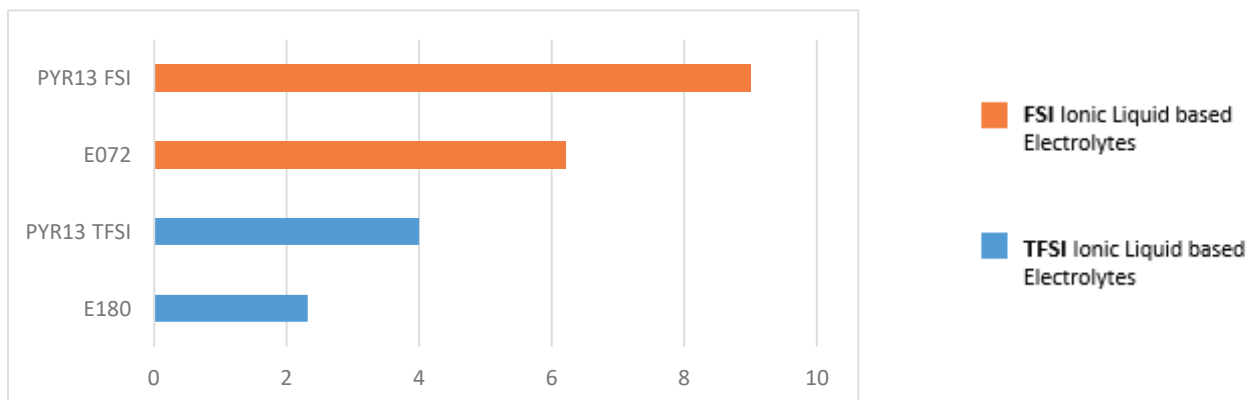
REF.	Ionic Liquids based Electrolytes	Packaging
E072	NaFSI:PYR13 FSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg
E180	NaTFSI:PYR13 TFSI (1:9 mol ratio) – 99.9% H ₂ O < 20ppm – packed under argon	50g to 1kg

Customized electrolyte

BULK packaging or specific needs, please contact us.

Solvionic社のナトリウムイオン電池用製品は、NaFSIまたはNaTFSIのナトリウム塩をイオン液体または有機溶媒（炭酸塩）に溶解したものをベースにしています。

Conductivity (mS.cm⁻¹) at 25°C:

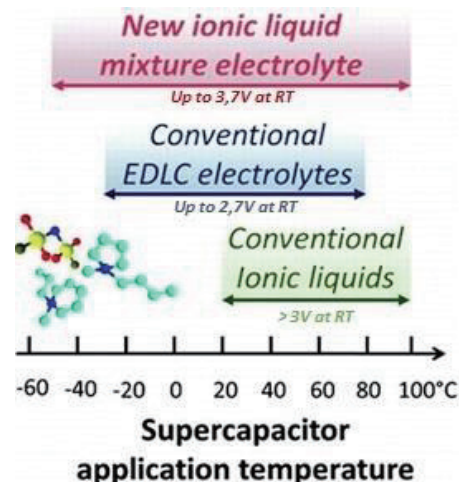


III. スーパーキャパシタ

1) スーパーキャパシタ用共晶混合物

Solvionic 社は、これらの共晶混合物が-50~100℃の容量性エネルギー貯蔵を可能にすることを実証しました[1]。

これらの共晶混合物は、-80℃~120℃の広い安定な液相線温度範囲を有します。様々なタイプの電極への応用が示されています[2,3,4]。結果は、100℃と20℃でサイクルしたとき、それぞれ3.3~3.7Vの最大電圧範囲で良好な容量を示しました。

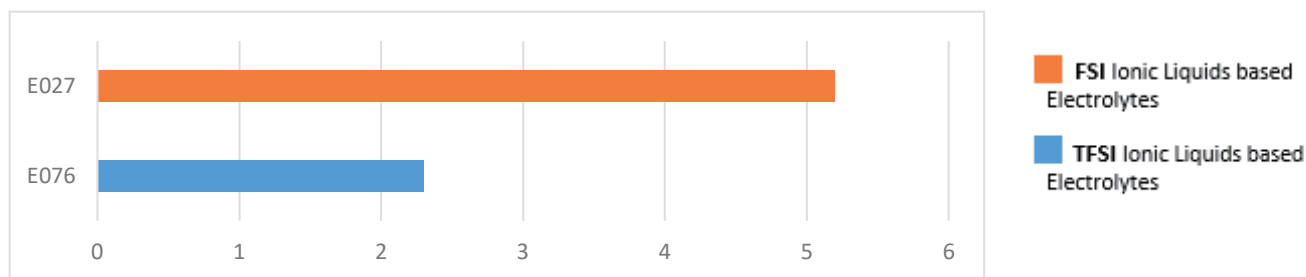


REF.	FORMULATIONS	Packaging
E027	PII3 FSI:PYR14 FSI (1:1 wt.%) – 99.9% H ₂ O < 20ppm – packed under argon	10g to 250g
E076	PII3 TFSI:PYR14 TFSI (1:1 wt.%) – 99.9% H ₂ O < 20ppm – packed under argon	10g to 250g

Customized electrolyte

BULK packaging or specific needs, please contact us.

Conductivity (mS.cm⁻¹) at 25°C :



References :

- [1] R. Lin et al., Capacitive energy storage from -50 to 100 °C using an ionic liquid electrolyte, *The Journal of Physical Chemistry Letters*, 2011, 2 (19), 2396–2401
- [2] R. Lin et al., Outstanding performance of activated graphene based supercapacitors in ionic liquid electrolyte from -50 to 80 °C, *Nano Energy*, 2013, 2 (3), 403–411
- [3] Huang et al., On-chip micro-supercapacitors for operation in a wide temperature range, *Electrochemistry Communications*, 2013, 36, 53–56
- [4] Lecoer et al., Self-standing electrochemical double layer capacitors for operation in severe temperature conditions, *Materials for Renewable and Sustainable Energy*, 2013, 2 (2) 13

2) スーパーキャパシタ用イオン液体

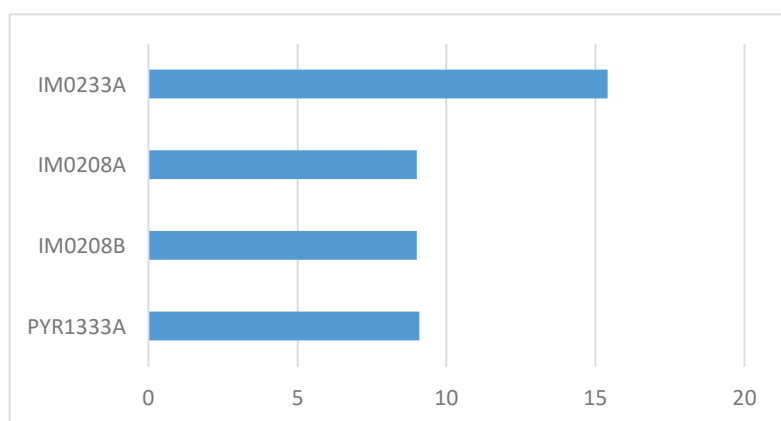
1-エチル-3-メチルイミダゾリウム系(Emim)イオン性液体は、この分野で最も売れている製品のひとつです。イオン液体の中では比較的高いイオン伝導度と熱安定性を持つため、一般的なスーパーキャパシタの電解質として良好な性能を発揮します。

それらは、異なる電気化学グレードで入手可能です。

REF.	IONIC LIQUIDS	EW (V) at RT (1mA/cm ²)	PACKAGING
IM0233A	Emim FSI - 99.9% anhydrous [235789-75-0] fw : 291.30 ; mp : -13 d : 1.39 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon	4.6	10g to 250g
IM0208A	Emim TFSI - 99.9% anhydrous [174899-82-2] fw : 391.31 ; mp : -16 ; d : 1.52 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon	4.7	10g to 5Kg
IM0208B	Emim TFSI - 99.5% [174899-82-2] fw : 391.31 ; mp : -16 ; d : 1.52 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O < 500ppm - packed under nitrogen	4.5 - 4.7	50g to 5kg
PYR1333A	PYR13 FSI - 99.9% anhydrous [852620-97-4] fw : 308.37 ; mp : -9 ; d : 1.343 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon	5.4	10g to 250g

BULK packaging or specific needs, please contact us.

Conductivity (mS.cm⁻¹) at 25°C :



IV. ゲル/ポリマー電解質

Solvionic社は最近、柔軟で透明な自立型高分子電解質への加工（キャスト、ディープコートなど）が可能な製剤を開発しました。

Solvionic社は、カスタマイズされた電解質を製造することができます。

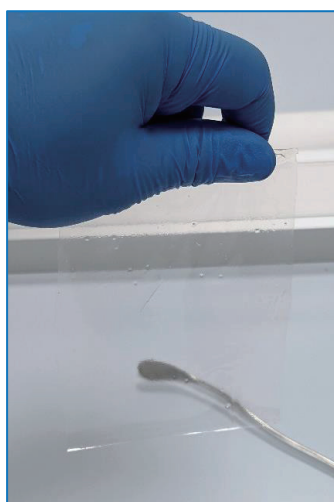
XM of Salt in Pyr14FSI + PolyDDATFSI (proportions) in %Solvent

LiFSI
Or
LiTFSI

Ex:
60:40
70:30
50:50
40:60

Acetone
Butanone
Acetonitrile
Propylene carbonate

1) 電池用膜剤



薄膜型電解質用の次世代電解質製剤。このようにして得られた電解質膜を挿入した写真（40～50 μ m）：自立性、伸縮性、柔軟性があります。

Ref. EM005 - LiTFSI:PYR14TFSI (1:9 mol) + 58 wt. % Poly([DDA][TFSI]), in acetone.

At 20°C = 3.5 mS.cm⁻¹

EW at RT (0.1mA/cm²) = 4.4 V

特注品:

他の金属塩（例えば、NaTFSI、Mg(II)TFSI、Ca(II)TFSI、Zn(II)TFSI・・・）と同じタイプの配合物も入手可能です。

REF.	FORMULATIONS	PACKAGING
EM005	[LiTFSI:PYR14TFSI 1:9 (mol.)] : PolyDDATFSI 42:58 (wt.), 50% acetone H ₂ O < 20ppm packed under argon	50g to 1kg
EM009	[LiTFSI : PYR14FSI 1:9 (mol.)] : PolyDDAFSI 42:58 (wt.), 50% acetone H ₂ O < 20ppm packed under argon	50g to 1kg
EM011	[MgTFSI:PYR14FSI 1:9 (mol.)] : PolyDDAFSI 42:58 (wt.),50% acetone H ₂ O < 100ppm packed under argon	50g to 1kg
EM015	[ZnTFSI:PYR14FSI 1:9 (mol.)] : PolyDDAFSI 42:58 (wt.),50% acetone H ₂ O < 100ppm packed under argon	50g to 1kg
EM022	[LiFSI:PYR14FSI 1:9 (mol.)]:PolyDDAFSI 42:58 (wt.),50% acetonitrile H ₂ O < 20ppm – packed under argon	50g to 1kg
EM028	[LiFSI:PYR14FSI 2:3 (mol.)]:PolyDDAFSI 42:58 (wt.),50% acetonitrile H ₂ O < 20ppm – packed under argon	50g to 1kg

Customized electrolyte

BULK packaging or specific needs, please contact us.

References :

MacFarlane et al., 'Energy applications of ionic liquids'; *Energy Environ. Sci.*, 2014, 7, 232

G.B. Appetecchi et al., 'Ternary polymer electrolytes containing pyrrolidinium-based polymeric ionic liquids for lithium batteries' *Journal of Power Sources*, 2010, 195, p3668

2) 電気化学デバイスのための膜配合物

REF.	FORMULATIONS	PACKAGING
EM001	1-Allyl-3H-Imidazolium TFSI : PMMA 60:40 (wt.), 50wt% butanone Application : H ⁺ conducting membrane for electrochromic devices	50g
EM002	N,N-diethyl-N-(2-hydroxyethyl)Am TFSI + 40 wt. % PMMA,50% in butanone Application : H ⁺ conducting membrane for electrochromic devices	50g
EM003	[0,3M LiTFSI in BmimTFSI] : PMMA 60:40 (wt.), 50wt% in butanone Application : Li ⁺ conducting membrane for electrochromic devices	50g

Customized electrolyte

BULK packaging or specific needs, please contact us.

References :

Duluard et al., 'Soft matter electrolytes based on polymethylmetacrylate dispersions in lithium bis(trifluoromethanesulfonyl)imide/1-butyl-3-methylimidazolium bis(trifluoromethanesulfonyl)imide ionic liquids'; *Electrochimica Acta*, 2010, 55, p8839-8846

イオン液体

REF.	IONIC LIQUIDS	(mS.cm ⁻¹) at RT	EW (V) at RT (1mA/cm ²)	PACKAGING
IM0233A	Emim FSI - 99.9% anhydrous [235789-75-0] fw : 291.30 ; mp : -13 d : 1.39 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	17.7	4.6	10g to 5kg Bulk
IM0208A	Emim TFSI - 99.9% anhydrous [174899-82-2] fw : 391.31 ; mp : -16 ; d : 1.52 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	9.0	4.7	10g to 5kg Bulk
PYR1333A	PYR13 FSI - 99.9% anhydrous [852620-97-4] fw : 308.37 ; mp : -9 ; d : 1.343 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	9.1	5.4	10g to 5kg Bulk
PYR1308A	PYR13 TFSI - 99.9% anhydrous [223437-05-6] fw : 408.40 ; mp: 12 ; d: 1.4 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	4.0	5.9	10g to 5kg Bulk
PYR0433A	PYR14 FSI - 99.9% anhydrous [1057745-51-3] fw : 322,28 ; mp: -17.7 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	6,9	5,7	10g to 5kg Bulk
PYR0408A	PYR14 TFSI - 99.9% anhydrous [223437-11-4] fw : 422.41 ; mp: -6 ; d: 1.4 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	2,8	6,1	10g to 5kg Bulk



REF.	IONIC LIQUIDS	(mS.cm ⁻¹) at RT	EW (V) at RT (1mA/cm ²)	PACKAGING
PYRSF1908A	PYR(1201) TFSI - 99.9% anhydrous [757240-24-7] fw : 424.38 ; mp: 5.4 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application : Electrochemistry	3,8	5.9	10g to 5kg Bulk
PYRSF1933A	PYR(1201) FSI - 99.9% anhydrous [1235234-47-5] fw : 324.36 ; mp: 5.8 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm - packed under argon Application: Electrochemistry	7,3	5.6	10g to 5kg Bulk
AM0308A	N-Trimethyl-N-propylammonium bis(trifluoromethanesulfonyl)imide [268536-05-6] fw : 382 ; mp :19 ; Hydrophobic Halides ≤ 1ppm ; H ₂ O < 20ppm Application: Electrochemistry	3.3	5.8	10g to 5kg Bulk

BULK packaging or specific needs, please contact us.



金属塩

Solvionic社は、電着、エネルギー貯蔵および触媒作用の用途を目的とした金属塩を開発し、生成します。

REF.	SALTS	PACKAGING
M0333A	Lithium bis(fluorosulfonyl)imide 99.9% LiF ₂ NO ₄ S ₂ ; [171611-11-3]; fw : 187,07 H ₂ O ≤ 20ppm - packed under argon	50g to 10Kg
M1133B	Sodium(I) Bis(fluorosulfonyl)imide 99.7% Na F ₂ NO ₄ S ₂ ; [100669-96-3]; fw : 203,30 H ₂ O ≤ 20ppm - packed under argon	10g to 10kg
S001	Lithium(I) Bis(trifluoromethanesulfonyl)imide 99% LiC ₂ F ₆ NO ₄ S ₂ ; [90076-65-6]; fw : 287,10 H ₂ O ≤ 5000ppm - packed under nitrogen	50g to 10kg
S001A	Lithium(I) Bis(trifluoromethanesulfonyl)imide 99.9% LiC ₂ F ₆ NO ₄ S ₂ ; [90076-65-6]; fw : 287,10 Extra-Dry H ₂ O ≤ 20ppm - packed under argon	50g to 10Kg
M1108C	Sodium(I) Bis(trifluoromethanesulfonyl)imide 99.5% NaC ₂ F ₆ NO ₄ S ₂ ; [91742-21-1]; fw : 303,13 H ₂ O ≤ 20ppm - packed under argon	10g to 10kg
M1208C	Magnesium(II) Bis(trifluoromethanesulfonyl)imide 99.5% Mg(C ₂ F ₆ NO ₄ S ₂) ₂ ; [133395-16-1]; fw : 584,59 H ₂ O ≤ 250ppm - packed under argon	10g to 10kg
M1908C	Potassium(I) Bis(trifluoromethanesulfonyl)imide 99.5% KC ₂ F ₆ NO ₄ S ₂ ; [90076-67-8]; fw : 319,14 H ₂ O ≤ 250ppm - packed under argon	10g to 10kg
M2008C	Calcium(II) Bis(trifluoromethanesulfonyl)imide 99.5% Ca(C ₂ F ₆ NO ₄ S ₂) ₂ ; [165324-09-4]; fw : 600,38 H ₂ O ≤ 250ppm - packed under argon	10g to 1kg
M2508C	Manganese(II) Bis(trifluoromethanesulfonyl)imide 99.5% Mn(C ₂ F ₆ NO ₄ S ₂) ₂ ; [207861-55-0]; fw : 615,22 H ₂ O ≤ 250ppm - packed under argon	10g to 5Kg

REF.	SALTS	PACKAGING
M2908C	Copper(II) Bis(trifluoromethanesulfonyl)imide 99.5% Cu(C ₂ F ₆ NO ₄ S ₂) ₂ ; [162715-14-2]; fw : 623,82 H ₂ O ≤ 20ppm - packed under argon	10g to 5kg
M3008B	Zinc(II) Bis(trifluoromethanesulfonyl)imide 99.5% Zn(C ₂ F ₆ NO ₄ S ₂) ₂ ; [168106-25-0]; fw : 625,68 H ₂ O ≤ 100ppm - packed under argon	10g to 1kg
M4708C	Silver(I) Bis(trifluoromethanesulfonyl)imide 99.5% AgC ₂ F ₆ NO ₄ S ₂ ; [189114-61-2]; fw : 388,01 H ₂ O ≤ 20ppm - packed under argon	5g to 50g
M5508C	Cesium(I) Bis(trifluoromethanesulfonyl)imide 99.5% CsC ₂ F ₆ NO ₄ S ₂ ; [91742-16-4]; fw : 413,05 H ₂ O ≤ 20ppm - packed under argon	10g to 1kg
M5608C	Barium(II) Bis(trifluoromethanesulfonyl)imide 99.5% Ba(C ₂ F ₆ NO ₄ S ₂) ₂ ; [168106-22-7]; fw : 697,61 H ₂ O ≤ 250ppm - packed under argon	10g to 1kg
M5708C	Lanthanum(III) bis(trifluoromethanesulfonyl)imide 99.5% La(C ₂ F ₆ NO ₄ S ₂) ₃ ; [168106-26-1]; fw : 979,42 H ₂ O ≤ 20ppm - packed under argon	10g to 250g
M5808C	Cerium(III) bis(trifluoromethanesulfonyl)imide 99.5% Ce(C ₂ F ₆ NO ₄ S ₂) ₃ ; [1046099-39-1]; fw : 980,54 H ₂ O ≤ 20ppm - packed under argon	10g to 500g

BULK packaging or specific needs, please contact us.

REF.	SALTS	PACKAGING
M1105C	Sodium(I) trifluoromethanesulfonate 99.5% NaCF ₃ SO ₃ ; [2926-30-9] ; fw : 172,06 H ₂ O ≤ 20ppm - packed under argon	10g to 1Kg
M1205C	Magnesium(II) trifluoromethanesulfonate 99.5% Mg(CF ₃ SO ₃) ₂ ; [60871-83-2] ; fw : 322,44 H ₂ O ≤ 250ppm - packed under argon	10g to 10kg
M1905C	Potassium(I) trifluoromethanesulfonate 99.5% KCF ₃ SO ₃ ; [2926-27-4] ; fw : 188,07 H ₂ O ≤ 250ppm - packed under argon	10g to 1kg
M3005B	Zinc(II) trifluoromethanesulfonate 99.5% Zn(CF ₃ SO ₃) ₂ ; [54010-75-2] ; fw : 363,54 H ₂ O ≤ 100ppm - packed under argon	10g to 1Kg

BULK packaging or specific needs, please contact us.

References :

Wagner et al., 'Counterintuitive Role of Magnesium Salts as Effective Electrolyte Additives for High Voltage Lithium-Ion Batteries', *Advanced Material Interfaces*, 2016, p1600096

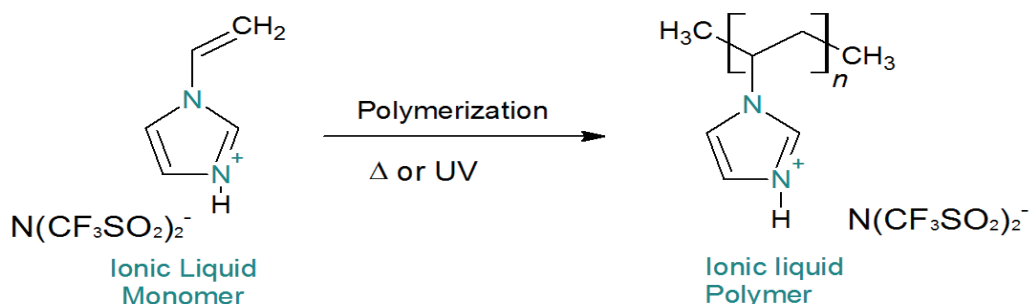
Senguttuvan et al., 'A High Power Rechargeable Nonaqueous Multivalent Zn/V₂O₅ Battery', *Advanced Energy Materials*, 2016, p1600826

モノマー・ポリマー

Solvionic社は最近、イオン液体モノマーを開発し、熱または紫外線重合によって容易に電荷伝導性ポリマーに変換することができるようになりました。

これらのポリマーは、電極バインダー、ポリマー電解質（全固体電池）、架橋剤、コーティング剤として使用されています。

カスタムメイド: Solvionic社は、モノマー分子のカスタマイズされたエンジニアリングと、要望に応じてモノマー分子を用いた製剤を提供します。製剤は、添加剤および/または不燃性イオン性液体を含有することができます。



REF.	MONOMERS	PACKAGING
IMSF2908B	3-Ethyl-1-Vinyl Imidazolium TFSI - 99.5% fw : 403,32 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g
IMSF2933B	3-Ethyl-1-Vinyl Imidazolium FSI - 99.5% fw : 303,3 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g
IMSF0108B	1-Vinyl-3H-imidazolium TFSI - 99.5% fw : 375,27 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g
IM1308B	1-Allyl-3-methylimidazolium TFSI - 99.5% fw : 403,32 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g

BULK packaging or specific needs, please contact us.

REF.	MONOMERS	PACKAGING
AMSF2908B	N,N,N,N-butyltrimethylmethacryloyloxyethylammonium TFSI - 99.5% fw : 494,47 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g
PYR3108B	1-Allyl-1-Methylpyrrolidinium TFSI - 99.5% fw : 406,36 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g

BULK packaging or specific needs, please contact us.

REF.	CROSSLINKERS DIMERS	PACKAGING
IMSF4208B	1,4-butanediyl-3,3'-bis-1-vinylimidazolium Di-TFSI - 99.5% fw : 804,63 ; Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g

BULK packaging or specific needs, please contact us

REF.	POLYMERS	PACKAGING
AM5408B	Poly(diallyldimethylammonium TFSI) - 99.5% Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g
AM5433B	Poly(diallyldimethylammonium FSI) - 99.5% Hydrophobic Halides ≤ 10ppm ; H ₂ O ≤ 500ppm - packed under nitrogen	10g to 50g

BULK packaging or specific needs, please contact us.

References :

Zamory et al, 'Polymeric ionic liquid nanoparticles as binder for composite Li-ion Electrodes', Journal of Power Sources, 2013, 240, 745-752

Chemical reagents



Green propellant fuels

Thermal fluids



Biotechnology

- Biocatalysis

Analytical chemistry



Applications of Ionic Liquids



Electrochemical energy storage

- Batteries
- Supercaps
- Sensors

Lubricants



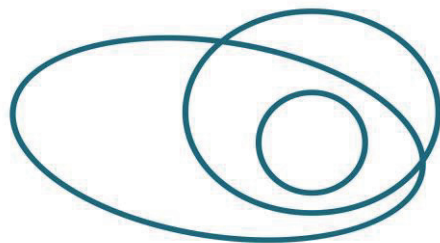
Surface treatment

Extraction processes

- Carbon capture
- Metal ion extraction



Industrial solvents



SOLVIONIC

POWERED BY INNOVATION

11 chemin des Silos

31100 Toulouse – France

Tel. : **+33(0)5 32.26.20.20** – Email : sales@solvionic.com

www.solvionic.com



重松貿易株式会社 化学品部

Shigematsu & Co.,Ltd.

<大阪本社>

〒541-0047 大阪市中央区淡路町 2 丁目 2 番 5 号

TEL : (06)6231-6146 FAX : (06)6231-6149

WEB : www.shigematsu-bio.com/

Mail : info@shigematsu-bio.com

