



Let's start
something new!

Ionic Liquids Product Range
for your innovations



What's in it for you with Ionic Liquids from EMD?

Quite simply:

a wide range of high quality products with great variety of properties,
custom synthesis and special product formulations –

some available exclusively from EMD –

all of them available from grams to tons.

That's what's in it for you. Merck Chemicals

Ready for you

- Our catalog portfolio consists of around 100 ready-to-use Ionic Liquids.
- For your screening and trials they are available from stock in package sizes of 25 g, 100 g and 500 g.

Especially for you

- Quantities in kilogram and ton scale can be supplied according to dedicated conditions and specifications depending on your specific requirements.
- If you need a product which is currently not included in our portfolio – please ask. We are pleased and prepared to supply you with a tailor made Ionic Liquid.

Support for you

- If you need help implementing your ideas, please contact our Technical Marketing Team and benefit from our competent technical support.
- We invite you to work with us in all stages of your process development.
- We provide solutions and consultancy: from initial concepts to production.

Content

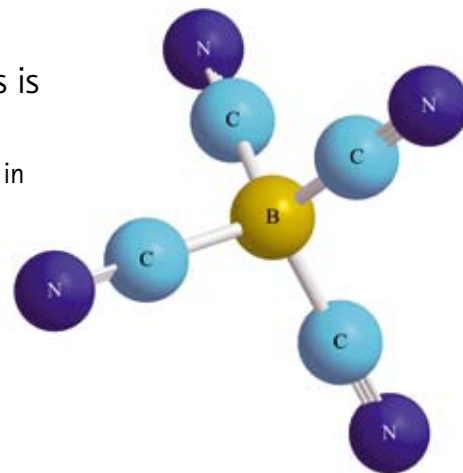
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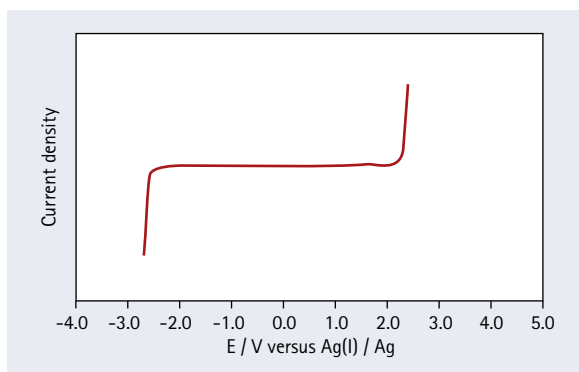
TCB-Anion $[B(CN)_4]^-$

Tetracyanoborate

- Our innovative material with superior properties is the answer to your design requirements
The remarkable combination of very low viscosity (resulting in high conductivity) and high electrochemical stability sets TCB-based Ionic Liquids apart from other Ionic Liquids.
- Exclusively available from EMD



Electrochemical window of EMIM TCB



We have developed this outstanding anion during the last years and are proud to introduce the first Ionic Liquids with TCB-anion to the market.

Product information

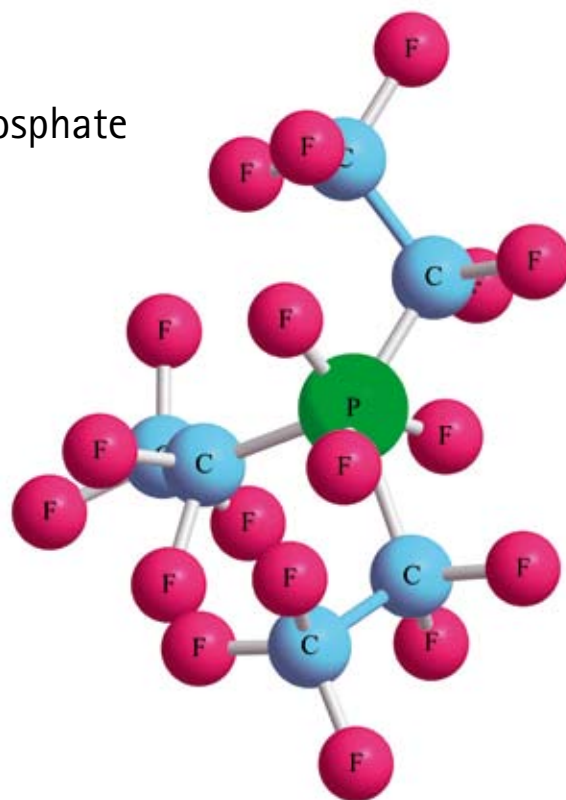
Product name	Short name	Cat. No.	mp [°C]	Density* [g/cm ³]	Viscosity* [cP]	Conductivity* [mS/cm]
1-Ethyl-3-methylimidazolium tetracyanoborate	EMIM TCB	490231	13	1.04	22	13
1-Butyl-1-methylpyrrolidinium tetracyanoborate	BMPL TCB	490123	22	0.979	62	4

* at 20 °C

FAP-Anion $[(C_2F_5)_3PF_3]^-$

Tris(pentafluoroethyl)trifluorophosphate

- Very high electrochemical stability
- Immiscible with water
The most "hydrophobic" Ionic Liquid available
- Non-coordinating anion
Helps to stabilize carbo-cations
- Stable against hydrolysis
More stable than hexafluorophosphate and tetrafluoroborate
- Exclusively available from EMD



Product information

Product name	Short name	Cat. No.	mp [°C]	Density* [g/cm ³]	Viscosity* [cP]	Conductivity* [mS/cm]
1-Ethyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate	EMIM FAP	490001	-1	1.715	75	3.6
Trihexyl(tetradecyl)phosphonium tris(pentafluoroethyl)trifluorophosphate	PH3 T FAP	490002	< -50	1.18	464	0.81
1-Hexyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate	HMIM FAP	490078	-14	1.56	116	1.3
1-Butyl-1-methylpyrrolidinium tris(pentafluoroethyl)trifluorophosphate	BMPL FAP	490084	4	1.589	292	0.9
1-Butyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate	BMIM FAP	490232	3	1.626	93	2.3
1-(2-Methoxyethyl)-1-methyl-pyrrolidinium tris(pentafluoroethyl)trifluorophosphate	MOEMPL FAP	491233	< -50	1.646	164	1.3
1-(Methoxyethyl)-1-methylpiperidinium tris(pentafluoroethyl)trifluorophosphate	MOEMPIP FAP	491234	< -50	1.612	272	0.7
N-Ethyl-N,N-dimethyl-2-methoxyethylammonium tris(pentafluoroethyl)trifluorophosphate	MOEDEA FAP	491235	< -50	1.629	178	1.1
N-(Methoxyethyl)-N-methylmorpholinium tris(pentafluoroethyl)trifluorophosphate	MOEMMO FAP	491236	< -50	1.682	1144	0.2
N-(3-Hydroxypropyl)pyridinium tris(pentafluoroethyl)trifluorophosphate	POHPYR FAP	491237	< -50	1.74	482	0.3
1-(2-Hydroxyethyl)-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate	EOHMIM FAP	491238	< -50	1.76	276	1.0

* at 20 °C

Quality

Our knowledge - your advantage: We at EMD – the pioneer in the field of analytics – have developed an advanced and reliable quality control of our Ionic Liquids. Comprehensive measurements using diverse analytical techniques are undertaken to confirm constant quality.

Your benefit: Top preconditions for reproducible results.

Depending on the product you can choose from three purity grades:

- For Synthesis grade (S)
- High Purity grade (HP)
- Ultra Pure grade (UP)

And if needed we can also manufacture Ionic Liquids to your specifications.

Specifications for the majority of our Ionic Liquids

	For synthesis	High purity	Ultra pure
Purity (HPLC or Electrophoresis)	> 98 %	> 99 %	> 99 %
Identity (NMR)	conforms	conforms	conforms
Halides (IC)	< 1000 ppm	< 100 ppm	< 10 ppm
Water (Karl Fischer titration)	< 1 %	< 100 ppm	< 10 ppm

Additional parameters if indicated

	For synthesis	High purity	Ultra pure
Assay (alkalimetric)	> 98 %	> 99 %	> 99 %
Alkali metal ions		< 150 ppm	< 150 ppm
Dimethylsulfate	< 0.01 %	< 0.01 %	< 0.01 %

... on request we can provide customised parameters.

We may update parts of these specification as the case arises.

Please visit our website to find the updates.

Packaging

Our Ionic Liquids are packaged under an Argon atmosphere in amber glass bottles in sizes of 25 g, 100 g and 500 g.

For bulk quantities we offer special packaging depending on the product and your requirements.



Catalog number matrices

Our matrix gives you a compact, clearly arranged overview of our portfolio and its catalog numbers. It helps you to find your desired Ionic Liquids using different criteria:

1 Cation headgroups

3-Methylimidazolium
2,3-Dimethylimidazolium
Pyridinium
1-Methylpyrrolidinium
Ammonium
Miscellaneous

2 Cation sidechain(s)

are sorted by increasing chainlength
and functionalised sidechains

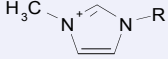
3 Anions

Fluoroalkylphosphate	FAP
Bis(trifluoromethylsulfonyl)imide	NTF
Tetracyanoborate	TCB
Trifluoromethanesulfonate	OTF
Dicyanamide	DCN
Tricyanomethide	TCC
Thiocyanate	SCN
Hydrogensulfate	HSO4
Alkylsulfate	MSU, ESU, BSU, HSU, OSU, MEESU
Oxalato borate	BOB
Methanesulfonate	MSO
Trifluoroacetate	ATF
Tosylate	TOS
Tetrafluoroborate	BF4
Hexafluorophosphate	PF6
Halides	Cl, Br, I
Nonafate	NON

Cation Headgroup		3-Methylimidazolium								
Anion	Side-chain R	1-Methyl-	1-Ethyl-	1-Propyl-	1-Butyl-	1-Hexyl-	1-Octyl-	1-Cyanomethyl-	1-(2-Hydroxyethyl)-	
	shortname	MMIM	EMIM	PMIM	BMIM	HMIM	OMIM	MCNMMIM	EOHMIM	
[C ₂ F ₅ PF ₆] ⁻	FAP		490001		490232	490078				491238
[N(SO ₂ CF ₃) ₂] ⁻	NTF		490189	490228	490092	490031			490246	490263
[CF ₃ SO ₃] ⁻	OTF		490061		490024					
[B(CN) ₄] ⁻	TCB		490231							
[N(CN) ₂] ⁻	DCN		490163		490015					
[C(CN) ₃] ⁻	TCC				490330					
[SCN] ⁻	SCN		490201							
[HSO ₄] ⁻	HSO4		490223		490230					
[C ₂ H ₅ SO ₄] ⁻	MSU	490059	490175		490063					
[C ₃ H ₇ SO ₄] ⁻	ESU		490229							
[C ₄ H ₉ SO ₄] ⁻	BSU		490291							
[C ₆ H ₁₃ SO ₄] ⁻	HSU		490292							
[C ₈ H ₁₇ SO ₄] ⁻	OSU		490205		490177					
[C ₁₂ H ₂₅ SO ₄] ⁻	MEESU		490290							
[B(C ₂ O ₄) ₂] ⁻	BOB		490012							
[C ₂ H ₅ SO ₃] ⁻	MSO		490286		490287					
[CF ₃ COO] ⁻	ATF		490147		490158					
[C ₆ H ₄ SO ₃] ⁻	TOS		490176							
[BF ₄] ⁻	BF4		490037		490049	490064				
[PF ₆] ⁻	PF6				490050	490065				
Cl ⁻	Cl		490054		490079	490039	490056			
Br ⁻	Br		490038		490087		490285			
I ⁻	I			490202	490187					
[C ₂ F ₅ SO ₃] ⁻	NON									

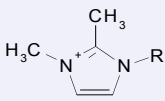
The product list (pages 14–25) is sorted by the catalog numbers, which you find in the matrices. As one of the leading suppliers of innovative products we are continually working to regularly adapt our portfolio to the changing market requirements. Please visit our website www.ionic-liquids.com to find the updates.

3-Methylimidazolium

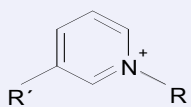
Cation Headgroup		 3-Methylimidazolium							
Anion	Side-chain R	1-Methyl-	1-Ethyl-	1-Propyl-	1-Butyl-	1-Hexyl-	1-Octyl-	1-Cyanomethyl-	1-(2-Hydroxyethyl)-
	shortname	MMIM	EMIM	PMIM	BMIM	HMIM	OMIM	MCNMIM	EOHMIM
$[(C_2F_5)_3PF_3]^-$	FAP		490001		490232	490078			491238
$[N(SO_2CF_3)_2]^-$	NTF		490189	490228	490092	490031		490246	490263
$[CF_3SO_3]^-$	OTF		490061		490024				
$[B(CN)_4]^-$	TCB		490231						
$[N(CN)_2]^-$	DCN		490163		490015				
$[C(CN)_3]^-$	TCC				490330				
$[SCN]^-$	SCN		490201						
$[HSO_4]^-$	HSO4		490223		490230				
$[CH_3SO_4]^-$	MSU	490059	490175		490063				
$[C_2H_5SO_4]^-$	ESU		490229						
$[C_4H_9SO_4]^-$	BSU		490291						
$[C_6H_{13}SO_4]^-$	HSU		490292						
$[C_8H_{17}SO_4]^-$	OSU		490205		490177				
$[C_5H_{11}O_2SO_4]^-$	MEESU		490290						
$[B(C_2O_4)_2]^-$	BOB		490012						
$[CH_3SO_3]^-$	MSO		490286		490287				
$[CF_3COO]^-$	ATF		490147		490158				
$[CH_3C_6H_4SO_3]^-$	TOS		490176						
$[BF_4]^-$	BF4		490037		490049	490064			
$[PF_6]^-$	PF6				490050	490065			
Cl^-	Cl		490054		490079	490039	490056		
Br^-	Br		490038		490087		490285		
I^-	I			490202	490187				
$[C_4F_9SO_3]^-$	NON								

For detailed information see product list (pages 14–25) sorted by catalog numbers

2,3-Dimethylimidazolium

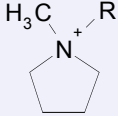
Cation Headgroup		 2,3- Dimethylimidazolium			
Anion	Side-chain R	1-Methyl-	1-Ethyl-	1-Propyl-	1-Butyl-
	shortname	MMMIM	EMMIM	PMMIM	BMMIM
$[(C_2F_5)_3PF_3]^-$	FAP				
$[N(SO_2CF_3)_2]^-$	NTF			490227	
$[CF_3SO_3]^-$	OTF				490115
$[B(CN)_4]^-$	TCB				
$[N(CN)_2]^-$	DCN				
$[C(CN)_3]^-$	TCC				
$[SCN]^-$	SCN				
$[HSO_4]^-$	HSO4				
$[CH_3SO_4]^-$	MSU				
$[C_2H_5SO_4]^-$	ESU				
$[C_4H_9SO_4]^-$	BSU				
$[C_6H_{13}SO_4]^-$	HSU				
$[C_8H_{17}SO_4]^-$	OSU				
$[C_5H_{11}O_2SO_4]^-$	MEESU				
$[B(C_2O_4)_2]^-$	BOB				
$[CH_3SO_3]^-$	MSO				
$[CF_3COO]^-$	ATF				
$[CH_3C_6H_4SO_3]^-$	TOS				
$[BF_4]^-$	BF4				490016
$[PF_6]^-$	PF6				490035
Cl^-	Cl		490168		490021
Br^-	Br				
I^-	I	490204			490191
$[C_4F_9SO_3]^-$	NON				

Pyridinium

Cation Headgroup		 Pyridinium					
Anion	Side-chains R,R'	N-Butyl-	N-Ethyl-3-methyl-	N-Butyl-3-methyl-	N-(3-Hydroxypropyl)-	N-Hexyl-4-(dimethylamino)-	N-Ethyl-3-hydroxymethyl-
	shortname	BPYR	E3MPYR	B3MPYR	POHPYR	HDMAP	EHMP
[(C ₂ F ₅) ₃ PF ₃] ⁻	FAP				491237		
[N(SO ₂ CF ₃) ₂] ⁻	NTF				490264	490248	
[CF ₃ SO ₃] ⁻	OTF			490146			
[B(CN) ₄] ⁻	TCB						
[N(CN) ₂] ⁻	DCN			490331			
[C(CN) ₃] ⁻	TCC						
[SCN] ⁻	SCN						
[HSO ₄] ⁻	HSO4						
[CH ₃ SO ₄] ⁻	MSU						
[C ₂ H ₅ SO ₄] ⁻	ESU		490298				490297
[C ₄ H ₉ SO ₄] ⁻	BSU						
[C ₆ H ₁₃ SO ₄] ⁻	HSU						
[C ₈ H ₁₇ SO ₄] ⁻	OSU						
[C ₅ H ₁₁ O ₂ SO ₄] ⁻	MEESU						
[B(C ₂ O ₄) ₂] ⁻	BOB						
[CH ₃ SO ₃] ⁻	MSO						
[CF ₃ COO] ⁻	ATF						
[CH ₃ C ₆ H ₄ SO ₃] ⁻	TOS						
[BF ₄] ⁻	BF4			490122			
[PF ₆] ⁻	PF6			490206			
Cl ⁻	Cl	490042					
Br ⁻	Br			490088			
I ⁻	I						
[C ₄ F ₉ SO ₃] ⁻	NON		490295				

For detailed information see product list (pages 14–25) sorted by catalog numbers

1-Methylpyrrolidinium

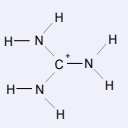
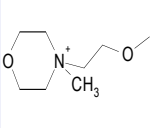
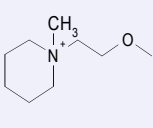
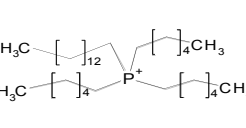
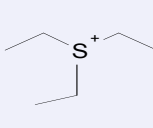
Cation Headgroup		 N-Methylpyrrolidinium		
Anion	Side-chain R	N-Methyl-	N-Butyl-	N-(2-Methoxyethyl)-
	shortname	MMPL	BMPL	MOEMPL
[(C ₂ F ₅) ₃ PF ₃] ⁻	FAP		490084	491233
[N(SO ₂ CF ₃) ₂] ⁻	NTF		490046	490267
[CF ₃ SO ₃] ⁻	OTF		490029	
[B(CN) ₄] ⁻	TCB		490123	
[N(CN) ₂] ⁻	DCN		490044	
[C(CN) ₃] ⁻	TCC			
[SCN] ⁻	SCN			
[HSO ₄] ⁻	HSO4			
[CH ₃ SO ₄] ⁻	MSU			
[C ₂ H ₅ SO ₄] ⁻	ESU			
[C ₄ H ₉ SO ₄] ⁻	BSU			
[C ₆ H ₁₃ SO ₄] ⁻	HSU			
[C ₈ H ₁₇ SO ₄] ⁻	OSU			
[C ₅ H ₁₁ O ₂ SO ₄] ⁻	MEESU			
[B(C ₂ O ₄) ₂] ⁻	BOB		491211	
[CH ₃ SO ₃] ⁻	MSO			
[CF ₃ COO] ⁻	ATF			
[CH ₃ C ₆ H ₄ SO ₃] ⁻	TOS			
[BF ₄] ⁻	BF4			
[PF ₆] ⁻	PF6			
Cl ⁻	Cl		490028	
Br ⁻	Br		490195	
I ⁻	I	490203		
[C ₄ F ₉ SO ₃] ⁻	NON			

Ammonium

Cation Headgroup		Ammonium N (R, R', R'', R''')			
Anion	R, R', R'', R'''	Tetramethyl-	Tetraethyl-	Ethyl-dimethyl-propyl-	Ethyl-dimethyl-2-methoxyethyl-
	shortname	NM4	NB4	NEMMP	MOEDEA
$[(C_2F_5)_3PF_3]^-$	FAP	490025			491235
$[N(SO_2CF_3)_2]^-$	NTF		490140	490222	
$[CF_3SO_3]^-$	OTF				
$[B(CN)_4]^-$	TCB				
$[N(CN)_2]^-$	DCN				
$[C(CN)_3]^-$	TCC				
$[SCN]^-$	SCN				
$[HSO_4]^-$	HSO4				
$[CH_3SO_4]^-$	MSU				
$[C_2H_5SO_4]^-$	ESU				
$[C_4H_9SO_4]^-$	BSU				
$[C_6H_{13}SO_4]^-$	HSU				
$[C_8H_{17}SO_4]^-$	OSU				
$[C_5H_{11}O_2SO_4]^-$	MEESU				
$[B(C_2O_4)_2]^-$	BOB				
$[CH_3SO_3]^-$	MSO				
$[CF_3COO]^-$	ATF				
$[CH_3C_6H_4SO_3]^-$	TOS				
$[BF_4]^-$	BF4				
$[PF_6]^-$	PF6				
Cl^-	Cl				
Br^-	Br				
I^-	I				
$[C_4F_9SO_3]^-$	NON				

For detailed information see product list (pages 14–25) sorted by catalog numbers

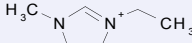
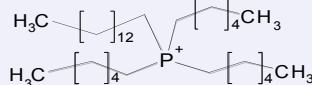
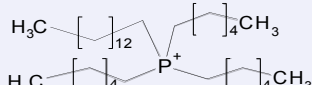
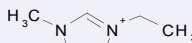
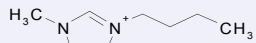
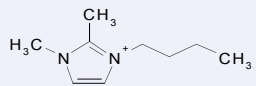
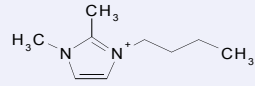
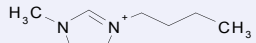
Miscellaneous

Miscellaneous						
		Cation				
		Anion				
shortname		GUA	MOEMMO	MOEMPIP	PH3T	SE3
$[(C_2F_5)_3PF_3]^-$	FAP	490135	491236	491234	490002	
$[N(SO_2CF_3)_2]^-$	NTF		490268	490269	490008	490296
$[CF_3SO_3]^-$	OTF					
$[B(CN)_4]^-$	TCB					
$[N(CN)_2]^-$	DCN					
$[C(CN)_3]^-$	TCC					
$[SCN]^-$	SCN					
$[HSO_4]^-$	HSO4					
$[CH_3SO_4]^-$	MSU					
$[C_2H_5SO_4]^-$	ESU					
$[C_4H_9SO_4]^-$	BSU					
$[C_6H_{13}SO_4]^-$	HSU					
$[C_8H_{17}SO_4]^-$	OSU					
$[C_5H_{11}O_2SO_4]^-$	MEESU					
$[B(C_2O_4)_2]^-$	BOB					
$[CH_3SO_3]^-$	MSO					
$[CF_3COO]^-$	ATF					
$[CH_3C_6H_4SO_3]^-$	TOS					
$[BF_4]^-$	BF4					
$[PF_6]^-$	PF6					
Cl^-	Cl					
Br^-	Br					
I^-	I					
$[C_4F_9SO_3]^-$	NON					

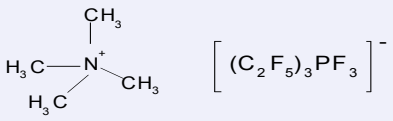
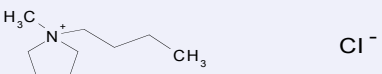
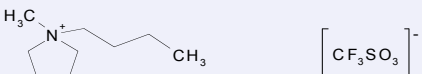
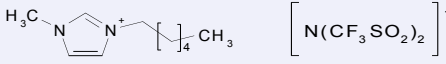
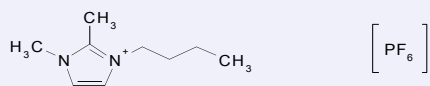
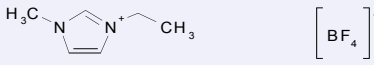
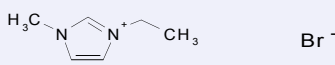
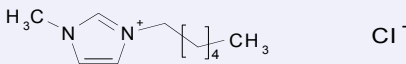
Product list

Cat. No. 490001 - 490024

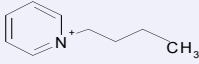


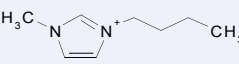
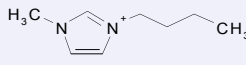
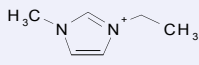
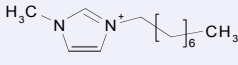
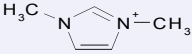


1-Ethyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate				
490001	for synthesis	EMIM FAP		$[(C_2F_5)_3PF_3]^-$
491001	High Purity	CAS-No.: 377739-43-0 M: 556.18 g/mol mp: -1°C		
Trihexyl(tetradecyl)phosphonium tris(pentafluoroethyl)trifluorophosphate				
490002	for synthesis	PH3T FAP		$[(C_2F_5)_3PF_3]^-$
491002	High Purity	CAS-No.: 883860-35-3 M: 928.88 g/mol mp: < -50°C		
Trihexyl(tetradecyl)phosphonium bis(trifluoromethylsulfonyl)imide				
490008	for synthesis	PH3T NTF		$[N(CF_3SO_2)_2]^-$
		CAS-No.: 460092-03-9 M: 764.00 g/mol mp: < -50°C		
1-Ethyl-3-methylimidazolium bis[oxalato(2-)-O,O]borate				
490012	for synthesis	EMIM BOB		$[B(C_2O_4)_2]^-$
		CAS-No.: 376650-06-5 M: 298.01 g/mol mp: 60°C		
1-Butyl-3-methylimidazolium dicyanamide				
490015	for synthesis	BMIM DCN		$[N(CN)_2]^-$
		CAS-No.: 448245-52-1 M: 205.26 g/mol mp: < -50°C		
1-Butyl-2,3-dimethylimidazolium tetrafluoroborate				
490016	for synthesis	BMMIM BF4		$[BF_4]^-$
		CAS-No.: 402846-78-0 M: 240.05 g/mol mp: 40°C		
1-Butyl-2,3-dimethylimidazolium chloride				
490021	for synthesis	BMMIM CL		Cl^-
		CAS-No.: 98892-75-2 M: 188.70 g/mol mp: 99°C		
1-Butyl-3-methylimidazolium trifluoromethanesulfonate				
490024	for synthesis	BMIM OTF		$[CF_3SO_3]^-$
491024	High Purity	CAS-No.: 174899-66-2 M: 288.29 g/mol mp: 17°C		

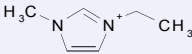
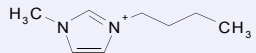
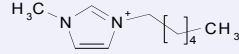
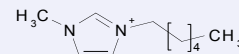
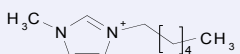
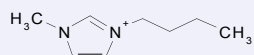

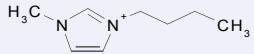
Cat. No. 490025 - 490039

Tetramethylammonium tris(pentafluoroethyl)trifluorophosphate			
490025	for synthesis	NM4 FAP CAS-No.: 394692-83-2 M: 519.15 g/mol mp: 115°C	
N-Butyl-1-methylpyrrolidinium chloride			
490028	for synthesis	BMPL CL CAS-No.: 479500-35-1 M: 177.71 g/mol mp: 106°C	
N-Butyl-1-methylpyrrolidinium trifluoromethanesulfonate			
490029	for synthesis	BMPL OTF	
491029	High Purity	CAS-No.: 367522-96-1 M: 291.33 g/mol mp: 3°C	
1-Hexyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide			
490031	for synthesis	HMIM NTF	
491031	High Purity	CAS-No.: 382150-50-7 M: 447.42 g/mol mp: -9°C	
1-Butyl-2,3-dimethylimidazolium hexafluorophosphate			
490035	for synthesis	BMMIM PF6 CAS-No.: 227617-70-1 M: 298.21 g/mol mp: 42°C	
1-Ethyl-3-methylimidazolium tetrafluoroborate			
490037	for synthesis	EMIM BF4 CAS-No.: 143314-16-3 M: 197.97 g/mol mp: 14°C	
1-Ethyl-3-methylimidazolium bromide			
490038	for synthesis	EMIM BR CAS-No.: 65039-08-9 M: 191.07 g/mol mp: 65°C	
1-Hexyl-3-methylimidazolium chloride			
490039	for synthesis	HMIM CL CAS-No.: 171058-17-6 M: 202.72 g/mol mp: < -50°C	

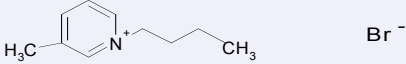
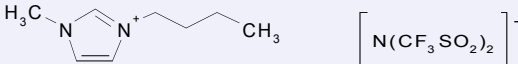
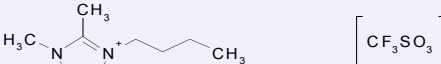
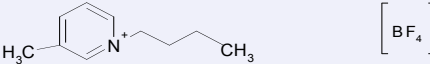
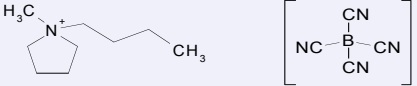

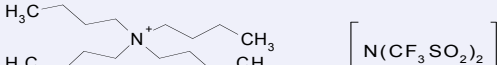
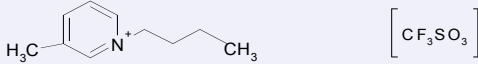
Cat. No. 490042 - 490059

N-Butylpyridinium chloride			
490042	for synthesis	BPYR CL CAS-No.: 1124-64-7 M: 171.67 g/mol mp: 127°C	 Cl ⁻
N-Butyl-1-methylpyrrolidinium dicyanamide			
490044	for synthesis	BMPL DCN CAS-No.: 370865-80-8 M: 208.30 g/mol mp: < -50°C	 [N(CN) ₂] ⁻
491044	High Purity		
N-Butyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide			
490046	for synthesis	BMPL NTF CAS-No.: 223437-11-4 M: 422.41 g/mol mp: -6°C	 [N(CF ₃ SO ₂) ₂] ⁻
491046	High Purity		
492046	Ultra Pure		
1-Butyl-3-methylimidazolium tetrafluoroborate			
490049	for synthesis	BMIM BF ₄ CAS-No.: 174501-65-6 M: 226.02 g/mol mp: < -50°C	 [BF ₄] ⁻
491049	High Purity		
1-Butyl-3-methylimidazolium hexafluorophosphate			
490050	for synthesis	BMIM PF ₆ CAS-No.: 174501-64-5 M: 284.18 g/mol mp: 12°C	 [PF ₆] ⁻
491050	High Purity		
1-Ethyl-3-methylimidazolium chloride			
490054	for synthesis	EMIM CL CAS-No.: 65039-09-0 M: 146.62 g/mol mp: 88°C	 Cl ⁻
3-Methyl-1-octylimidazolium chloride			
490056	for synthesis	OMIM Cl CAS-No.: 64697-40-1 M: 230.78 g/mol mp: -55°C	 Cl ⁻
1,3-Dimethylimidazolium methylsulfate			
490059	for synthesis	MMIM MSU CAS-No.: 97345-90-9 M: 208.24 g/mol mp: 45°C	 [CH ₃ OSO ₃] ⁻

Cat. No. 490061 - 490087

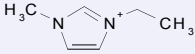
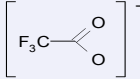
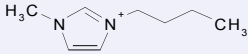
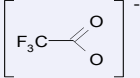
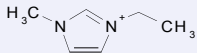

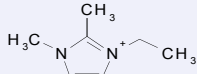
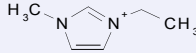
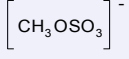
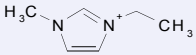
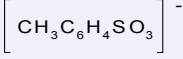
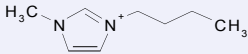
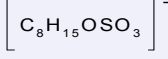
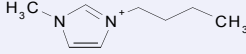
1-Ethyl-3-methylimidazolium trifluoromethanesulfonate			
490061	for synthesis	EMIM OTF	
491061	High Purity	CAS-No.: 145022-44-2 M: 260.24 g/mol mp: -12°C	 $[\text{CF}_3\text{SO}_3]^-$
1-Butyl-3-methylimidazolium methylsulfate			
490063	for synthesis	BMIM MSU	
		CAS-No.: 401788-98-5 M: 250.32g/mol mp: 13°C	 $[\text{CH}_3\text{OSO}_3]^-$
1-Hexyl-3-methylimidazolium tetrafluoroborate			
490064	for synthesis	HMIM BF4	
		CAS-No.: 244193-50-8 M: 254.08 g/mol mp: < -50°C	 $[\text{BF}_4]^-$
1-Hexyl-3-methylimidazolium hexafluorophosphate			
490065	for synthesis	HMIM PF6	
		CAS-No.: 304680-35-1 M: 312.24 g/mol mp: -68°C	 $[\text{PF}_6]^-$
1-Hexyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate			
490078	for synthesis	HMIM FAP	
491078	High Purity	CAS-No.: 713512-19-7 M: 612.28 g/mol mp: -14°C	 $[(\text{C}_2\text{F}_5)_3\text{PF}_3]^-$
1-Butyl-3-methylimidazolium chloride			
490079	for synthesis	BMIM CL	
		CAS-No.: 79917-90-1 M: 174.67 g/mol mp: 73°C	 Cl^-
N-Butyl-1-methylpyrrolidinium tris(pentafluoroethyl)trifluorophosphate			
490084	for synthesis	BMPL FAP	
491084	High Purity	CAS-No.: 851856-47-8 M: 587.27 g/mol mp: 4°C	 $[(\text{C}_2\text{F}_5)_3\text{PF}_3]^-$
1-Butyl-3-methylimidazolium bromide			
490087	for synthesis	BMIM BR	
		CAS-No.: 85100-77-2 M: 219.12 g/mol mp: 76°C	 Br^-

Cat. No. 490088 - 490146

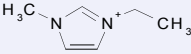
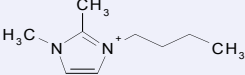

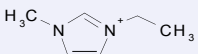
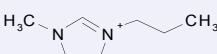
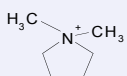
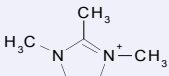
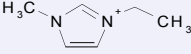
N-Butyl-3-methylpyridinium bromide			
490088	for synthesis	B3MPYR BR CAS-No.: 26576-85-2 M: 230.14 g/mol mp: 138°C	
1-Butyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide			
490092	for synthesis	BMIM NTF	
491092	High Purity	CAS-No.: 174899-83-3 M: 419.37 g/mol mp: 2°C	
1-Butyl-2,3-dimethylimidazolium trifluoromethanesulfonate			
490115	for synthesis	BMMIM OTF CAS-No.: 765910-73-4 M: 303.32 g/mol mp: 41°C	
N-Butyl-3-methylpyridinium tetrafluoroborate			
490122	for synthesis	B3MPYR BF4 CAS-No.: 597581-48-1 M: 237.05 g/mol mp: < -50°C	
1-Butyl-1-methyl-pyrrolidinium tetracyanoborate			
490123	for synthesis	BMPL TCB	
491123	High Purity	CAS-No.: M: 257.15 g/mol mp: 22°C	
Guanidinium tris(pentafluoroethyl)trifluorophosphate			
490135	for synthesis	GUA FAP CAS-No.: M: 505.09 g/mol mp: 155°C	
Tetrabutylammonium bis(trifluoromethylsulfonyl)imide			
490140	for synthesis	NB4 NTF CAS-No.: 210230-40-3 M: 522.61 g/mol mp: 92°C	
N-Butyl-3-methylpyridinium trifluoromethanesulfonate			
490146	for synthesis	B3MPYR OTF CAS-No.: M: 299.31 g/mol mp:	



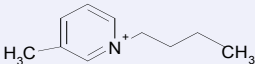
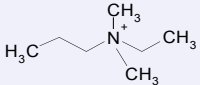
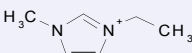
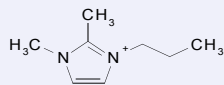
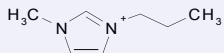
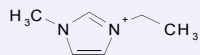
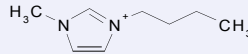
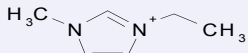
Cat. No. 490147 - 490187

1-Ethyl-3-methylimidazolium trifluoroacetate				
490147	for synthesis	EMIM ATF CAS-No.: 174899-65-1 M: 224.18 g/mol mp: < - 50°C		
1-Butyl-3-methylimidazolium trifluoroacetate				
490158	for synthesis	BMIM ATF CAS-No.: 174899-94-6 M: 252.23 g/mol mp: < - 50°C		
1-Ethyl-3-methylimidazolium dicyanamide				
490163	for synthesis	EMIM DCN CAS-No.: 370865-89-7 M: 176.22 g/mol mp: < - 50°C		
1-Ethyl-2,3-dimethylimidazolium chloride				
490168	for synthesis	EMMIM CL CAS-No.: 92507-97-6 M: 160.64 g/mol mp: 182°C		Cl^-
1-Ethyl-3-methylimidazolium methylsulfate				
490175	for synthesis	EMIM MSU CAS-No.: 516474-01-4 M: 222.27 g/mol mp: < - 50°C		
1-Ethyl-3-methylimidazolium p-toluenesulfonate				
490176	for synthesis	EMIM TOS CAS-No.: 328090-25-1 M: 282.36 g/mol mp: 56°C		
1-Butyl-3-methylimidazolium octylsulfate				
490177	for synthesis	BMIM OSU CAS-No.: 445473-58-5 M: 348.50 g/mol mp: 32°C		
1-Butyl-3-methylimidazolium iodide				
490187	for synthesis	BMIM I CAS-No.: 65039-05-6 M: 266.12 g/mol mp: - 58°C		I^-

Cat. No. 490189 - 490205

1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide			
490189	for synthesis	EMIM NTF	
491189	High Purity	CAS-No.: 174889-82-2 M: 391.31 g/mol mp: -15°C	 $\left[\text{N}(\text{CF}_3\text{SO}_2)_2 \right]^-$
1-Butyl-2,3-dimethylimidazolium iodide			
490191	for synthesis	BMMIM I CAS-No.: 108203-70-9 M: 280.15 g/mol mp: 97°C	 I^-
N-Butyl-1-methylpyrrolidinium bromide			
490195	for synthesis	BMPL BR CAS-No.: 93457-69-3 M: 222.17 g/mol mp: 215°C	 Br^-
1-Ethyl-3-methylimidazolium thiocyanate			
490201	for synthesis	EMIM SCN CAS-No.: 331717-63-6 M: 169.25 g/mol mp: < -50°C	 $\left[\text{SCN} \right]^-$
3-Methyl-1-propylimidazolium iodide			
490202	for synthesis	PMIM I CAS-No.: 119171-18-5 M: 252.10 g/mol mp: -75°C	 I^-
N,N-Dimethylpyrrolidinium iodide			
490203	for synthesis	MMPL I CAS-No.: 872-44-6 M: 227.09 g/mol mp: 203°C	 I^-
1,2,3-Trimethylimidazolium iodide			
490204	for synthesis	MMMIM I CAS-No.: 36432-31-3 M: 238.07 g/mol mp: 320°C	 I^-
1-Ethyl-3-methylimidazolium octylsulfate			
490205	for synthesis	EMIM OSU CAS-No.: 790663-79-5 M: 320.45 g/mol mp: 11°C	 $\left[\text{C}_8\text{H}_{15}\text{OSO}_3 \right]^-$

Cat. No. 490206 - 490231

N-Butyl-3-methylpyridinium hexafluorophosphate			
490206	for synthesis	B3MPYR PF6 CAS-No.: 845835-03-2 M: 295.20 g/mol mp: 46°C	 $\left[\text{PF}_6 \right]^-$
Ethyl-dimethyl-propylammonium bis(trifluoromethylsulfonyl)imide			
490222	for synthesis	NEMMP NTF	
491222	High Purity	CAS-No.: 258273-77-7 M: 396.37 g/mol mp: - 11°C	 $\left[\text{N}(\text{CF}_3\text{SO}_2)_2 \right]^-$
1-Ethyl-3-methylimidazolium hydrogensulfate			
490223	for synthesis	EMIM HSO4 CAS-No.: 412009-61-1 M: 208.24 g/mol mp:	 $\left[\text{HSO}_4 \right]^-$
2,3 Dimethyl-1-propylimidazolium bis(trifluoromethylsulfonyl)imide			
490227	for synthesis	PMMIM NTF CAS-No.:169051-76-7 M: 419.37 g/mol mp:	 $\left[\text{N}(\text{CF}_3\text{SO}_2)_2 \right]^-$
3-Methyl-1-propylimidazolium bis(trifluoromethylsulfonyl)imide			
490228	for synthesis	PMIM NTF CAS-No.: 216299-72-8 M: 405.34 g/mol mp:	 $\left[\text{N}(\text{CF}_3\text{SO}_2)_2 \right]^-$
1-Ethyl-3-methylimidazolium ethylsulfate			
490229	for synthesis	EMIM ESU CAS-No.: 342573-75-5 M: 236.29 g/mol mp: - 65°C	 $\left[\text{C}_2\text{H}_5\text{SO}_4 \right]^-$
1-Butyl-3-methylimidazolium hydrogensulfate			
490230	for synthesis	BMIM HSO4 CAS-No.: 262297-13-2 M: 236.29 g/mol mp: 38°C	 $\left[\text{HSO}_4 \right]^-$
1-Ethyl-3-methylimidazolium tetracyanoborate			
490231	for synthesis	EMIM TCB	
491231	High Purity	CAS-No.: 742099-80-5 M: 226.05 g/mol mp: 13°C	 $\left[\text{B}(\text{CN})_4 \right]^-$

NEW

NEW

Cat. No. 490232 - 490269

1-Butyl-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate

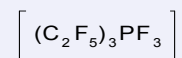
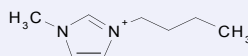
490232 for synthesis BMIM FAP

491232 High Purity

CAS-No.:

M: 584.23 g/mol

mp: 3°C



1-Cyanomethyl-3-methyl-imidazolium bis(trifluoromethylsulfonyl)imide

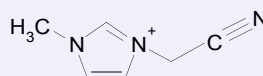
490246 for synthesis

MCNMIM NTF

CAS-No.: 937720-90-6

M: 402.32 g/mol

mp: -54°C



N-Hexyl-4-dimethylamino-pyridinium bis(trifluoromethylsulfonyl)imide

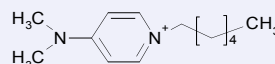
490248 for synthesis

HDMAP NTF

CAS-No.: 872672-57-6

M: 487.50 g/mol

mp: < -50°C



1-(2-Hydroxyethyl)-3-methylimidazolium bis(trifluoromethylsulfonyl)imide

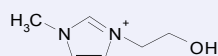
490263 for synthesis

EOHMIM NTF

CAS-No.: 174599-86-6

M: 407.31 g/mol

mp: -74°C



N-(3-Hydroxypropyl)pyridinium bis(trifluoromethylsulfonyl)imide

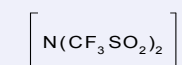
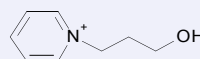
490264 for synthesis

POHPYR NTF

CAS-No.: 827027-29-2

M: 418.34 g/mol

mp: -72°C



N-(Methoxyethyl)-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide

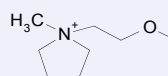
490267 for synthesis

MOEMPL NTF

CAS-No.: 757240-24-7

M: 424.40 g/mol

mp: < -50°C



N-(Methoxyethyl)-N-methylmorpholinium bis(trifluoromethylsulfonyl)imide

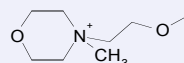
490268 for synthesis

MOEMMO NTF

CAS-No.: 796039-07-10

M: 440.38 g/mol

mp: < -50°C



1-(Methoxyethyl)-1-methylpiperidinium bis(trifluoromethylsulfonyl)imide

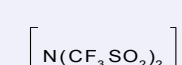
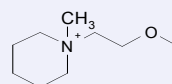
490269 for synthesis

MOEMPIP NTF

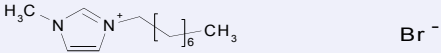
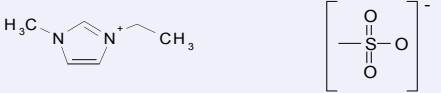
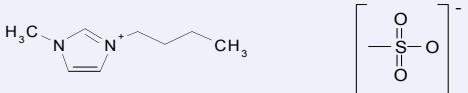



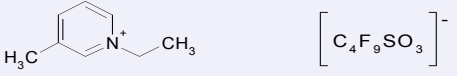

CAS-No.: 663628-45-3

M: 452.44 g/mol

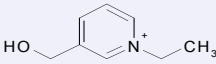
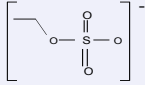
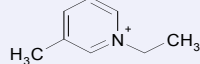
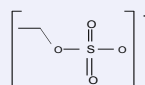
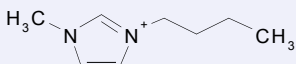
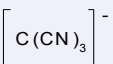
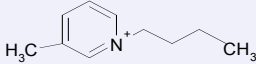
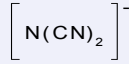

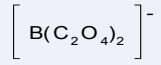

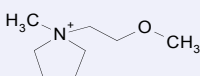
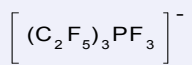

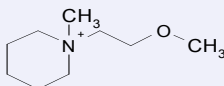
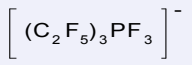

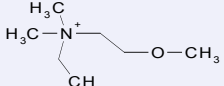
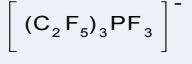
mp: < -50°C



Cat. No. 490285 - 490296

3-Methyl-1-octylimidazolium bromide			
490285	for synthesis	OMIM BR CAS-No.: 61545-99-1 M: 275.23 g/mol mp:	
1-Ethyl-3-methylimidazolium methanesulfonate			
490286	for synthesis	EMIM MSO CAS-No.: 145022-45-3 M: 206.27 g/mol mp: 35°C	
1-Butyl-3-methylimidazolium methanesulfonate			
490287	for synthesis	BMIM MSO CAS-No.: 342789-81-5 M: 234.32 g/mol mp: 75°C	
1-Ethyl-3-methylimidazolium 2(2-methoxyethoxy)ethylsulfate			
490290	for synthesis	EMIM MEESU CAS-No.: 790663-77-3 M: 310.37 g/mol mp: 15°C	
1-Ethyl-3-methylimidazolium n-butylsulfate			
490291	for synthesis	EMIM BSU CAS-No.: 880171-44-8 M: 264.34 g/mol mp: 24°C	
1-Ethyl-3-methylimidazolium n-hexylsulfate			
490292	for synthesis	EMIM HSU CAS-No.: 942916-86-1 M: 292.40 g/mol mp: 7°C	
N-Ethyl-3-methylpyridinium perfluorobutanesulfonate			
490295	for synthesis	E3MPYR NON CAS-No.: M: 421.28 g/mol mp:	
Triethylsulfonium bis(trifluoromethylsulfonyl)imide			
490296	for synthesis	SE3 NTF CAS-No.: 321746-49-0 M: 399.40 g/mol mp:	

Cat. No. 490297 - 491235

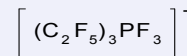
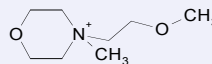
N-Ethyl-3-hydroxymethylpyridinium ethylsulfate					
490297	for synthesis	EHMP ESU CAS-No.: M: 263.31 g/mol mp: < - 65°C			
N-Ethyl-3-methylpyridinium ethylsulfate					
490298	for synthesis	E3MPYR ESU CAS-No.: 872672-50-9 M: 247.31 g/mol mp: < - 65°C			
1-Butyl-3-methylimidazolium tricyanomethide					
490330	for synthesis	BMIM TCC CAS-No.: 878027-73-7 M: 229.28 g/mol mp: < - 50°C			
N-Butyl-3-methylpyridinium dicyanamide					
490331	for synthesis	B3MPYR DCN CAS-No.: 712355-12-9 M: 216.28 g/mol mp: 16°C			
N-Butyl-1-methylpyrrolidinium bis[oxalato(2-)-O,O']borate					
491211	High Purity	BMPL BOB CAS-No.: 625835-91-8 M: 329.12 g/mol mp: 55°C			
1-(2-Methoxyethyl)-1-methyl-pyrrolidinium tris(pentafluoroethyl)trifluorophosphate					
	491233	High Purity	MOEMPL FAP CAS-No.: M: 589.24 g/mol mp: < - 50°C		
1-(Methoxyethyl)-1-methylpiperidinium tris(pentafluoroethyl)trifluorophosphate					
	491234	High Purity	MOEMPIP FAP CAS-No.: M: 603.27 g/mol mp: - 44°C		
N-Ethyl-N,N-dimethyl-2-methoxyethylammonium tris(pentafluoroethyl)trifluorophosphate					
	491235	High Purity	MOEDEA FAP CAS-No.: M: 577.25 g/mol mp: < -50°C		

Cat. No. 491236 - 491238

NEW

N-(Methoxyethyl)-N-methylmorpholinium tris(pentafluoroethyl)trifluorophosphate

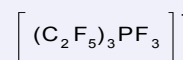
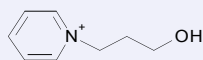
491236 **High Purity** **MOEMMO FAP**
CAS-No.:
M: 605.24 g/mol
mp: < -50°C



NEW

N-(3-Hydroxypropyl)pyridinium tris(pentafluoroethyl)trifluorophosphate

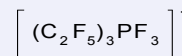
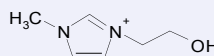
491237 **High Purity** **POHPYR FAP**
CAS-No.:
M: 583.20 g/mol
mp: < -50°C



NEW

1-(2-Hydroxyethyl)-3-methylimidazolium tris(pentafluoroethyl)trifluorophosphate

491238 **High Purity** **EOHMIM FAP**
CAS-No.:
M: 572.18 g/mol
mp: < -50°C



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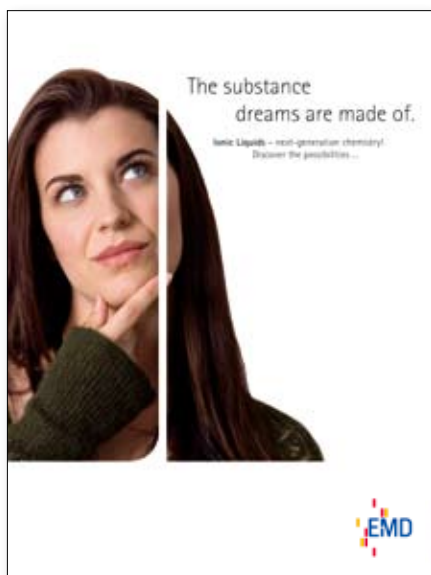


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