

リチウムイオン電池材料

正極材料、負極材料

Ready-to-use 電極シート・スラリー

プレリチウム化試薬

炭素材料

電解液、溶媒、添加剤、
電解質塩

無機固体電解質材料

2次電池用イオン液体

電極・電解質調製用ポリマー
リチウム化合物

各種無機化合物、無水溶媒

バッテリーグレード前駆体



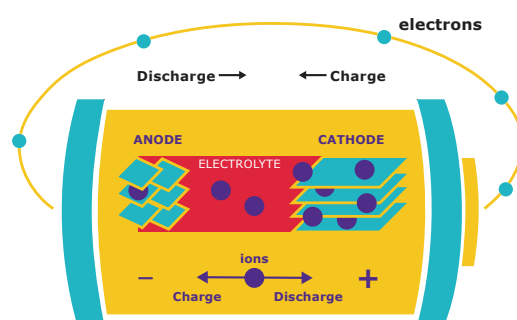
The life science
business of Merck
operates as
MilliporeSigma in
the U.S. and Canada.

Sigma-Aldrich®
Lab & Production Materials

リチウムイオン電池材料

リチウムイオン電池は、省スペースで高効率なエネルギー貯蔵を可能にし、モバイル機器や輸送分野の革新を牽引してきました。エネルギー密度、出力密度、耐久性、安全性の向上が求められる中、材料選択とプロセス最適化が電池性能向上の鍵となります。

シグマ アルドリッチは、研究開発者が次世代電池を効率的に設計・実証できるよう、高純度前駆体から使い勝手の良い ready-to-use 電解液・電極材料まで、信頼性の高い材料群を提供します。論文作成からプロトタイプ検証まで、あらゆるフェーズの研究開発を支援します。



<https://bit.ly/lib-jp>

正極材料

製品番号	化学式	製品名	容量
442704	LiCoO ₂	Lithium cobalt (III) oxide, 99.8% trace metals basis	100 g
939897	LiCoO ₂ (LiNbO ₃ coated)	Lithium cobalt oxide, lithium-niobate coated LCO cathode active material	25 g
725145	LiCoPO ₄	Lithium cobalt phosphate, powder, ≥99% (trace metals analysis)	25 g
442712	LiFeO ₂	Lithium iron (III) oxide, 95%	100 g
759546	LiFePO ₄	Lithium iron (II) phosphate, powder, <5 μm particle size (BET), >97% (XRF)	5 g
939420	LiFePO ₄ (carbon coated)	Lithium iron phosphate, LFP cathode active material, powder, battery grade	100 g, 1 kg
725137	LiMnO ₂	Lithium manganese dioxide, powder, <1 μm particle size, >99% trace metals basis	25 g
725110	Li ₂ Mn ₃ NiO ₈	Lithium manganese nickel oxide spinel, powder, <0.5 μm particle size (BET), >99%	25 g
915432	LiMn _{1.5} Ni _{0.5} O ₄	Lithium manganese nickel oxide spinel (LMNO) powder, battery grade	50 g
915173	LiMn _{1.5} Ni _{0.5} O ₄ (LATP coated)	LATP-coated Lithium Manganese Nickel Oxide (LMNO) powder, battery grade	50 g
725129	LiMn ₂ O ₄	Lithium manganese oxide spinel, powder, <0.5 μm particle size (BET), >99%	25 g
482277	LiMn ₂ O ₄	Lithium manganese (III,IV) oxide, electrochemical grade	25 g
916439	LiMn ₂ O ₄	Lithium Manganese Oxide spinel (LMO) powder, battery grade	50 g
400904	Li ₂ MoO ₄	Lithium molybdate, 99.9% trace metals basis	250 g
760994	LiNi _{0.8} Co _{0.15} Al _{0.05} O ₂	Lithium nickel cobalt aluminium oxide, powder, <0.5 μm particle size, >98%	10 g
757365	LiNiO ₂	Lithium nickel dioxide, powder, <3 μm particle size (BET), ≥98% trace metals basis	10 g
761001	LiNi _{0.33} Mn _{0.33} Co _{0.33} O ₂	Lithium nickel manganese cobalt oxide, powder, <0.5 μm particle size, >98%	10 g
940968	LiNi _{0.5} Mn _{0.3} Co _{0.2} O ₂	Lithium nickel manganese cobalt oxide, NMC532 cathode active material, battery grade	250 g, 1 kg
940941	LiNi _{0.6} Mn _{0.2} Co _{0.2} O ₂	Lithium nickel manganese cobalt oxide, NMC622 cathode active material, battery grade	250 g, 1 kg
940925	LiNi _{0.8} Mn _{0.1} Co _{0.1} O ₂	Lithium nickel manganese cobalt oxide, NMC811 cathode active material, battery grade	250 g, 1 kg
932558	LiNi _{0.33} Mn _{0.33} Co _{0.33} O ₂ /PANI	Lithium nickel manganese cobalt oxide (NMC111) Crosslinked Polyaniline Composite, Cathode for Lithium ion Battery	10 g
939579	LiNi _{0.5} Mn _{0.3} Co _{0.2} O ₂ (LiNbO ₃ -coated)	Lithium nickel manganese cobalt oxide, lithium-niobate coated NMC532 cathode active material	25 g
939587	LiNi _{0.6} Mn _{0.2} Co _{0.2} O ₂ (LiNbO ₃ -coated)	Lithium nickel manganese cobalt oxide, lithium-niobate coated NMC622 cathode active material	25 g
939560	LiNi _{0.8} Mn _{0.1} Co _{0.1} O ₂ (LiNbO ₃ -coated)	Lithium nickel manganese cobalt oxide, lithium-niobate coated NMC811 cathode active material	25 g

負極材料

製品番号	化学式	製品名	容量
940569	Li	Lithium, metal anode, for CR20XX coin cell testing, 99% (Li chips), diam. × thickness 15.6 mm × 0.25 mm, battery grade	50PCS
940712	Li	Lithium, metal anode, for CR24XX coin cell testing, 99% (Li chips), diam. × thickness 18.0 mm × 0.45 mm, battery grade	50PCS
444456	Li	Lithium granular, 4-10 mesh particle size, high sodium, 99% (metals basis)	10 g, 50 g
266000	Li	Lithium ribbon, thickness × W 1.5 mm × 100 mm, 99.9% trace metals basis	25 g, 100 g
265993	Li	Lithium ribbon, thickness × W 0.75 mm × 45 mm, 99.9% trace metals basis	25 g, 100 g
320080	Li	Lithium ribbon, thickness × W 0.75 mm × 19 mm, 99.9% trace metals basis	25 g, 100 g
265985	Li	Lithium ribbon, thickness × W 0.38 mm × 23 mm, 99.9% trace metals basis	25 g, 100 g
278327	Li	Lithium wire, diam. 3.2 mm, in mineral oil, ≥98%	25 g
400939	Li ₂ TiO ₃	Lithium titanate, —80 mesh	100 g
702277	Li ₄ Ti ₅ O ₁₂	Lithium titanate spinel, nanopowder, <200 nm particle size (BET), >99%	25 g
915939	Li ₄ Ti ₅ O ₁₂	Lithium titanate spinel (LTO) powder, battery grade	25 g, 100 g
916196	Li ₄ Ti ₅ O ₁₂ (C coated)	Carbon coated Lithium Titanate (LTO) powder, battery grade	25 g, 100 g
940208	C	Mesocarbon microbeads, for lithium-ion battery anodes	100 g
933759	Si	Silicon, nanoparticles, 10 nm avg. part. size, ≥99% trace metals basis, battery grade	10 g
933767	Si	Silicon, nanoparticles, 40 nm avg. part. size, ≥99% trace metals basis	10 g
941700	Si	2D silicon, silicon anode material for Li-ion battery, nanopowder, battery grade	2 g
215619	Si	Silicon, powder, —325 mesh, 99% trace metals basis	50 g, 250 g, 1 kg
GF07750403	Si	Silicon, powder, 45μm max. particle size, 99.5%	1 EA (100 g)
GF38819571			1 EA (200 g)
GF69448450	Si	Silicon, powder, 45μm max. particle size, 99.95%	1 EA (50 g)
GF92116997			1 EA (100 g)
GF93494177	Si	Silicon, powder, 45μm max. particle size, 99.999%	1 EA (10 g)
GF86772202			1 EA (20 g)
GF46525620			1 EA (50 g)
GF64953614			1 EA (100 g)
262951	SiO	Silicon monoxide, powder, —325 mesh	50 g, 250 g
549657	SnO ₂	Tin (IV) oxide, nanopowder, ≤100 nm avg. part. size	5 g, 25 g
912409	—	High-performance silicon anode, 1 μm silicon particles in crosslinked conducting polyaniline matrix ¹⁻⁶	5 g
918334	—	High-performance silicon anode, 100 nm silicon particles in crosslinked conducting polyaniline matrix ¹⁻⁶	2 g
912891	—	High surface area conducting polyaniline ⁷⁻⁹	2 g
912573	—	High surface area conducting polypyrrole ^{1,7,10,11}	2 g
909106	—	Molybdenum (IV) diselenide, lithium intercalated ¹²	1 g
902462	—	Molybdenum (IV) disulfide, lithium intercalated ¹³	1 g
905992	—	Tungsten (IV) diselenide, lithium intercalated ¹⁴	1 g
903841	—	Tungsten (IV) disulfide, lithium intercalated ¹⁴	1 g

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電極シート・スラリー

フルセル試験を行う際には、調合や塗布などの手間のかかる工程を省くために、当社のすぐに使える電極シートと電極スラリーをご活用ください。厚さと面積当たり容量が均一になるよう設計された電極シートは、信頼性の高い一貫した実験結果をもたらし、比較検討を加速します。

製品番号	製品名	容量
電極シート (size 5 in. × 10 in.)		
765163	Lithium nickel manganese cobalt oxide (NMC111), electrode sheet, aluminum substrate	1EA
934682	NMC532, electrode sheet, aluminum substrate	1EA
934755	NMC622, electrode sheet, aluminum substrate	1EA
934712	NMC811, electrode sheet, aluminum substrate	1EA
934771	Lithium iron phosphate (LFP), electrode sheet, aluminum substrate	1EA
990445	Lithium manganese iron phosphate LMFP, Electrode sheet, aluminum substrate	1EA
934747	Sulfur, electrode sheet, aluminum substrate	1EA
934674	Activated carbon, Electrode sheet, copper substrate	1EA
934690	Graphite, electrode sheet, copper substrate	1EA
934666	Hard carbon, electrode sheet, copper substrate	1EA
スラリー		
928038	Ready-to-Cast LiCoO ₂ Slurry for Lithium ion battery	5 mL
928011	Ready-to-Cast LiFePO ₄ (LFP) Slurry for Lithium ion battery	5 mL
935387	Ready-to-Cast LiMn ₂ O ₄ (LMO) Slurry for Lithium ion battery, Blade coatable ink slurry for lithium ion battery	25 mL
928003	Ready-to-Cast LiNi _{0.33} Mn _{0.33} Co _{0.33} O ₂ (NMC111) Slurry for Lithium ion battery	5 mL
934267	Ready-to-Cast Lithium Titanate (Li ₄ Ti ₅ O ₁₂) Slurry for Lithium ion battery, Blade coatable ink slurry for Lithium ion battery	25 mL
934259	Ready-to-Cast Si Anode Slurry for Lithium ion battery, 1-micron silicon particles	25 mL
928046	Ready-to-Cast Slurry of MCMB (MesoCarbon MicroBeads) Graphite Powder for Lithium ion battery	5 mL

プレリチウム化試薬・化学研磨剤

製品番号	製品名	容量
917060	Biphenyl, 1 M in DME, a precursor solution to prepare the prelithiation/presodiation reagent for disordered carbon, SiO, Sn, Sb, P, and S electrodes ^{1,2}	5 mL
916803	Biphenyl, 1 M in THF, a precursor solution to prepare the prelithiation/presodiation reagent for disordered carbon, SiO, Sn, Sb, P, and S electrodes ^{1,2}	5 mL
940453	9,9-dimethyl-9H-fluorene, ≥99.5% (HPLC), Silicon anode prelithiation reagent ⁴	25 g
918059	9,9-dimethylfluorene, 1 M in THF, a precursor solution to prepare the prelithiation reagent for Si anode ⁴	5 mL
921106	Naphthalene, 0.1 M in THF, Lithium metal scrubbing solution for battery testing ³	10 mL

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3. Chemically polished lithium metal anode for high energy lithium metal batteries. Tang W., et al. *Energy Storage Mater.* **2018**, 14, 289-296.
4. Chemical prelithiation of Al for use as an ambient air compatible and polysulfide resistant anode for Li-ion/S batteries. Huang Y., et al. *J. Mater. Chem. A*, **2020**, 8, 18715-18720.

炭素材料

製品番号	製品名	容量
484164	Carbon, glassy, spherical powder, 2-12 μm , 99.95% trace metals basis	10 g, 50 g
699640	Carbon, mesoporous, average pore diameter 100 $\text{\AA} \pm 10 \text{\AA}$ (typical), >99.95% trace metals basis	5 g, 25 g
699624	Carbon, mesoporous, nanopowder, graphitized, <500 nm particle size (DLS), >99.95% trace metals basis	5 g, 25 g
GF01511626	Carbon, powder, max. particle size 75 μm , high purity 99.997%	1 EA (10 g)
GF14123685		1 EA (20 g)
GF44538295		1 EA (50 g)
GF52352355		1 EA (100 g)
698849	Carbon nanotube, multi-walled, >98% carbon basis, O.D. $\times$ L 6-13 nm $\times$ 2.5-20 μm	1 g
901002	Carbon nanotube, multi-walled, flake of bundled CNTs, >95% carbon basis, O.D. $\times$ L 10-40 nm $\times$ 0.5-1.5 mm	1 g
755133	Carbon nanotube, multi-walled, thin, <5% Metal Oxide (TGA)	5 g
805033	Carbon nanotube, single-walled, carbon $\geq 80\%$, diam. 1.2-2.0 nm, avg. no. of layers, 1	25 g
900711	Carbon nanotube, single-walled, $\geq 98\%$ carbon basis, avg. no. of layers, 1	5 g
161551	Activated charcoal powder, -100 mesh, decolorizing	175 g, 1 kg, 5 kg
808113	Graphite, flakes, 99% carbon basis, +50 mesh particle size ($\geq 80\%$), natural	2.5 kg
808091	Graphite, flakes, 99% carbon basis, -100 mesh ($\geq 80\%$), natural	2.5 kg
808067	Graphite, flakes, 99% carbon basis, -325 mesh particle size ($\geq 99\%$), natural	2.5 kg
808083	Graphite, flakes, 99% carbon basis, -325 mesh particle size (50-70%), natural, wettable	2.5 kg
282863	Graphite, powder, <20 μm , synthetic	25 g, 1 kg
496537	Graphite, rod, L 150 mm, diam. 3 mm, low density, 99.995% trace metals basis	43.5 g
496553	Graphite, rod, L 150 mm, diam. 6 mm, 99.995% trace metals basis	180.7 g
808121	Expandable Graphite, flakes	2.5 kg
900704	Graphene oxide, paste, non-exfoliated 酸化グラフェンペーストは、大量の貯蔵や輸送を安全に行うことができます。酸化グラフェンペーストからは、所望の濃度の酸化グラフェン溶液や酸化グラフェンペーパーやシートを作製することが可能です。	25 g, 100 g
909130	Sulfonated reduced graphene oxide, sodium salt ¹⁻³	500 mg
921386	Reduced graphene oxide enhanced NTCDA composite for battery ⁴	1 g
921351	Reduced graphene oxide enhanced PAQS composite for battery ⁴	1 g
921378	Reduced graphene oxide enhanced PMDA composite for battery ⁴	1 g

参考文献

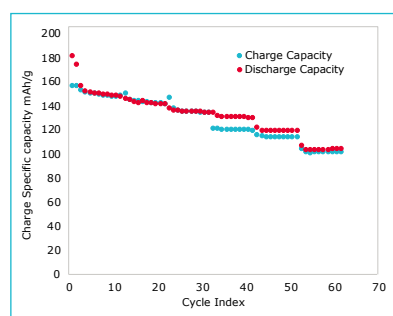
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2. Synthesis of sulfonated graphene/carbon nanotubes/manganese dioxide composite with high electrochemical properties. Li W, et al. *Ionics* **2018**, 25, 999-1006.
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4. Polymer-Graphene Nanocomposites as Ultrafast-Charge and -Discharge Cathodes for Rechargeable Lithium Batteries. Song Z., et al. *Nano Lett.* **2012**, 12, 2205-2211.



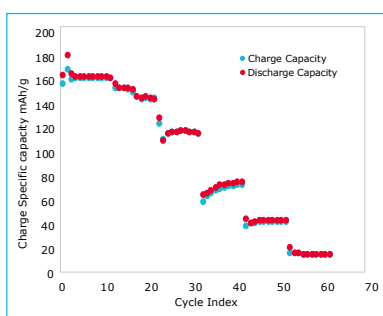
rGOナノコンポジット電極材料

Fast Charge and Discharge Rates

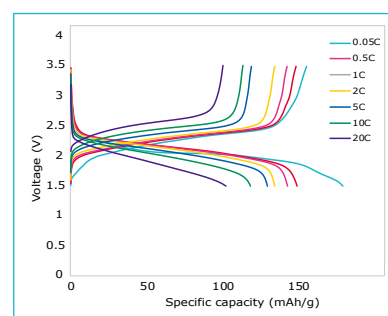
リチウムイオン電池用の高レート性能電極材料として、レドックスポリマーと還元型酸化グラフェンのナノコンポジットを開発しました。グラフェンシートが存在下、簡単な *in situ* 重合によって合成され、ナノコンポジット中に高分散したグラフェンシートは、電子伝導性を飛躍的に高め、電池性能の大幅な向上につながります¹。



PAQS/rGO複合電極の充放電レート性能



PAQS電極の充放電レート性能



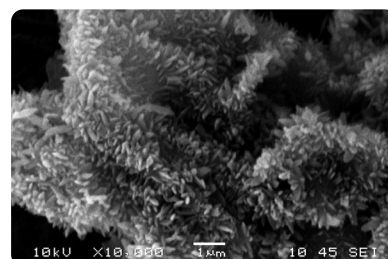
0.5~20 CにおけるPAQS/rGO複合電極を用いたリチウム金属ハーフセル電池の電圧プロファイル

環境にやさしい電池

レドックスポリマーは、リチウムイオン電池で一般的に使用されるコバルトやニッケルなどの有害な遷移金属を含んでいません。また、このタイプの電池材料は、よりサステナブルである可能性も期待されています^{2,3}。

向上したキャパシティ

還元型酸化グラフェン複合材料は、PAQSと比較して10 Cで4倍の容量増加を示しました。



還元型酸化グラフェンに被覆したPMDAポリマーのSEM画像

Fast Charge/Discharge Li-Ion Battery Electrode Materials

製品番号	製品名
921351	Reduced graphene oxide enhanced poly (anthraquinonyl sulfide) (PAQS) battery electrode
921378	Reduced graphene oxide enhanced pyromellitic dianhydride (PMDA) battery electrode
921386	Reduced graphene oxide enhanced 1,4,5,8-naphthalenetetracarboxylic dianhydride (NTCDA) battery electrode

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電解液・溶媒・添加剤・電解質塩

製品番号	製品名	容量
電解液		
746746	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/DEC=50/50 (v/v), battery grade	25 mL, 100 mL, 500 mL
930172	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/DMC=30/70 (w/w), battery grade	100 mL
746711	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/DMC=50/50 (v/v), battery grade	25 mL, 100 mL, 500 mL
901685	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/DMC/DEC=1:1:1 (v/v/v), battery grade	25 mL, 100 mL, 500 mL
930156	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/EMC=30/70 (w/w), battery grade	100 mL
934828	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/EMC=30/70 (w/w) + 1 wt.% VC, battery grade	25 mL
746738	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EC/EMC=50/50 (v/v), battery grade	25 mL, 100 mL, 500 mL
746770	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in DEC, battery grade	100 mL, 500 mL
746754	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in DMC, battery grade	100 mL, 500 mL
746762	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in EMC, battery grade	100 mL, 500 mL
746789	Lithium hexafluorophosphate solution, 1.0 M LiPF ₆ in PC, battery grade	100 mL, 500 mL
934836	Lithium hexafluorophosphate solution, 1.2 M LiPF ₆ in EC/DMC=30/70 (w/w) + 1 wt.% VC, battery grade	25 mL
930164	Lithium hexafluorophosphate solution, 1.2 M LiPF ₆ in EC/EMC=30/70 (w/w), battery grade	100 mL
934844	Lithium hexafluorophosphate solution, 1.2 M LiPF ₆ in EC/EMC=30/70 (w/w) + 1 wt.% VC, battery grade	25 mL
809357	Lithium hexafluorophosphate solution, 2.0 M LiPF ₆ in EC/DMC=50/50 (v/v), battery grade	100 mL
809403	Lithium hexafluorophosphate solution, 2.0 M LiPF ₆ in EMC, battery grade	100 mL
809470	Lithium hexafluorophosphate solution, 2.0 M LiPF ₆ in PC, battery grade	100 mL
溶媒		
809942	Dimethyl carbonate (DMC), ≥99.9%, acid <10 ppm, H ₂ O <10 ppm, battery grade	25 g, 500 g
900018	Diethyl carbonate (DEC), ≥99%, acid <10 ppm, H ₂ O <10 ppm, battery grade	25 g, 500 g
809950	Ethylene carbonate (EC), ≥99%, acid <10 ppm, H ₂ O <10 ppm, battery grade	25 g, 500 g
809934	Ethyl methyl carbonate (EMC), 99.9%, acid <10 ppm, H ₂ O <10 ppm, battery grade	25 g, 500 g
901686	Fluoroethylene carbonate (FEC), ≥99%, acid <200 ppm, anhydrous, battery grade	1 g, 10 g, 50 g
809969	Propylene carbonate (PC), ≥99%, acid <10 ppm, H ₂ O <10 ppm, battery grade	25 g, 500 g
添加剤		
900020	Adiponitrile, >99%, acid <200 ppm, H ₂ O <100 ppm, battery grade	25 g, 500 g
718203	Allyl methyl sulfone, 96%	5 g
934011	Bis (2,2,2-trifluoroethyl) carbonate (DFDEC), ≥99%, anhydrous, battery grade	50 g
934046	Ethyl 1,1,2,2-tetrafluoroethyl ether (ETFE), ≥99%, anhydrous, battery grade	50 g
935646	Ethylene sulfite (DTD), ≥99%, anhydrous, battery grade	25 g
774251	Ethylene sulfite (ES), ≥99.0%	25 g
934038	Hexafluoroisopropyl methyl ether (HFPM), ≥99%, anhydrous, battery grade	50 g
757136	Lithium bis (oxalato) borate (LiBOB)	25 g
933716	Lithium bis (oxalato) borate (LiBOB), ≥99.9% trace metals basis, battery grade	50 g
933708	Lithium difluorophosphate (LiDFP), ≥99% trace metals basis, acid ≤ 200 ppm, battery grade	25 g
774138	Lithium difluoro (oxalato) borate (LiODFB)	25 g, 250 g
919977	Lithium bis (trifluoromethanesulfonyl) imide (LiTFSI), anhydrous, 99.99% trace metals basis	10 g, 50 g
934003	Methyl (2,2,2-trifluoroethyl) carbonate (FEMC), ≥99%, anhydrous, battery grade	50 g, 500 g
810002	Phenylcyclohexane, ≥99%, acid < 200 ppm, H ₂ O < 100 ppm, battery grade	25 g
774456	1,2-Propyleneglycol sulfite (1,2-PS), ≥98%	10 g
939927	1,3-Propanediol cyclic sulfate (PCS), ≥99.5%, anhydrous, battery grade	50 g
809985	1,3-Propanesultone (PS), ≥99%, acid <200 ppm, H ₂ O <100 ppm, battery grade	25 g, 500 g
939919	1,3-propene sultone (PES), ≥99.5%, anhydrous, battery grade	50 g
774243	1,3-Propylene sulfite, 99%	25 g
809993	2-Propynyl methanesulfonate, ≥99.5%, acid <200 ppm, H ₂ O <100 ppm, battery grade	25 g
933988	1,1,2,2-Tetrafluoroethyl 2,2,2-trifluoroethyl ether (TFTFE), ≥99.5%, anhydrous, acid ≤100 ppm, battery grade	100 g
933961	1,1,2,2-Tetrafluoroethyl 2,2,3,3-tetrafluoropropylether (TTE), ≥99%, ≤10 ppm acid, battery grade	50 g, 500 g
935654	Tris (trimethylsilyl) borate (TMSB), ≥99.5%, battery grade	50 g
935638	Tris (trimethylsilyl) phosphate (TMSB), ≥99.0%, anhydrous, battery grade	25 g
935611	4-Vinyl-1,3-dioxolan-2-one (VEC), ≥99.9%, anhydrous, battery grade	50 g
809977	Vinylene carbonate (VC), 99.5%, acid <200 ppm, H ₂ O <100 ppm, battery grade	2 g, 25 g, 500 g

Technology Spotlight

リチウムイオン電池技術の進歩における電解液添加剤の役割
 電解液添加剤がSEI/CEIの形成を制御して負極・正極を安定化し、リチウムイオン電池の効率・サイクル寿命・安全性を向上させる役割と具体的な添加剤・戦略を解説しています。

<https://bit.ly/4qSqNPg>



リチウムイオン電池用電解液・添加剤・溶媒
 LiPF₆電解液・溶媒・添加剤を組み合わせて調合することで、所望する組成の電解液を自由自在に調整することができます。

<https://bit.ly/4hUCiSo>



製品番号	製品名	容量
電解質塩		
544094	Bis(trifluoromethane) sulfonimide lithium salt (LiTFSI) , 99.95% trace metals basis	5 g, 25 g, 100 g
940186	LiBETI, electrolyte powder, anhydrous, battery grade	5 g
940496	LiTDI, powder, ≥99.9% trace metals basis, battery grade	25 g
935832	Lithium bis (fluorosulfonyl) imide (LiFSI) , 99.9% trace metals basis, battery grade	5 g, 25 g, 100 g
920398	Lithium bis (trimethylsilyl) amide (LiHMDS) , 99.9% trace metals basis	1 g, 25 g, 100 g
920371	Lithium hexafluorophosphate, 99.9% trace metals basis	50 g, 250 g
450227	Lithium hexafluorophosphate, ≥99.99% trace metals basis, battery grade	5 g, 25 g, 250 g
901695	Lithium tetrafluoroborate, ≥98%, acid <200 ppm, anhydrous	10 g, 50 g
451622	Lithium tetrafluoroborate, ultra dry, powder, 99.99% trace metals basis	5 g, 25 g

無機固体電解質材料

液体電解質を固体電解質に置き換える全固体電池は、安全性とエネルギー密度の向上が期待される次世代技術です。合成における再現性の課題を回避するため、バッチ間で安定した性能を発揮する、すぐに使える固体電解質をご利用ください。

製品番号	略称 / 化学式	製品名	容量	文献
硫化物系				
940550	LAGP/ Li _{1.5} Al _{0.5} Ge _{1.5} (PO ₄) ₃	Lithium aluminum germanium phosphate, powder	10 g	16
940542	LGPS/ Li ₁₀ GeP ₂ S ₁₂	Lithium germanium phosphorus sulfide, powder	10 g	17
915114	LSPS/ Li ₁₀ SnP ₂ S ₁₂	Lithium tin phosphorus sulfide, battery grade LSPSは、Li ₁₀ GeP ₂ S ₁₂ (LGPS) の類縁化合物で高いイオン伝導率を示し、安価に製造できることから有望な固体電解質です。 平均粒径: 7~8 μm イオン伝導度: 10 ⁻⁴ ~10 ⁻² S/cm (@ RT)	5 g	1,2
916374	β-LPS/ Li ₃ PS ₄	Lithium phosphorus sulfide, powder, battery grade Li ₃ PS ₄ は、Li ₂ S-P ₂ S ₅ 系の中で最も安定性の高い組成 (75 : 25) です。 イオン伝導度: 10 ⁻⁵ ~10 ⁻⁴ S/cm (@ RT 文献値)	10 g	3-5
940917	Li _{5.5} PS _{4.5} Cl _{1.5}	Chloride-rich argyrodite lithium phosphorus sulfide, powder, battery grade	25 g	18
916137	LPSCI/ Li ₆ PS ₅ Cl	Lithium phosphorus sulfur chloride, powder, battery grade Li ₆ PS ₅ Clは、代表的なアルジロダイト型結晶性電解質の一つです。 イオン伝導度: 10 ⁻⁴ ~10 ⁻³ S/cm (@ RT 文献値)	10 g, 100 g	6-9
934763	LPSClI/ Li ₆ PS ₅ Cl _{0.9} I _{0.1}	Iodine-doped lithium phosphorus sulfur chloride, powder, battery grade	25 g	19
酸化物系				
915394	LATP/ Li _{1.4} Al _{0.4} Ti _{1.6} (PO ₄) ₃	Lithium Aluminum Titanium Phosphate, powder, battery grade 一般式 Li _{1+x} Al _x Ti _{2-x} (PO ₄) ₃ で表される、リン酸塩系LiSICON (Lithium Super Ionic CONductor) イオン伝導体の一つです 粒径 (d ₅₀) : 約 2 μm イオン伝導度: 10 ⁻⁵ ~10 ⁻⁴ S/cm (@ RT)	50 g	10,11
916099	LLTO/ LiLaTiO ₄	Lithium Lanthanum Titanate, powder, battery grade 粒径 (d ₅₀) : 約 2 μm イオン伝導度: 約 10 ⁻⁵ S/cm (@ RT)	50 g	20
915874	Al-LLZO/ Li _{6.24} La ₃ Zr ₂ Al _{0.24} O _{11.98}	Al-doped Lithium Lanthanum Zirconate Oxide, powder, battery grade Li ₇ La ₃ Zr ₂ O ₁₂ (LLZO) にAlをドーピングすることで、イオン伝導度の高い立方晶LLZOが得られます。 粒径 (d ₅₀) : 約 5 μm イオン伝導度: 10 ⁻⁵ ~10 ⁻⁴ S/cm (@ RT)	50 g	12-15
934720	Ta-LLZO/ Li _{6.2} Al _{0.2} La ₃ Zr _{1.8} Ta _{0.2} O ₁₂	Tantalum-doped lithium lanthanum zirconium oxide, powder, battery grade 粒径 (d ₅₀) : 1-2 μm イオン伝導度: 10 ⁻⁵ ~10 ⁻⁴ S/cm (@ RT)	25 g	21

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2 次電池用イオン液体

イオン液体は、100℃より低い融点を有する溶融塩で、通常、有機カチオンとアニオンで構成されます。イオン液体は、不揮発性、高い熱安定性、高いイオン伝導性をはじめとする独特の特性を示し、リチウム/ナトリウムイオン電池および色素増感太陽電池の電解質として期待されています。また、導電性ポリマー合成用メディアや電極のインターカレーションのゲスト用材料としても使用されます。

製品番号	製品名	別名	容量
900804	1-Butyl-2,3-dimethylimidazolium bis(trifluoromethylsulfonyl) imide, $\geq 99\%$, $H_2O < 500$ ppm	BDiMIM TFSI	25 g
900873	1-Butyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl) imide, $> 99\%$, $H_2O < 500$ ppm	PYR14 TFSI; BMPyrr TFSI	25 g
900802	1-Butyl-3-methylimidazolium bis(trifluoromethylsulfonyl) imide, $\geq 99\%$, $H_2O < 500$ ppm	BMIM TFSI	25 g
900856	1-Butyl-3-methylimidazolium chloride, $\geq 99\%$	BMIM Cl	25 g
900801	1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl) imide, $\geq 99\%$, $H_2O \leq 500$ ppm	EMIM TFSI	25 g
900771	1-Ethyl-3-methylimidazolium chloride, $> 99\%$	EMIM Cl	25 g
900779	1-Ethyl-3-methylimidazolium hexafluorophosphate, $\geq 99\%$, $H_2O < 500$ ppm	EMIM PF6	25 g
900772	1-Ethyl-3-methylimidazolium tetrafluoroborate, $\geq 99\%$, $H_2O < 1000$ ppm	EMIM BF4	25 g
900813	1-Ethyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl) imide, $\geq 99\%$, $H_2O < 500$ ppm	PYR12 TFSI; EMPyrr TFSI	25 g
900806	1-Methyl-1-propylpiperidinium bis(trifluoromethylsulfonyl) imide, $\geq 99\%$, $H_2O \leq 500$ ppm	PIP13 TFSI; PMPip TFSI	25 g

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シグマ アルドリッチ 無機・ポリマー材料検索

- カテゴリや形状で絞り込み検索が可能
- 周期表で無機・有機金属材料の検索が可能
- 3000品目を超える、様々な形状のポリマーも検索が可能

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電極・電解質調製用ポリマー

製品番号	製品名	容量
PVDF (ポリフッ化ビニリデン)		
427152	Poly(vinylidene fluoride), average Mw ~180,000, beads or pellets	100 g
427144	Poly(vinylidene fluoride), average Mw ~275,000, pellets	100 g
347078	Poly(vinylidene fluoride), average Mw ~530,000, pellets	100 g
182702	Poly(vinylidene fluoride), average Mw ~534,000, powder	5 g, 100 g, 250 g
GF44051598		1 EA (100 g)
GF06449283		1 EA (200 g)
GF06160171	Poly vinylidene fluoride, granule, 5 mm nominal granule size, additive free polymer	1 EA (500 g)
GF70021886		1 EA (1,000 g)
GF52735406		1 EA (2,000 g)
427160	Poly(vinylidene fluoride- <i>co</i> -hexafluoropropylene), average Mw ~400,000, pellets	100 g
427179	Poly(vinylidene fluoride- <i>co</i> -hexafluoropropylene), average Mw ~455,000, pellets	100 g
427187	Poly(vinylidene fluoride- <i>co</i> -hexafluoropropylene), pellets	100 g
PEO (ポリエチレンオキサイド)		
181986	Poly(ethylene oxide), average Mw 100,000, powder	5 g, 250 g, 500 g
181994	Poly(ethylene oxide), average Mw 200,000, powder	5 g, 250 g, 500 g
182001	Poly(ethylene oxide), average Mw ~300,000, powder	5 g, 250 g, 500 g
372773	Poly(ethylene oxide), average Mw 400,000, powder	5 g, 250 g, 500 g
182028	Poly(ethylene oxide), average Mw 600,000, powder	5 g, 250 g, 500 g
189456	Poly(ethylene oxide), average Mw ~900,000, powder	5 g, 250 g, 500 g
372781	Poly(ethylene oxide), average Mw ~1,000,000, powder	5 g, 250 g, 500 g
372803	Poly(ethylene oxide), average Mw ~2,000,000, powder	5 g, 250 g
189464	Poly(ethylene oxide), average Mw ~2,000,000, powder	5 g, 250 g, 500 g
189472	Poly(ethylene oxide), average Mw ~5,000,000, powder	5 g, 250 g, 500 g
372838	Poly(ethylene oxide), average Mw ~8,000,000, powder	5 g, 250 g, 500 g
CMC (カルボキシメチルセルロース ナトリウム塩)		
419273	Sodium carboxymethyl cellulose, average Mw ~90,000	100 g, 1 kg
419311	Sodium carboxymethyl cellulose, average Mw ~250,000, degree of substitution 0.7	100 g, 1 kg
419303	Sodium carboxymethyl cellulose, average Mw ~250,000, degree of substitution 0.9	100 g, 1 kg
419281	Sodium carboxymethyl cellulose, average Mw ~250,000, degree of substitution 1.2	100 g, 1 kg
419338	Sodium carboxymethyl cellulose, average Mw ~700,000	100 g, 1 kg
PAA (ポリアクリル酸)		
323667	Poly(acrylic acid)	5 g, 100 g, 250 g
181285	Poly(acrylic acid), average Mw ~450,000	5 g, 100 g, 250 g
306215	Poly(acrylic acid), average Mw ~1,250,000	5 g, 100 g, 250 g
306223	Poly(acrylic acid), average Mw ~3,000,000	100 g, 250 g
306231	Poly(acrylic acid), average Mw ~4,000,000	5 g, 100 g
535931	Poly(acrylic acid) solution, average Mw ~2,000, 50 wt. % in H ₂ O, electronic grade	100 g
523925	Poly(acrylic acid) solution, average Mw ~100,000, 35 wt. % in H ₂ O	100 mL, 500 mL
416002	Poly(acrylic acid) solution, average Mw ~250,000, 35 wt. % in H ₂ O	250 mL, 500 mL
PMMA (ポリメチルメタクリレート)		
182265	Poly(methyl methacrylate)	25 g, 500 g, 1 kg
200336	Poly(methyl methacrylate), average Mw ~15,000 by GPC, powder	50 g, 100 g
445746	Poly(methyl methacrylate), average Mw ~350,000 by GPC	25 g, 500 g, 1 kg
182230	Poly(methyl methacrylate), viscosity 250 - 560 cps	25 g, 500 g, 1 kg
SBR (スチレン・ブタジエンゴム)		
430072	Poly(styrene- <i>co</i> -butadiene), butadiene 4 wt. %, melt index 6 g/10 min (200°C/5kg)	1 kg
182877	Polystyrene- <i>block</i> -polybutadiene- <i>block</i> -polystyrene, styrene 30 wt. %, average Mw ~140,000 by GPC, contains <0.5 wt. % antioxidant	250 g
PAN (ポリアクリロニトリル)		
181315	Polyacrylonitrile, average Mw 150,000	50 g, 100 g

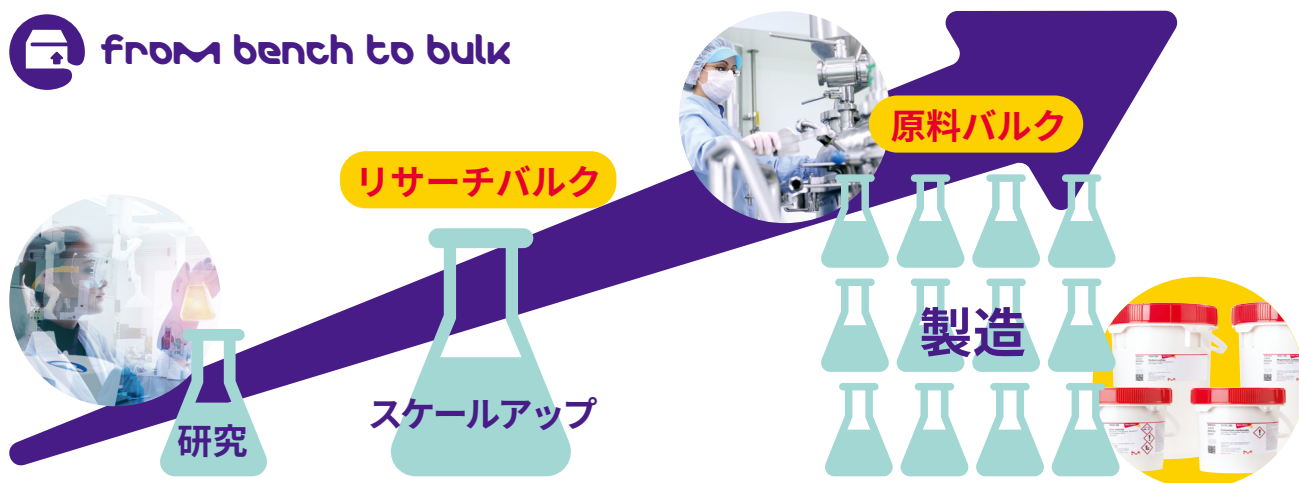
リチウム化合物

製品番号	化学式	製品名	容量
920355	LiAlF ₄	Lithium tetrafluoroaluminate, 98%	5 g, 20 g
920347	LiAsF ₆	Lithium hexafluoroarsenate(V), anhydrous, 99.9% trace metals basis	5 g, 25 g
757136	LiB(C ₂ O ₄) ₂	Lithium bis (oxalato) borate	25 g
451622	LiBF ₄	Lithium tetrafluoroborate, ultra dry, powder, 99.99% trace metals basis	5 g, 25 g
901695	LiBF ₄	Lithium tetrafluoroborate, ≥ 98%, acid <200 ppm, anhydrous	10 g, 50 g
774138	LiBF ₂ (C ₂ O ₄)	Lithium difluoro (oxalato) borate	25 g, 250 g
222356	LiBH ₄	Lithium borohydride, ≥ 90%	1 g, 10 g, 50 g
686026	LiBH ₄	Lithium borohydride, hydrogen-storage grade, ≥ 90%	10 g
205524	LiBO ₂	Lithium metaborate, 99.9% trace metals basis	100 g, 500 g
365297	LiBO ₂ ·2H ₂ O	Lithium metaborate dihydrate	500 g
254304	Li ₂ B ₄ O ₇	Lithium tetraborate, ≥ 99.995% trace metals basis	25 g, 100 g
449873	LiBr	Lithium bromide, AnhydroBeads™, ≥ 99.9% trace metals basis	25 g, 100 g
429465	LiBr	Lithium bromide, AnhydroBeads™, 99.999% trace metals basis	5 g, 25 g
229733	LiBr	Lithium bromide, powder and chunks, ≥ 99.995% trace metals basis	25 g, 125 g
451754	LiBr·xH ₂ O	Lithium bromide hydrate, 99.999% trace metals basis	10 g
203637	LiCl	Lithium chloride, powder, ≥ 99.98% trace metals basis	10 g, 50 g, 100 g
449881	LiCl	Lithium chloride, AnhydroBeads™, ≥ 99.9% trace metals basis	10 g, 50 g
916013	LiCl	Lithium chloride, anhydrous, 99.95% trace metals basis	50 g, 250 g
429457	LiCl	Lithium chloride, AnhydroBeads™, 99.998% trace metals basis	5 g, 25 g
298328	LiCl·xH ₂ O	Lithium chloride hydrate, ≥ 99.99% trace metals basis	25 g, 100 g
479330	LiCl/KCl	Lithium chloride/potassium chloride eutectic, AnhydroBeads™, 99.99% trace metals basis	50 g
931969	LiClO ₄	Lithium perchlorate, anhydrous, ≥ 99.9% trace metals basis	100 g, 500 g
431567	LiClO ₄	Lithium perchlorate, 99.99% trace metals basis	50 g, 250 g
634565	LiClO ₄	Lithium perchlorate, battery grade, dry, 99.99% trace metals basis	10 g, 100 g
931942	Li ₂ CO ₃	Lithium carbonate, ≥ 99.9% trace metals basis, battery grade	100 g, 500 g
431559	Li ₂ CO ₃	Lithium carbonate, 99.99% trace metals basis	50 g, 250 g
203629	Li ₂ CO ₃	Lithium carbonate, 99.997% trace metals basis	10 g, 50 g
752843	Li ₂ CO ₃	Lithium carbonate, 99.999% trace metals basis	25 g
932310	LiF	Lithium fluoride, 99.9% trace metals basis	5 g
449903	LiF	Lithium fluoride, ≥ 99.99% trace metals basis	2 g, 10 g
203645	LiF	Lithium fluoride, powder, <100 μ m, ≥ 99.98% trace metals basis	5 g, 25 g
237965	LiF	Lithium fluoride, powder, -300 mesh	100 g, 1 kg
669431	LiF	Lithium fluoride, precipitated, 99.995%	50 g
442682	LiH ₂ PO ₄	Lithium phosphate monobasic, 99%	500 g
218219	LiI	Lithium iodide, beads, 99%	10 g, 50 g, 250 g
439746	LiI	Lithium iodide, AnhydroBeads™, 99.99% trace metals basis	5 g, 25 g
450952	LiI	Lithium iodide, AnhydroBeads™, 99.999% trace metals basis	5 g, 25 g
518018	LiI	Lithium iodide, crystalline powder, 99.9% trace metals basis	10 g, 50 g
443964	LiIO ₃	Lithium iodate, 97%	100 g
399558	Li ₃ N	Lithium nitride — 80 mesh, ≥ 99.5%	5 g, 10 g, 25 g
254290	LiNbO ₃	Lithium niobate, 99.9% trace metals basis	10 g
930946	LiNO ₃	Lithium nitrate, anhydrous, ≥ 99.9% trace metals basis, battery grade	50 g, 250 g, 1 kg
229741	LiNO ₃	Lithium nitrate, 99.99% trace metals basis	25 g, 125 g
930938	LiNO ₃	Lithium nitrate, anhydrous, 99.999% trace metals basis, battery grade	10 g, 50 g
374725	Li ₂ O	Lithium oxide, 97%, powder, — 60 mesh	10 g, 100 g
940976	Li ₂ O	Lithium oxide, 99.9% trace metals basis, battery grade	25 g, 500 g
940194	Li ₂ O ₂	Lithium peroxide, 99.9% trace metals basis, battery grade	25 g
920312	LiOH	Lithium hydroxide, anhydrous, 99.9% trace metals basis	100 g, 500 g
930903	LiOH·H ₂ O	Lithium hydroxide monohydrate, ≥ 99.9% trace metals basis, battery grade	100 g, 1 kg
254274	LiOH·H ₂ O	Lithium hydroxide monohydrate, 99.95% trace metals basis	10 g, 50 g, 250 g
450197	LiOH·H ₂ O	Lithium hydroxide monohydrate, 99.995% trace metals basis	25 g

製品番号	化学式	製品名	容量
450227	LiPF ₆	Lithium hexafluorophosphate, battery grade, ≥ 99.99% trace metals basis	5 g, 25 g, 250 g
338893	Li ₃ PO ₄	Lithium phosphate	100 g
213241	Li ₂ S	Lithium sulfide, 99.98% trace metals basis	5 g, 10 g, 50 g
940321	Li ₂ S	Lithium sulfide, 99.995% trace metals basis, low sodium, battery grade	25 g, 250 g
920363	LiSbF ₆	Lithium hexafluoroantimonate(V), 98%	5 g
308374	LiSCN · xH ₂ O	Lithium thiocyanate hydrate	25 g, 100 g
203653	Li ₂ SO ₄	Lithium sulfate, ≥ 99.99% trace metals basis	10 g
920339	Li ₂ SO ₄	Lithium sulfate, anhydrous, 99.5% trace metals basis	100 g, 500 g
704393	LiTaO ₃	Lithium tantalite, ≥ 99.99%	5 g
400920	Li ₂ ZrO ₃	Lithium zirconate, — 80 mesh	25 g
920320	CH ₃ COOLi	Lithium acetate, anhydrous, 99.9% trace metals basis	100 g, 500 g
517992	CH ₃ COOLi	Lithium acetate, 99.95% trace metals basis	100 g, 500 g
939374	CH ₃ COOLi · 2H ₂ O	Lithium acetate dihydrate, ≥ 99.9% trace metals basis	100 g, 500 g
920398	[(CH ₃) ₃ Si] ₂ NLi	Lithium bis(trimethylsilyl)amide, 99.9% trace metals basis	1 g, 25 g, 100 g
481548	CF ₃ SO ₃ Li	Lithium trifluoromethanesulfonate, 99.995% trace metals basis	5 g, 25 g
544094	(CF ₃ SO ₂) ₂ NLi	Bis (trifluoromethane) sulfonimide lithium salt, 99.95% trace metals basis	5 g, 25 g, 100 g
919977	(CF ₃ SO ₂) ₂ NLi	Lithium bis(trifluoromethanesulfonyl)imide, anhydrous, 99.99% trace metals basis	10 g, 50 g

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その他リチウムイオン電池関連材料

製品番号	化学式	製品名	容量
無機化合物・有機金属化合物			
229393	$\text{AlCl}_3 \cdot x\text{H}_2\text{O}$	Aluminum chloride hydrate, 99.999% trace metals basis	25 g, 100 g
449598	AlCl_3	Aluminum chloride, anhydrous, powder, 99.99% trace metals basis	5 g, 25 g
563919	AlCl_3	Aluminum chloride, anhydrous, powder, 99.999% trace metals basis	5 g, 25 g
769460	$\text{Al}(\text{OH})_3 \cdot x\text{H}_2\text{O}$	Aluminum hydroxide hydrate, powder, <45 μm	100 g
229407	$\text{Al}[\text{OCH}(\text{CH}_3)_2]_3$	Aluminum isopropoxide, $\geq 99.99\%$ trace metals basis	10 g, 50 g, 250 g
229415	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	Aluminum nitrate nonahydrate, 99.997% trace metals basis	10 g, 100 g
450308	$\text{Al}_2(\text{SO}_4)_3 \cdot x\text{H}_2\text{O}$	Aluminum sulfate hydrate, 99.99% trace metals basis	5 g
202614	$\text{Al}_2(\text{SO}_4)_3$	Aluminum sulfate, 99.99% trace metals basis	5 g, 25 g, 100 g
467782	$\text{NH}_4\text{H}_2\text{PO}_4$	Ammonium phosphate monobasic, $\geq 99.99\%$ trace metals basis	50 g, 250 g
204005	$\text{NH}_4\text{H}_2\text{PO}_4$	Ammonium dihydrogenphosphate, 99.999% trace metals basis	25 g, 100 g, 500 g
338818	NH_4OH	Ammonium hydroxide solution, 28% NH_3 in H_2O , $\geq 99.99\%$ trace metals basis	5 mL, 100 mL, 1 L
216593	NH_4PF_6	Ammonium hexafluorophosphate, 99.98% trace metals basis	5 g, 25 g, 100 g, 1 kg
203076	Co	Cobalt, granular, 99.99% trace metals basis	5 g, 25 g
399973	$(\text{CH}_3\text{CO}_2)_2\text{Co}$	Cobalt (II) acetate, 99.99% trace metals basis	1 g, 10 g
449776	CoCl_2	Cobalt (II) chloride, AnhydroBeads™, 99.9% trace metals basis	5 g, 25 g
409332	CoCl_2	Cobalt (II) chloride, AnhydroBeads™, 99.995% trace metals basis	1 g, 5 g
935743	$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$	Cobalt (II) chloride hexahydrate, $\geq 99.99\%$ trace metals basis	50 g, 250 g
943037	$\text{Co}(\text{OH})_2$	Cobalt (II) hydroxide, $\geq 99.9\%$ trace metals basis, battery grade	100 g
935719	$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	Cobalt (II) nitrate hexahydrate, $\geq 99.9\%$ trace metals basis	25 g, 250 g
203106	$\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	Cobalt (II) nitrate hexahydrate, 99.999% trace metals basis	10 g, 50 g
940151	CoSO_4	Cobalt (II) sulfate, anhydrous, $\geq 99.9\%$ trace metals basis, battery grade	50 g
229598	$\text{CoSO}_4 \cdot x\text{H}_2\text{O}$	Cobalt (II) sulfate hydrate, 99.998% trace metals basis	10 g
935751	$\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$	Cobalt (II) sulfate heptahydrate, $\geq 99.99\%$ trace metals basis	50 g, 250 g
764566	CoS_2	Cobalt sulfide, 99.98% trace metals basis	25 g
923087	$\text{Cu}(\text{NO}_3)_2 \cdot x\text{H}_2\text{O}$	Copper (II) nitrate hydrate, $\geq 99.9\%$ trace metals basis	50 g, 250 g
939315	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	Copper (II) sulfate pentahydrate, $\geq 99.9\%$ trace metals basis	100 g, 500 g
263230	Ge	Germanium, chips, 99.999% trace metals basis	10 g, 50 g
203351	Ge	Germanium, powder, -100 mesh, $\geq 99.99\%$ trace metals basis	10 g, 50 g
327395	Ge	Germanium, powder, -100 mesh, $\geq 99.999\%$ trace metals basis	5 g, 25 g
939935	FeCl_2	Iron (II) chloride anhydrous, $\geq 99.99\%$ trace metals basis	100 g
701122	FeCl_3	Iron (III) chloride, $\geq 99.9\%$ trace metals basis	1 g, 5 g, 25 g
940534	$\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$	Iron (III) chloride hexahydrate, $\geq 99.99\%$ trace metals basis	50 g, 250 g
518158	Fe_3O_4	Iron (II,III) oxide, 99.99% trace metals basis	10 g, 50 g
529311	Fe_2O_3	Iron (III) oxide, $\geq 99.995\%$ trace metals basis	5 g, 25 g
529303	$\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	Iron (III) nitrate nonahydrate, $\geq 99.999\%$ trace metals basis	25 g
940895	$\text{FePO}_4 \cdot 2\text{H}_2\text{O}$	Iron (III) phosphate dihydrate, $\geq 99.99\%$ trace metals basis	100 g, 500 g
940909	FePO_4	Iron (III) phosphate, anhydrous, $\geq 99.9\%$ trace metals basis, battery grade	50 g, 250 g
935689	$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$	Iron (II) sulfate heptahydrate, 99.99% trace metals basis	100 g, 500 g
942979	$\text{Fe}_2(\text{SO}_4)_3 \cdot 5\text{H}_2\text{O}$	Iron (III) Sulfate Pentahydrate, $\geq 99.9\%$ trace metals basis	100 g, 500 g
255777	$\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$	Magnesium chloride hexahydrate, 99.995% trace metals basis	5 g, 25 g, 100 g
203696	$\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	Magnesium nitrate hexahydrate, 99.999% trace metals basis	10 g, 50 g
377449	MnCO_3	Manganese (II) carbonate, $\geq 99.9\%$ trace metals basis	250 g, 1 kg
529680	$\text{MnCl}_2 \cdot x\text{H}_2\text{O}$	Manganese (II) chloride hydrate, 99.999% trace metals basis	5 g, 25 g
203734	$\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$	Manganese (II) chloride tetrahydrate, 99.99% trace metals basis	5 g, 25 g, 100 g
429449	MnCl_2	Manganese (II) chloride, AnhydroBeads™, 99.99% trace metals basis	5 g, 25 g
450995	MnCl_2	Manganese (II) chloride, AnhydroBeads™, 99.999% trace metals basis	5 g
203742	$\text{Mn}(\text{NO}_3)_2 \cdot x\text{H}_2\text{O}$	Manganese (II) nitrate hydrate, 99.99% trace metals basis	25 g, 100 g
935697	$\text{Mn}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$	Manganese (II) nitrate tetrahydrate, $\geq 99.9\%$ trace metals basis	50 g, 250 g, 500 g
933791	Mn_2O_3	Manganese (III) oxide, nanopowder, 30 nm avg. part. size, $\geq 99\%$ trace metals basis	100 g
229784	$\text{MnSO}_4 \cdot x\text{H}_2\text{O}$	Manganese (II) sulfate hydrate, $\geq 99.99\%$ trace metals basis	25 g, 100 g
940178	$\text{MnSO}_4 \cdot \text{H}_2\text{O}$	Manganese (II) sulfate monohydrate, $\geq 99.9\%$ trace metals basis	250 g
544183	$\text{NiCO}_3 \cdot 2\text{Ni}(\text{OH})_2 \cdot x\text{H}_2\text{O}$	Nickel carbonate, basic hydrate, 99.9% trace metals basis	250 g, 1 kg
654507	$\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$	Nickel (II) chloride hexahydrate, 99.9% trace metals basis	5 g, 25 g, 100 g

製品番号	化学式	製品名	容量
203866	$\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$	Nickel (II) chloride hexahydrate, 99.999% trace metals basis	5 g, 25 g
451193	NiCl_2	Nickel (II) chloride, anhydrous, powder, 99.99% trace metals basis	5 g, 25 g
939366	$\text{Ni}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot x\text{H}_2\text{O}$	Nickel citrate hydrate, 99.9% trace metals basis	50 g, 250 g
283622	$\text{Ni}(\text{OH})_2$	Nickel (II) hydroxide	250 g, 1 kg
941824	$\text{Ni}(\text{OH})_2$	Nickel (II) hydroxide, $\geq 99.9\%$ trace metals basis, battery grade	100 g
939323	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	Nickel (II) nitrate hexahydrate, $\geq 99.9\%$ trace metals basis	250 g, 1 kg
203874	$\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	Nickel (II) nitrate hexahydrate, 99.999% trace metals basis	20 g, 100 g, 500 g
399523	NiO	Nickel (II) oxide, green, -325 mesh, 99%	100 g
203882	NiO	Nickel (II) oxide, 99.99% trace metals basis	20 g, 100 g
203890	$\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$	Nickel (II) sulfate heptahydrate, 99.999% trace metals basis	10 g, 50 g
939331	$\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$	Nickel (II) sulfate hexahydrate, $\geq 99.9\%$ trace metals basis	100 g, 250 g
467901	$\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$	Nickel (II) sulfate hexahydrate, $\geq 99.99\%$ trace metals basis	50 g
656895	NiSO_4	Nickel (II) sulfate, anhydrous, 99.99% trace metals basis	10 g, 50 g
215791	NbCl_5	Niobium (V) chloride, 99%	10 g, 50 g
336602	NbCl_5	Niobium (V) chloride, $\geq 99.9\%$ trace metals basis	10 g, 50 g
510696	NbCl_5	Niobium (V) chloride, anhydrous, powder, 99.995% trace metals basis	5 g, 25 g
339202	$\text{Nb}(\text{OCH}_2\text{CH}_3)_5$	Niobium (V) ethoxide, 99.95% trace metals basis	5 g, 50 g
452289	H_3PO_4	Phosphoric acid, ≥ 85 wt. % in H_2O , $\geq 99.999\%$ trace metals basis	50 mL, 250 mL
345245	H_3PO_4	Phosphoric acid, 85 wt. % in H_2O , 99.99% trace metals basis	100 mL, 500 mL
466123	H_3PO_4	Phosphoric acid, crystalline, $\geq 99.999\%$ trace metals basis	25 g, 100 g
232106	P_2S_5	Phosphorus pentasulfide, 99%	5 g, 100 g, 1 kg
343242	P	Phosphorus, red, $\geq 99.99\%$ trace metals basis	5 g
213292	S	Sulfur, 99.998% trace metals basis	10 g, 50 g, 250 g
344621	S	Sulfur, flakes, 99.99+% trace metals basis	50 g, 250 g
414980	S	Sulfur, powder, 99.98% trace metals basis	50 g, 250 g
218634	TaCl_5	Tantalum (V) chloride, 99.8% trace metals basis	5 g, 25 g, 100g
317004	TaF_5	Tantalum (V) fluoride, 98%	10 g
755702	Sn	Tin, powder, -100 mesh, 99.99% trace metals basis	5 g
576883	Sn	Tin, nanopowder, <150 nm particle size (SEM), $\geq 99\%$ trace metals basis	5 g
388165	$[\text{CH}_3\text{CH}(\text{O}-)\text{CO}_2\text{NH}_4]_2\text{Ti}(\text{OH})_2$	Titanium (IV) bis (ammonium lactato) dihydroxide solution, 50 wt. % in H_2O	100 mL, 500 mL
244112	$\text{Ti}(\text{OCH}_2\text{CH}_2\text{CH}_2\text{CH}_3)_4$	Titanium (IV) butoxide, reagent grade, 97%	5 g, 100 g, 500 g, 2 kg
377996	$\text{Ti}[\text{OCH}(\text{CH}_3)_2]_4$	Titanium (IV) isopropoxide, 99.999% trace metals basis	5 mL, 25 mL, 100 mL
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271004	CH_3CN	Acetonitrile, anhydrous, 99.8%	100 mL, 1 L, 2 L
733466	CH_3CN	Acetonitrile, electronic grade, 99.999% trace metals basis	1 L, 4 L
287725	$\text{CH}_3\text{COO}(\text{CH}_2)_3\text{CH}_3$	Butyl acetate, anhydrous, $\geq 99\%$	100 mL, 1 L, 2 L
271012	$\text{CH}_3\text{CON}(\text{CH}_3)_2$	<i>N,N</i> -Dimethylacetamide (DMA), anhydrous, 99.8%	100 mL, 1 L, 2 L
227056	$\text{HCON}(\text{CH}_3)_2$	<i>N,N</i> -Dimethylformamide (DMF), anhydrous, 99.8%	100 mL, 1 L, 2 L
296309	$\text{C}_4\text{H}_8\text{O}_2$	1,4-Dioxane, anhydrous, 99.8%	100 mL, 1 L, 2 L
270989	$\text{CH}_3\text{COOC}_2\text{H}_5$	Ethyl acetate, anhydrous, 99.8%	100 mL, 1 L, 2 L
912735	$\text{HO}_2\text{CCH}=\text{CHCO}_2\text{H}$	Maleic acid, electronic grade, $\geq 99.97\%$ trace metals basis, water ≤ 350 ppm	500 g
913243	$\text{HO}_2\text{CCH}=\text{CHCO}_2\text{H}$	Maleic acid, $\geq 99.5\%$ (HPLC), $\leq 0.5\%$ water	1 kg
322415	CH_3OH	Methanol, anhydrous, 99.8%	100 mL, 1 L, 2 L
296996	$\text{CH}_3\text{COOCH}_3$	Methyl acetate, anhydrous, 99.5%	100 mL, 1 L, 2 L
328634	$\text{C}_5\text{H}_9\text{NO}$	1-Methyl-2-pyrrolidinone (NMP), anhydrous, 99.5%	100 mL, 1 L, 2 L
07805	$\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{CH}_2\text{NH}_2$	Oleylamine, technical grade, 70%	5 g, 100 g, 500 g
278475	$(\text{CH}_3)_2\text{CHOH}$	2-Propanol, anhydrous, 99.5%	100 mL, 1 L, 2 L
733458	$(\text{CH}_3)_2\text{CHOH}$	2-Propanol, electronic grade, 99.999% trace metals basis	1 L, 4 L
401757	$\text{C}_4\text{H}_8\text{O}$	Tetrahydrofuran (THF), anhydrous, $\geq 99.9\%$, inhibitor-free	100 mL, 1 L, 2 L
186562	$\text{C}_4\text{H}_8\text{O}$	Tetrahydrofuran (THF), anhydrous, contains 250 ppm BHT as inhibitor, $\geq 99.9\%$	100 mL, 1 L, 2 L
244511	$\text{C}_6\text{H}_5\text{CH}_3$	Toluene, anhydrous, 99.8%	100 mL, 1 L, 2 L
918660	$\text{C}_5\text{H}_8\text{O}_2$	γ -Valerolactone, BioRenewable, $\geq 99\%$	1 L, 2.5 L, 4 L
933856	$\text{C}_5\text{H}_8\text{O}_2$	γ -Valerolactone, BioRenewable, anhydrous, DMF and NMP substitute, $\geq 99\%$	100 mL, 1 L

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製品番号	化学式	製品名	容量
940151	CoSO ₄	Cobalt (II) sulfate, anhydrous, ≥99.9% trace metals basis, battery grade	50 g
943037	Co (OH) ₂	Cobalt (II) hydroxide, ≥99.9% trace metals basis (≤ 1000 ppm), battery grade	100 g
940909	FeSO ₄	Iron (III) phosphate, anhydrous, ≥99.9% trace metals basis, battery grade	50 g, 250 g
931942	Li ₂ CO ₃	Lithium carbonate, ≥99.9% trace metals basis, battery grade	100 g, 500 g
930903	LiOH · H ₂ O	Lithium hydroxide monohydrate, ≥99.9% trace metals basis, battery grade	100 g, 1 kg
930946	LiNO ₃	Lithium nitrate, anhydrous, ≥99.9% trace metals basis, battery grade	50 g, 250 g, 1 kg
930938	LiNO ₃	Lithium nitrate, anhydrous, 99.999% trace metals basis, battery grade	10 g, 50 g
940194	Li ₂ O ₂	Lithium peroxide, 99.9% trace metals basis, battery grade	25 g
940321	Li ₂ S	Lithium sulfide, 99.995% trace metals basis (basis), low sodium, battery grade	25 g, 250 g
941824	Ni (OH) ₂	Nickel (II) hydroxide, ≥99.9% trace metals basis, battery grade	100 g
941948	NaNO ₃	Sodium nitrate, anhydrous, cathode material precursor, (low Li and K), 99.9% trace metals basis, battery grade	100 g, 1 kg

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製品番号	製品名	容量
807796	Cyrene™	100 mL, 1 L, 2.5 L, 4 L, 18 L, 200 L

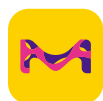
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