

Perovskite Solar Cell Materials



As the UK and European distribution partner for **LTS Research Laboratories**, PI-KEM provides access to a comprehensive range of materials for perovskite solar cell development and manufacturing.

Available as high-purity powders, sputtering targets, evaporation pellets, and ready-to-use solutions, the range supports a variety of deposition and fabrication methods.

Custom stoichiometry, doping levels, and particle sizes are also available to meet specific requirements. Whether you are exploring new device architectures, improving efficiency, or scaling production, you can source the materials you need through a single trusted partner.

1. Light-Absorbing Active Layer (Perovskite Absorbers) 24 materials

S/N	Material	Formula	CAS No.
1	Caesium Lead Bromide	CsPbBr ₃	15243-48-8
2	Caesium Lead Iodide	CsPbI ₃	18041-25-3
3	Caesium Lead Chloride	CsPbCl ₃	N/A
4	Methylammonium Lead Iodide	MAPbI ₃	69507-98-8
5	Methylammonium Lead Bromide	MAPbBr ₃	69276-13-7
6	Methylammonium Lead Chloride	MAPbCl ₃	N/A
7	Formamidinium Lead Iodide	FAPbI ₃	1451592-07-6
8	Formamidinium Lead Bromide	FAPbBr ₃	N/A
9	Caesium Tin Iodide	CsSnI ₃	N/A
10	Caesium Tin Bromide	CsSnBr ₃	N/A
11	Caesium Tin Chloride	CsSnCl ₃	N/A
12	Methylammonium Tin Iodide	MASnI ₃	N/A
13	Methylammonium Tin Bromide	MASnBr ₃	N/A
14	Formamidinium Tin Iodide	FASnI ₃	N/A
15	Formamidinium Tin Bromide	FASnBr ₃	N/A
16	Caesium Silver Bismuth Bromide (double perovskite)	Cs ₂ AgBiBr ₆	N/A
17	Caesium Silver Bismuth Chloride (double perovskite)	Cs ₂ AgBiCl ₆	N/A
18	Caesium Silver Bismuth Iodide (double perovskite)	Cs ₂ AgBiI ₆	N/A
19	Caesium Silver Indium Bromide (double perovskite)	Cs ₂ AgInBr ₆	N/A
20	Caesium Bismuth Iodide	Cs ₃ Bi ₂ I ₉	N/A
21	Methylammonium Bismuth Iodide	MA ₃ Bi ₂ I ₉	N/A
22	Silver Bismuth Iodide (rudorffite)	AgBiI ₄	N/A
23	Barium Zirconium Sulfide (chalcogenide perovskite)	BaZrS ₃	N/A
24	Cadmium Selenide	CdSe	1306-24-7

2. Electron Transport Layer (ETL) 41 materials

S/N	Material	Formula	CAS No.
1	Titanium Dioxide	TiO ₂	1317-80-2

S/N	Material	Formula	CAS No.
2	Tin(IV) Oxide	SnO ₂	18282-10-5
3	Zinc Oxide	ZnO	1314-13-2
4	Niobium Pentoxide	Nb ₂ O ₅	1313-96-4
5	Tungsten Trioxide	WO ₃	1314-35-8
6	Indium(III) Oxide	In ₂ O ₃	1312-43-2
7	Cerium(IV) Oxide	CeO ₂	1306-38-3
8	Iron(III) Oxide	Fe ₂ O ₃	1309-37-1
9	Zirconium Dioxide (scaffold)	ZrO ₂	1314-23-4
10	Chromium(III) Oxide	Cr ₂ O ₃	1308-38-9
11	Barium Tin Oxide	BaSnO ₃	12009-18-6
12	Strontium Titanate	SrTiO ₃	12060-59-2
13	Zinc Stannate	Zn ₂ SnO ₄	12027-96-2
14	Barium Titanate	BaTiO ₃	12047-27-7
15	Barium Strontium Titanate	BaSrTiO ₃	12430-73-8
16	Barium Zirconate Titanate	BaTiZrO ₅	37305-89-8
17	Barium Zirconium Titanate	BaZrTiO ₃	N/A
18	Bismuth Titanate	Bi ₁₂ TiO ₂₀	12441-73-5
19	Bismuth Titanium Oxide	Bi ₂ Ti ₄ O ₁₁	12233-34-0
20	Bismuth Titanium Oxide	Bi ₂ TiO ₃	N/A
21	Bismuth Iron Titanium Oxide	BiFeTiO ₃	N/A
22	Bismuth Sodium Titanate	BiNaTiO ₃	N/A
23	Potassium Barium Strontium Titanium Oxide	KBaSrTiO ₃	N/A
24	Lanthanum Titanium Oxide	La ₂ Ti ₂ O ₇	144087-28-5
25	Lithium Titanium Oxide	Li ₄ Ti ₅ O ₁₂	12031-95-7
26	Magnesium Titanate	MgTiO ₃	12032-30-3
27	Manganese Titanate	MnTiO ₃	12032-74-5
28	Lead Titanium Oxide	PbTiO ₃	12060-00-3
29	Strontium Titanium Niobium Oxide	SrTiNbO ₃	N/A
30	Yttrium Titanium Oxide	Y ₂ Ti ₂ O ₇	N/A
31	Yttrium Titanium Oxide	YTiO ₃	N/A
32	Zinc Orthotitanate	Zn ₂ TiO ₄	12036-69-0
33	Zinc Titanate	ZnTiO ₃	12036-43-0
34	Cadmium Sulfide	CdS	1306-23-6
35	Tin(IV) Sulfide	SnS ₂	1315-01-1
36	Zinc Sulfide	ZnS	1314-98-3
37	Fullerene-C60	C ₆₀	99685-96-8
38	Fullerene-C70	C ₇₀	115383-22-7
39	[6,6]-Phenyl-C61-butyric acid methyl ester	PCBM	160848-22-6
40	[6,6]-Phenyl-C71-butyric acid methyl ester	PC71BM	609771-63-3

S/N	Material	Formula	CAS No.
41	Indene-C60 Bisadduct	ICBA	1207461-57-1

3. Hole Transport Layer (HTL) 18 materials

S/N	Material	Formula	CAS No.
1	Nickel(II) Oxide	NiO	1313-99-1
2	Copper(I) Thiocyanate	CuSCN	1111-67-7
3	Copper(I) Iodide	CuI	7681-65-4
4	Copper(I) Oxide (cuprous)	Cu ₂ O	1317-39-1
5	Copper(II) Oxide (cupric)	CuO	1317-38-0
6	Copper Aluminate	CuAlO ₂	12250-93-0
7	Copper Gallium Oxide (delafossite)	CuGaO ₂	N/A
8	Molybdenum Trioxide	MoO ₃	1313-27-5
9	Vanadium(V) Oxide	V ₂ O ₅	1314-62-1
10	Tungsten Trioxide	WO ₃	1314-35-8
11	Bismuth Aluminate	BiAlO ₃	12284-76-3
12	Lanthanum Aluminum Oxide	LaAlO ₃	12003-65-5
13	2,2',7,7'-Tetrakis[N,N-di(4-methoxyphenyl)amino]-9,9'-spirobifluorene	Spiro-OMeTAD	207739-72-8
14	2,2',7,7'-Tetra(N,N-di-p-tolyl)amino-9,9-spirobifluorene	Spiro-TTB	515834-67-0
15	Poly(3,4-ethylenedioxythiophene) polystyrene sulfonate	PEDOT:PSS	155090-83-8
16	Poly(triaryl amine)	PTAA	1333317-99-9
17	Poly(3-hexylthiophene-2,5-diyl)	P3HT	104934-50-1
18	Poly[N-9'-heptadecanyl-2,7-carbazole-alt-5,5-(4',7'-di-2-thienyl-2',1',3'-benzothiadiazole)]	PCDTBT	958261-50-2

4. Perovskite Precursors & Halide Salts 20 materials

S/N	Material	Formula	CAS No.
1	Lead(II) Iodide	PbI ₂	10101-63-0
2	Lead(II) Bromide	PbBr ₂	10031-22-8
3	Lead(II) Chloride	PbCl ₂	7758-95-4
4	Lead(II) Thiocyanate	Pb(SCN) ₂	592-87-0
5	Tin(II) Iodide	SnI ₂	10294-70-9
6	Tin(II) Bromide	SnBr ₂	10031-24-0
7	Tin(II) Chloride	SnCl ₂	7772-99-8
8	Tin(II) Fluoride (additive)	SnF ₂	7783-47-3
9	Caesium Iodide	CsI	7789-17-5
10	Caesium Bromide	CsBr	7787-69-1
11	Caesium Chloride	CsCl	7647-17-8
12	Silver Iodide (additive)	AgI	7783-96-2

S/N	Material	Formula	CAS No.
13	Bismuth(III) Iodide	BiI ₃	7787-64-6
14	Antimony(III) Iodide	SbI ₃	7790-59-2
15	Methylammonium Iodide (MAI)	CH ₃ NH ₃ I	14965-49-2
16	Methylammonium Bromide (MABr)	CH ₃ NH ₃ Br	6876-37-5
17	Methylammonium Chloride (MACl)	CH ₃ NH ₃ Cl	593-51-1
18	Formamidinium Iodide (FAI)	CH(NH ₂) ₂ I	879643-71-7
19	Formamidinium Bromide (FABr)	CH(NH ₂) ₂ Br	146958-06-7
20	Phenethylammonium Iodide (PEAI, 2D / passivation)	C ₈ H ₁₂ IN	151245-24-8

5. Counter Electrodes & Transparent Contacts 13 materials

S/N	Material	Formula	CAS No.
1	Gold	Au	7440-57-5
2	Silver	Ag	7440-22-4
3	Copper	Cu	7440-50-8
4	Aluminum	Al	7429-90-5
5	Platinum	Pt	7440-06-4
6	Nickel	Ni	7440-02-0
7	Molybdenum	Mo	7439-98-7
8	Chromium	Cr	7440-47-3
9	Graphite	C	7440-44-0
10	Carbon Black	C	1333-86-4
11	Carbon Nanotubes	CNT	N/A
12	Indium Tin Oxide	ITO	50926-11-9
13	Fluorine-doped Tin Oxide	FTO	N/A

6. Passivation & Interface Materials 11 materials

S/N	Material	Formula	CAS No.
1	Lithium Fluoride	LiF	7789-24-4
2	Potassium Fluoride	KF	7789-23-3
3	Sodium Fluoride	NaF	7681-49-4
4	Magnesium Fluoride (anti-reflection / interface)	MgF ₂	7783-40-6
5	Potassium Iodide	KI	7681-11-0
6	Caesium Carbonate	Cs ₂ CO ₃	534-17-8
7	Aluminum Oxide (mesoporous scaffold)	Al ₂ O ₃	1344-28-1
8	Titanium Oxide (sub-stoichiometric)	TiO _x	N/A
9	Zinc Oxide	ZnO	1314-13-2
10	Bathocuproine	BCP	4733-39-5
11	Choline Chloride	C ₅ H ₁₄ ClNO	67-48-1

Notes

- Formulas are shown in idealized stoichiometric form. Mixed-cation and mixed-halide compositions (e.g. triple-cation CsFAMA or FA/MA $\text{Pb}(\text{I},\text{Br})_3$ absorbers) are supplied to customer specification. Page 5 of 5
- “N/A” denotes materials with no single registered CAS number typically composition-variable, mixed-halide, or double-perovskite phases and is not an indication of availability.
- Available purities up to 99.999% (5N). Sputtering targets, evaporation sources, nanopowders, and solution-grade precursors available on request.
- CAS numbers are provided as a guide; customers should confirm against their own specification and the Certificate of Analysis for each lot.



UK + EUROPEAN
DISTRIBUTOR

T +44 (0)1827 259250 E info@pi-kem.co.uk W pi-kem.co.uk

Unit 18-20 Tame Valley Business Centre, Magnus, Tamworth, B77 5BY, UK