

Materials List for:

Determination of Thermodynamic Properties of Alkaline Earth-liquid Metal Alloys Using the Electromotive Force Technique

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Materials

Name	Company	Catalog Number	Comments
1 L bottle	US Plastic	69032	HDPE, wide mouth
Acetone, 99.5%	Alfa Aesar	30698	ACS Grade
Alumina dish	AdValue Technology	AL-4120	81 mm OD, 30 mm height
Alumina plate	AdValue Technology	AL-D-82-6	10 cm in diameter, 4.65 mm thickness
Alumina powder	AluChem		AC99 tabular alumina
Alumina tube	Coorstek	66631-12.0000	0.25 in. OD, 12 in. length
Arc-Melter	Edmund Buhler GmbH	MAM1	
Argon, 99.999%	Praxair	AR 5.0UH-K	Ultrahigh purity
Ball mill	Norton Chemical Process Products Corporation	CF-70109	6 sets of 2 12.5 in. rollers, RPM 1725/1425
Barium	Alfa Aesar	653	99.2% purity
Barium fluoride	Sigma-Aldrich	652458	99.999% purity
Bismuth	Sigma-Aldrich	556130	99.999% purity
Boron nitride	Saint-Gobain	AX-05	
Calcium fluoride	Alfa Aesar	11055	99.95% purity
Cotton tip applicator	Dynarex	4301	100 count, 3 in. long
Die press	Carver, Inc.	3850	Clamping force: 12 tons; Platens: 6 x 6 in.
Drill bit 29 piece set	Chicago-Latrobe	45640	1/16 in. - 1/2 in. x 1/64 in.
Drying pan	Pyrex	5300114	15.5 in. x 9.5 in. x 2.25 in.
Emery paper	McMaster-Carr	4681A21	Grit size: 100
Fiberglass insulation	McMaster-Carr	9346K38	
Flowmeter	Brooks	MR3A00SVVT	Range: 0.1 to 1 standard cubic feet per hour (SCFH) of Air
Gas bubbler	Ace Glass	8761-10	
High temperature box furnace	Thermolyne	F48020-80	48000 Furnace, 8-segment program, Max. 1,200 °C
High temperature crucible furnace	Mellen	CC12-6X12-1Z	6 in. ID, 12 in. depth. Max temp 1,200 °C. 208 V
High vacuum grease	Sigma-Aldrich	Z273554	Brand: Dow Corning
Inert atmosphere glovebox	Mbraun	MB200	
Isopropyl alcohol	Macron Chemicals	3032-21	ACS Grade
Large pellet die set	MTI Corporation	EQ-Die-75D	
Polyvinyl alcohol, 99+%	Sigma-Aldrich	341584-5KG	Hydrolyzed, molecular weight (MW): 89,000-98,000

Potentiostat	Autolab	PGSTAT302N	
Potentiostat-multiplexing switch box	Autolab	MUX SCANNER16 F/16 X WE	Multiplexer (MUX) SCANNER16
Potentiostat control software	NOVA		NOVA 1.11
Precision mini lathe	Harbor Freight Tools	93212	Brand: Central Machinery
Quick cure epoxy	Grainger	5A462	Brand: Devcon
Recirculating chiller	VWR International	13271-204	Model: 1175PD
Small pellet die set	MTI Corporation	EQ-Die-18D-B	
Sonicator	VWR International	97043-968	
Squeeze bottle	VWR International	16650-022	LDPE, 500 mL
Stainless steel mesh sieve	Amazon		10 mesh, 2 mm holes
Strontium	Sigma-Aldrich	343730	99% purity
Strontium fluoride	Sigma-Aldrich	450030	99.99% purity
Thermocouple	Omega	KMQXL-125U-18	K-type thermocouple
Thermocouple acquisition board	National Instruments	NI-9211	
Tungsten wire	ThermoShield	88007-0.100	99.95% wire
Vacuum pump	Pfeiffer	PK D56 707	Duo Line 1.6
Wipes	Kimtech	S-8115	ULine distributor
Wire cutters	McMaster-Carr	5372A4	
Yttria-stabilized zirconia milling media	Tosoh, USA		3 mm diameter