

Materials List for:

# Indirect Fabrication of Lattice Metals with Thin Sections Using Centrifugal Casting

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## Materials

Name	Company	Catalog Number	Comments
Motorized centrifugal casting machine	Rey Motorized Centrifugal Casting Machine, Rey Industries Inc.		Made in U.S.A. by Rey industries, Inc. Dallas, TX 75220
Gypsum powder	Satin Cast 20, FindingKing Kerr	7960	Gypsum powder is used to make the investment mixture
Ployjet 3D printer	Projet HD3500 Plus, 3D Systems		This polymer based 3D printer to print out sacrificial pattern for casting.
Cartridge materials - UV curable and castable acrylic plastic	VisiJet Procast, 3D Systems		This is castable material that is going to be burn out before casting
Cartridge materials- support material	VijiJet S300, 3D Systems		This is support material that is going to be removed before pattern assemble
Ancient Bronze Casting Grain	Rio Grande	706051	This true bronze grain contains no zinc. Highly fluid, it melts quickly, casts cleanly and provides a good balance between strength and durability. The warm, deep-bronze color has rich red undertones, and the alloy takes a good patina. Composition is 90% copper with an amount of tin; fits into the CDA#90700 category. This grain is sold in 1 lb. packages.
Aluminum Round Wire, 1/8", 1-Lb. Spool, Dead Soft	Rio Grande	134700	Lightweight and strong, aluminum wire is an economical and versatile choice. Not as bright-white as silver, aluminum offers a warmer tone much like that of platinum. Solder ONLY with low-temp solders such as Stay-Brite; suitable for both pulse-arc and laser welding. This quality aluminum wire is packaged on 1 lb. spools.
Computer aided design software (Pro-e)			This software can be replaced with the others such as Auto CAD, Catia, and so on.
ProJet Finisher 1-A	3D Systems		This machine is used to melt the support material.
160 Watt 2.5 Liters Digital Ultrasonic Cleaner with Timer Heater Rings Tools	Chicago, Electric, Power Tools		85 oz. capacity, Five cleaning cycles: 90, 180, 280, 380 and 480 seconds, Clean with or without heat, Easy-to-read LED digital timer, Clear-view window
Fan	Honeywell Inc.	HT-800	120 V A.C., 60 Hz., 0.85 A. TP

Paraffin wax for wax sheet - Modeler's Pink Wax Sheet, 3" by 6", 24-Ga.	Rio Grande	700075	Sheet wax is flexible and can be cut or formed into any shape. It's ideal for designing since you can draw or trace directly onto the sheet; choose green or pink depending on which will best show your designs. High manufacturing standards ensure exceptional consistency and significant price savings. Value is enhanced by larger package quantities at the same price as the smaller packages available elsewhere. Each 8-oz. package contains approximately 30 sheets.
Paraffin wax for wax stick - Modeler's Medium Red Sprue Wax, 8-Ga	Rio Grande	700741	A pliable, softer sprue wax than the firm blue. Good for forming gates and sprues and burns out cleanly with no residue.
Alcohol Lamp	Rio Grande	700008	Use this lamp to heat wax-working tools or as a flame polisher. The heavy glass reservoir has faceted sides to allow it to be tipped for angling the flame. A screw adjustment for the 7" x 3/16" wick controls the height of the flame. A safety cap snuffs the flame and prevents fuel evaporation. For the best flame, use methyl alcohol fuel. Replacement wicks available. Reservoir holds 5 oz. (150 ml) of fuel.
Wax carving tool set - Soft Grip Wax Carvers, Set of 10	Rio Grande	700329	This boxed set offers the best in cutting and shaping technology. Each of these ten high-quality steel wax-carving tools features a 5/16" PVC covered handle that ensures a sure, comfortable grip through hours of work and all have sharp edges for shaping and fine detailing. Sharpen or custom-shape each tool to fit your needs. These tools provide exceptional tool strength and deliver excellent results. This set comes in a hinged, foam-lined wood box.
Rubber Mixing Bowl, 1 - 1/2 Qt.	Rio Grande	702131	This highly-flexible vulcanized rubber bowl is easy to grip, will not be marred by a spatula and cleans with ease.
Pyrex Beaker, 1,000ml	Rio Grande	335040	Ideal for holding and heating bath plating solutions, this genuine Pyrex glass beaker is sturdy and durable.
Rio Premium Stainless Steel Flask, 2 - 1/2" dia.	Rio Grande	70201514	This solid, #304-quality stainless steel flask is corrosion-resistant, durable for a long service life and performs under extreme temperature without distortion.
CAST/T Ceramic Casting Crucible, 450 g	Rio Grande	705047	Made exclusively for the CAST/T centrifugal casting machine, this crucible is designed with an angled base that slides into the hinged bracket on top of the casting machine. This brings the crucible into perfect alignment with the

			center of the flask ring to ensure an error-free pour.
MyWeigh iBalance 300 Digital Scale	Rio Grande	116850	This scale is used to measure the weight of the sacrificial and sprue system for metal which is going to be used for centrifugal casting.
Rubber bottom - CAST/T Flask Ring Base	Rio Grande	705025	Specially made for the CAST/T centrifugal casting machine, this rubber base accommodates all Table King flask ring styles, creating a secure, airtight seal throughout the investment process. The center post fits either of the wax disc styles for complete versatility.
Scotch® Colored Duct Tape, 1 7/8" x 20 Yd., Blue	OfficeMax	22353766	This scotch tape is used to make sure that the gypsum-water mixture fully covers the assembled sacrificial pattern inside the flask by allowing for extra material above the flask height
Vacuum casting machine - V.I.C. 12 Tabletop Solid- and Perforated-Flask Casting Machine with The Rio Assistant, 110-Volt	Rio Grande	70511814	The V.I.C. 12 casting machine offers all the latest technical innovations for efficient, productive vacuum investing and casting. Designed to meet the demands of medium-sized casting operations, this machine includes a powerful 1/2 hp, 5cfm vacuum pump for effective vacuuming and outstanding casting results. The V.I.C. 12 casts small or large flasks. Includes an adapter table that accepts standard solid flasks up to 5" x 7" high and is mounted on rubber feet for stability.
Furnace for burn out sacrificial pattern -Rio Model 1000 Enameling Kiln with Nine Program Controller	Rio Grande	703121	The Rio enameling kiln features three pre-set firing temperatures for enamels and six that you can define. Use the exclusive Rio controller to set and maintain firing temperatures. Perfect for all types of enameling, including tall pieces. Includes ample space for firing and an easy-latch door that will not jar your enamels when opening and closing. Also suitable for metal clay, glass and ceramics. Galvanized steel case with high-temperature insulating firebrick keeps them cool. Element protected in recessed groove. Includes user instructions.
Smith Complete Little Torch Acetylene and Oxygen System	Rio Grande	500030	Get everything you need to equip your shop for soldering and brazing. Use Little Torch systems for gold or silver soldering, brazing and casting applications. Complete every soldering and melting job with confidence and ease! This system accepts all Little Torch accessory tips for melting, brazing and large soldering jobs and is a staple for every jeweler.

Heat-Resistant Safety Apron	Rio Grande	750160	The specially designed apron has an 800 °F (427 °C) temperature resistance. Its reflective finish repels hot metal splashes and helps insulate the wearer from heat.
Radnor Heat-Resistant Gloves	Rio Grande	350050	These flexible, heat-resistant gloves are ideal for enameling projects, allowing you to grip even small tongs securely. Blue, shoulder-split leather gloves are made of tough cowhide and lined with cotton and foam, and have reinforced thumb wings.
Platinum Soldering Glasses, #7	Rio Grande	113914	Protect yourself and your employees when soldering platinum. Comfortable glasses feature adjustable earpieces and 52mm IR green polycarbonate #7 lenses. The #7 lens is approved by The Platinum Guild.
Economy Light-Duty Flask Tongs	Rio Grande	704026	Constructed of bent steel, these tongs are designed to handle flasks 3-1/2" or less in diameter. The small-angle notches grip smaller flask sizes and the larger, rounded contour area securely holds larger flasks.
Separating Screen Bucket	Rio Grande	201360	15"-diameter, 11-1/2"-deep
Sand blaster - Econoline - 101701CB-A - Free-Standing Cabinets Workspace Width (Inch): 60 Workspace Depth (Inch): 48	MSC industrial supply Co.	223818	Ree-Standing Cabinets; Workspace Width (Inch): 60; Workspace Depth (Inch): 48; Workspace Height (Inch): 40; Air Requirement: 12 CFM @ 80 psi; Overall Cabinet Width (Inch): 65; Maximum Cabinet Depth (Inch): 86
Johnson's Baby Oil Shea & Cocoa Butter	Wal-Mart	260074132	This baby oil is used for removing the residue of the support material for the castable sacrificial pattern using Digital Ultrasonic Cleaner.
German 4" Saw Frame and Saw Blade Kit	Rio Grande	110112	Quality, German-made frames are our most popular saw frames, and this frame includes a sampler pack of Rio German saw blades! The adjustable saw frame allows you to achieve the blade tension you want. Throat depth is 102mm (4"). Saw blades have rounded backs that make cutting curves and corners easy and are made from hardened, tempered steel.