

Specialty Waxes

Freeman Machinable Wax



Formulated & manufactured by Freeman, this unique medium is an extremely hard synthetic wax that machines faster than polyurethane and epoxy tooling boards or metals without sacrificing quality of finish, surface detail, or dimensional accuracy.

Machinable Wax is:

Non-Abrasive – unlike metal and tooling boards that can cause significant wear on cutting tools.

User-Friendly – machining produces chips instead of dust, for a cleaner work environment.

Self-Lubricating – enables all machining operations to be performed without the need for coolants or cutting fluids.

Able To Be Glued – to produce large or irregularly-shaped pieces for machining with the use of 3M #90 Hi-Strength Spray Adhesive (pg. 67).

Available in a Wide Variety of Sizes – eliminating the waste associated with using large tooling boards for smaller projects

Self-Releasing & Self-Sealing – liquid tooling plastics, including epoxy, urethane, and silicone rubber may be poured into Machinable Wax without requiring the use of sealers or release agents.

Machinable Wax is used for:

- Producing Accurate Molds and Prototypes
- Education as a Training Aid Material
- CNC Systems Set-up and Demonstrations
- Proofing CNC Machining Programs

Machinable Wax Specifications

Hardness (Shore D)	50-55
Specific Gravity	0.92
Flash Point	575° F
Softening Point	226° F
Volumetric Shrinkage @ Room Temp.	7%
Coefficient of Thermal Expansion (in./in. °F)	9.5 x 10 ⁻⁵
Color	Blue

Machinable Wax Machining Guidelines

	Spindle Speed	Feed Rate
Roughing	3,000 rpm	100 inches per minute
Finishing	8,000-10,000 rpm	40-100 inches per minute

*Data obtained using a 1/2" ball end mill

How to Calculate Machinable Wax Weight

$$\frac{\text{Length} \times \text{Width} \times \text{Thickness (inches)}}{28.8} = \text{Weight (lbs)}$$

Original Sizes

Catalog Number	Description	Thickness	Width	Length
108003	Wax Block	1½"	2"	3"
108011	Wax Block	1½"	3"	7"
108021	Wax Block	3"	3"	7"
108031	Wax Block	3"	4½"	7"
108051	Wax Block	3"	5"	10"

Standard Block Sizes

Width x Length	Thickness						
	2"	3"	4"	5"	6"	7"	8"
6" x 6"	108250	108300	108350	108400	108450	108500	108552
6" x 12"	108252	108071	108352	108402	108452	108502	108554
6" x 18"	108254	108304	108354	108404	108454	108504	108556
6" x 24"	108256	108306	108356	108406	108456	108506	108558
6" x 30"	108258	108308	108358	108408	108458	108508	108560
6" x 36"	108260	108310	108360	108410	108460	108510	108562
6" x 42"	108262	108312	108362	108412	108462	108512	108564
6" x 48"	108264	108314	108364	108414	108464	108514	108566
12" x 12"	108266	108316	108366	108416	108466	108516	108568
12" x 18"	108268	108318	108368	108418	108468	108518	108570
12" x 24"	108270	108320	108370	108420	108470	108520	108572
12" x 30"	108272	108322	108372	108422	108472	108522	108574
12" x 36"	108274	108324	108374	108424	108474	108524	108576
12" x 42"	108276	108326	108376	108426	108476	108526	108578
12" x 48"	108278	108328	108378	108428	108478	108528	108580
18" x 18"	108280	108330	108380	108430	108480	108530	108582
18" x 24"	108282	108332	108382	108432	108482	108532	108584
18" x 30"	108284	108334	108384	108434	108484	108534	108586
18" x 36"	108286	108336	108386	108436	108486	108536	108588
18" x 42"	108288	108338	108388	108438	108488	108538	108590
18" x 48"	108290	108340	108390	108440	108490	108540	108592
24" x 24"	108222	108342	108392	108442	108492	108542	108594
24" x 30"	108292	108344	108394	108444	108494	108544	108596
24" x 36"	108294	108346	108396	108446	108496	108546	108598
24" x 42"	108296	108348	108398	108448	108498	108548	108600
24" x 48"	108298	108243	108244	108245	108246	108550	108248

Standard Cylinder Sizes

Catalog Number	Description	Diameter (Nominal)	Length
108114	Wax Cylinder	1"	12"
108115	Wax Cylinder	1½"	12"
108125	Wax Cylinder	2"	12"
108135	Wax Cylinder	3"	12"
108145	Wax Cylinder	4"	14"
108155	Wax Cylinder	5"	16"
108165	Wax Cylinder	6"	18"
108175	Wax Cylinder	7"	18"

Non-Standard Sizes and Bulk Machinable Wax

In addition to the above blocks and cylinders, machinable wax is also available in custom sized blocks and cylinders.

Catalog Number	Description
108099	Non-Standard Size Block
108199	Non-Standard Size Cylinder
108001	Bulk Wax 1-5 lb. pieces

Freeman Sheet Wax

Freeman Sheet Wax is used primarily to simulate metal or part thickness when making metal forming dies or punches, resin transfer molds (RTM), or any two part molds where a uniform part thickness is desired.



Formulated and manufactured by Freeman, our Sheet Waxes are available in two formulations; No. 266 Thermo-Stable and No. 165 Regular.

Both formulations are available in plain back or easy to apply adhesive-back styles. Freeman Sheet Waxes are manufactured to a uniform thickness of ± 0.001 ".

To order Freeman Sheet Wax:

Specify Type: No. 266 Hi-Temp
No. 165 Regular

Specify Backing: Plain = PL (No Adhesive)
Pressure Sensitive = PS (Adhesive Applied)

Specify Thickness: Inches
Millimeters

Custom thicknesses are available with a 10 box minimum.

165 Regular Sheet Wax

This light yellow color wax is formulated to provide durability and translucency.

This wax features:

- Uniform thickness accuracy of ± 0.001 ".
- Firm surface for durability and depression resistance.
- Translucency of sheets up to $\frac{1}{8}$ " thick making it excellent for visualizing layout lines and transcribing engineering information.
- Melting point of 177°F.

165 Regular Sheet Wax (12" x 24")

Inches		Millimeters	
165 Plain*	165 Adhesive	165 Plain*	165 Adhesive
0.007	0.007	0.20 mm	0.20 mm
0.010	0.010		0.25 mm
0.015	0.015		0.30 mm
0.020	0.020		0.50 mm
0.025	0.025		0.60 mm
	0.030	0.75 mm	0.75 mm
0.031	0.031		0.80 mm
0.040	0.040	1.00 mm	1.00 mm
0.050	0.050		1.25 mm
0.060	0.060		1.50 mm
0.063	0.063	2.00 mm	2.00 mm
0.070	0.070		2.50 mm
0.072		3.00 mm	3.00 mm
0.080	0.080		5.00 mm
0.090	0.090		
0.094	0.094		
0.100	0.100		
0.125	0.125		
0.156	0.156		
0.160	0.160		
0.188	0.188		
0.250	0.250		

*Adhesive can also be applied manually using our Sheet Wax Spray Adhesive pg. 67

266 Hi-Temp Thermo-Stable Sheet Wax

Our most popular sheet wax, this medium brown wax was developed primarily for use with tooling plastics to prevent wax deformation under exothermic heat conditions.

This wax features:

- Uniform thickness accuracy of ± 0.001 ".
- Maximum flexibility for forming quickly and accurately to any contoured surface (more flexible than 165 Regular Sheet Wax).
- Natural draping characteristics at room temperature and absence of memory (spring-back) eliminate the need to warm or temper wax.
- Melting point of 282°F.

266 Hi-Temp Thermo-Stable Sheet Wax (12" x 24")

Inches		Millimeters	
266 Plain*	266 Adhesive	266 Plain*	266 Adhesive
	0.007		0.20 mm
	0.010		0.25 mm
0.015	0.015		0.30 mm
	0.018		0.40 mm
0.020	0.020		0.50 mm
	0.025		0.60 mm
	0.028		0.70 mm
	0.030		0.75 mm
	0.031**		0.80 mm
	0.035		0.85 mm
	0.040		0.90 mm
	0.045		1.00 mm
	0.047		1.20 mm
	0.050		1.25 mm
	0.055		1.30 mm
	0.060		1.40 mm
	0.063**		1.50 mm
	0.065**		1.60 mm
	0.070		1.70 mm
	0.075		1.75 mm
	0.080		1.80 mm
	0.085		1.90 mm
	0.090	2.00 mm	2.00 mm
	0.094**		2.20 mm
0.100	0.100**		2.25 mm
	0.110		2.30 mm
	0.116		2.40 mm
	0.118		2.50 mm
	0.120		2.60 mm
0.125	0.125**		2.70 mm
	0.140		2.75 mm
	0.156		2.80 mm
		3.00 mm	3.00 mm**
	0.170		3.20 mm
0.188	0.188**		3.50 mm
0.200			4.00 mm
	0.219		4.50 mm
0.250	0.250**		5.00 mm
0.375	0.375		6.00 mm
	0.500		7.00 mm
			8.00 mm

*Adhesive can also be applied manually using our Sheet Wax Spray Adhesive pg. 67.

**Also available in 6" x 6" / 152 mm x 152mm sheets

Freeman Fillet Wax

Freeman Wax Fillets

Freeman Wax Fillets are made of a performance-proven, high melting point wax formulation for meeting a wide variety of pattern shop applications.



Freeman Wax Fillets:

- Are easily applied to straight or irregularly shaped surfaces because of their flexibility.
- Can be painted using our Freeman Pattern Lacquers.
- Produce and maintain accurate radii regardless of application conditions.
- Can be applied to bare wood or coated surfaces without the use of an adhesive by using a heated fillet tool.
- Are available in rolls and boxes.

Catalog Number	Availability	Fillet No.	Dia./ Radius	Approx. Length	Net Wt. (Lbs.)
085104	Box – 24" straight pieces	1R	1/16" D	1640'	2
085208	Box – 24" straight pieces	2	1/8" R	1152'	2
085212	Box – 24" straight pieces	3	3/16" R	460'	2
085216	Box – 24" straight pieces	4	1/4" R	292'	2
085220	Box – 24" straight pieces	5	5/16" R	240'	2
085224	Box – 24" straight pieces	6	3/8" R	190'	2
085228	Box – 24" straight pieces	7	7/16" R	144'	2
085232	Box – 24" straight pieces	8	1/2" R	106'	2
085240	Box – 24" straight pieces	10	5/8" R	72'	2
085248	Box – 24" straight pieces	12	3/4" R	44'	2
085264	Box – 24" straight pieces	16	1" R	24'	2
085302	Roll	00R	1/32" D	1500'	0.5
085303	Roll	0R	3/64" D	1500'	1
085304	Roll	1R	1/16" D	750'	1
085408	Roll	2	1/8" R	500'	1
085412	Roll	3	3/16" R	400'	1
085416	Roll	4	1/4" R	175'	1
085420	Roll	5	5/16" R	125'	1
085424	Roll	6	3/8" R	85'	1
085428	Roll	7	7/16" R	40'	1
085432	Roll	8	1/2" R	40'	1

Freeman Di-Dup Wax Fillet

Freeman Di-Dup Wax Fillets are softer than our standard wax fillets and also have a lower melting point. These two features make them ideal for creating inside radii on expanded polystyrene foam patterns. This material is cut into 24" lengths and packaged in two pound boxes.

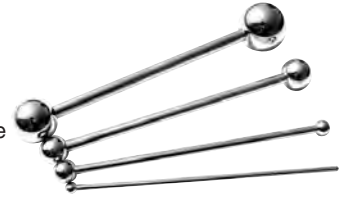


Catalog Number	Description	Fillet No.	Dia./ Rad	Approx. Length	Net Wt. (Lbs.)
085504	Di-Dup Fillets	4	1/4" R	350'	2
085506	Di-Dup Fillets	6	3/8" R	175'	2
085508	Di-Dup Fillets	8	1/2" R	80'	2
085510	Di-Dup Fillets	10	5/8" R	75'	2
085512	Di-Dup Fillets	12	3/4" R	35'	2
085516	Di-Dup Fillets	16	1" R	20'	2

Fillet Accessories

Fillet Tools

Freeman's high quality chrome plated steel Fillet Tools are accurate diameters used to correctly and easily install wax or leather fillet.



Catalog Number	Description	Radii
046380	# 1 Fillet Tool	1/16" & 1/8"
046385	# 2 Fillet Tool	3/16" & 1/4"
046390	# 3 Fillet Tool	5/16" & 3/8"
046395	# 4 Fillet Tool	1/2" & 5/8"

Alcohol Lamp

This chrome plated brass Alcohol Lamp comes complete with snuffer cap attached by chain and an adjustable cotton wick. The 7" long cotton wick raises and lowers by hand screw.



Catalog Number	Description
046730	Metal Alcohol Lamp (5 oz.)
046735	Replacement Alcohol Lamp Wicks

Freeman String Wax

String Wax is a round wax product that, when melted, is used as an adhesive to secure investment casting wax patterns to the gating system or for general wax pattern repair.



Catalog Number	Description	Diameter	Approx. Length	Net. Wt. (Lbs.)
085606	Di-Dup String Wax – Roll	1/8"	440'	2
085433	Fillet String Wax – Roll	1/8"	880'	4
085209	Fillet String Wax – Box	1/4"	292'	2

Freeman Half Round Wax

This specialty wax is extruded to a uniform half round shape making this material ideal for mold registration when applied to the parting line of a mold surface. Manufactured using our Fillet Wax formulation, this material will not inhibit the curing of silicones, urethanes, or plasters.

Catalog Number	Radius	Width	Length	Net Wt. (Lb.)
085114	1/8"	1/4"	24"	2
085113	1/16"	3/8"	24"	2
085112	5/16"	5/8"	24"	2
085111	3/8"	3/4"	24"	2