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FORMULAS FOR BOOKBINDERS

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particle of shellac is dissolved, then remove the scum which has formed on the surface, and bottle for use. Use it as you would the No. 21.

Finishing and  
Stamping.

Glair and Size.

Orange shellac comes in thin flakes, and is obtainable at nearly all painters' supply stores. Owing to the deep wine color of this size, it is hardly suitable for light-colored material. [C No. 22.] *Combination "A." Egg Albumen Glair and Bleached, Refined Shellac Size.* This combination size is the result of persistent efforts to combine the good qualities of shellac size and glair, and at the same time escape the defects that are possessed by both when used singly.

The two substances may be mixed in different proportions, but extensive experiments have proven that the following formula gives the best results on moroccos and levants:

Ten parts of glair to six parts of shellac. The glair should be poured into the shellac size; stir the latter briskly with a folder while gradually adding the former. In the preparation of the glair to be used in this combination, proceed thus: To half a cupful of egg albumen add three and a half cupfuls of cold water and two teaspoonfuls of milk; let stand, skim, stir up, allow to settle, and pour off, as explained in No. 20.

This combination is especially suitable for leathers of Class III, but may be used in all cases where glair can be employed. It can be used in connection with washes Nos. 2, 6 and 7, and all of the fillers enumerated, excepting Nos. 9 and 11.

It is not advisable to prepare this combination in large quantities, as it soon decomposes.

[No. 23.] *Liquid Fish Glue.* Some finishers and stampers in-

Glair  
and Shellac  
combined.

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FORMULAS FOR BOOKBINDERS

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The question is: Which leathers should be filled and what filler should be used?

According to the nature of both, the leather as well as the work, the use of a filler may be advisable or not. If a filler is necessary, washing may precede the application, or the washing may be omitted. Which method should be employed is a question to be left to the judgment of the finisher. I will give some directions, however, which you may safely follow. To render them more comprehensible I will divide finishing into two classes: Decorations, consisting of both blind and gold tooling (combination work); and such work as calls for gold tooling only. In referring to these two classes hereafter I shall merely specify "Combination Work," or "All Gilt," as the case may be. The leather I will arrange into divisions and refer to them as Class I, II and III respectively.

*Class I* comprises genuine Russia; American Russia (cowhide); and buffings in blank book finish, calf finish and water-grain; English, American and German calf; roans and skivers in paste, water, straight grain and calf finish; law and blank sheep, and skivers; pass-book skivers, title skivers and batwings.

*Class II* comprises American Russia (cowhide) buffings; calf, roans and skivers in seal, levant and morocco grain.

*Class III* comprises genuine levant of French, German, English and American tannage, in plain colors and marbled; Turkish and gros-grain morocco in plain colors and marbled; Persian (India sheep), in levant, seal, morocco and Vienna grain, both in plain colors and marbled; Bock morocco.

Finishing and  
Stamping.

General information relating  
to the filling  
of leather.

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## FORMULAS FOR BOOKBINDERS

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*Combination Work on Class I Leather.* (Decorations consisting of both blind and gold tooling.)

Blind in such portions of the design as will be required as guides for the finisher; in some instances, however, a few marks with the folder answers this purpose. Now apply the "wash" and blind-tool while considerable moisture remains in the leather; only then can a nice, deep and uniform color of all impressions be produced.

Next retouch with luke-warm tools all impressions which are to be worked in gold. This, of course, is not necessary if these impressions are still deep and plainly visible, but in washing they are often nearly obliterated. However, care must be taken not to use the tools so hot as to discolor the impressions.

A starch or flour paste filler from the list which follows is now applied, and when the surface is dry, the book can be given one coat of glair (one coat is always sufficient).

Lay on gold as soon as the glair is dry and hard; tool, clean up and retouch with moderately hot tools the blind-tooling.

¶ If the leather is to be polished, it may be done now or just before laying on, after glairing.

*Combination Work on Class II Leather.* Substitute one of the glue fillers in the following pages for the starch or flour paste filler called for under Class I; in all other respects follow exactly the directions given there.

*Combination Work on Class III Leather.* If the leather is hard and rough, proceed as directed in Class II. Should the leather be soft and pliable, however, resembling leather as is used in the making of fine kid gloves, it will be best not to

Finishing and  
Stamping.

General information relating  
to the filling  
of leather.

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## FORMULAS FOR BOOKBINDERS

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It cannot be kept in stock in crushed form, for upon exposure to air it soon melts and runs together in one solid lump. So it is crushed only as ordered, and should be made into size as soon as received. However, as already stated, you can buy bleached and refined shellac in bars and crush it yourself, but the fresh, prepared shellac from the factory is much more readily dissolved.

Ammonia carbonate (smelling salts) used for this purpose should be procured from a wholesale drug house, to insure its having full strength. It must be kept in an air-tight jar or bottle, as it rapidly weakens when exposed, and in great degree loses its power as a solvent. Take two ounces, as stated, tie it up securely in tough paper of any kind, place it upon an iron plate (such as the forwarder uses for rounding his books) and pulverize it with a hammer. Then add it to the eight ounces of crushed shellac already in the vessel.

Oil of spike can be had of druggists and dealers in technical supplies. It should be as clear as crystal.

The cooking should be done in an agate- or enameled-ware vessel, and be sure to have the water boiling hot when adding it to the shellac.

When preparing large quantities it is profitable to work with two receptacles. While one batch is on the stove simmering, another can be made ready in the second vessel. In this way the work can be greatly facilitated.

[No. 21a.] *Orange Shellac Size.* To one pound (16 ounces) of orange shellac add four ounces of powdered borax and two quarts of water. Let it simmer in a double boiler until every

Finishing and  
Stamping.

Glair and Size.

Shellac Size.

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## FORMULAS FOR BOOKBINDERS

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tools too hot; in fact, they should be just lukewarm. For quick work on black and dark red half-roan bindings, this size can hardly be excelled. In this case, wash your books with No. 2, fill with No. 8 or 10, and give one coat of size. It may be used for moroccos and levants, but it is hardly a suitable size for these leathers. If it is to be used, wash with No. 7, fill with either No. 16 or 18, and in case the leather is to be left grained (not polished), add from one to three parts of water to every six parts of size. For stamping cloth or paper with either gold, white or yellow metal, the size may be used either full strength or diluted with from one hundred to one thousand per cent of cold water; the latter proportion would be suitable for dull-finished papers to be stamped in gold. In all instances where a glossy finish is desired, the size must be used in its original consistency, or nearly so. As already stated, great care must be taken in sizing, to prevent streaking; this is especially necessary when the size is used in a diluted state. A rather fine-textured, soft, medium-sized sponge will be found suitable for producing good results, especially in the sizing of large surfaces. Always bear in mind that to go over the same place twice in sizing means "streaks."

A few more words about the preparation of this size, and the chemicals involved: Bleached and refined shellac can be purchased in bars at some painters' supply house, and then crushed with an ordinary hammer. I prefer to buy it already crushed from Wm. Zinsser & Co., 197 William St., New York, and always order it in lots of five pounds. As the size keeps forever, there is no risk in preparing large quantities at a time.

[ 22 ]

Finishing and  
Stamping.

—  
Bleached  
Shellac Size.

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## FORMULAS FOR BOOKBINDERS

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apply any filler. In place of it you may wash the leather lightly with the glycerine and rose-water mixture.

*All-Gilt Work.* (Decorations calling for gold tooling only). In this work you have to merely omit from the rules laid down for Combination Work such directions as have reference to blind-tooling. Otherwise follow those rules exactly. ¶ The following eleven preparations under numbers eight to eighteen, inclusive, are exceptionally well suited for the purpose under consideration, viz., for filling leather which is subsequently to be glaired and finished or gold tooled. Of these, numbers eight to eleven, inclusive, are especially adapted for leathers of Class I, although they may, with slight modifications, in some cases, be used on other leathers with good results. Experience has taught me that numbers twelve to eighteen, inclusive, will serve their purpose better if used for leathers of Classes II and III.

### FORMULAS

[No. 8.] *Flour Paste.* I strongly object to the use of patent paste for this purpose. Without exception, this paste dries too quickly and leaves the leather streaky and soiled. Therefore let me urge you to make a little of the old-fashioned kind—alum paste. Add a little powdered alum to the wheat flour, and a few drops of glycerine just before boiling, or prepare according to the paste formula which you will find in another part of the book.

For leathers of Class I, reduce with water to the consistency of thick syrup; for leathers of Classes II and III, if its use is

[ 11 ]

Finishing and  
Stamping.

—  
General information relating  
to the filling  
of leather.

Fillers.

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FORMULAS FOR BOOKBINDERS

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insisted upon, reduce with water to the consistency of cream. [C No. 9.] *Flour Paste with Vinegar*. Use the same paste as for No. 8, and reduce with vinegar instead of water. Otherwise follow directions as given in No. 8.

Finishing and  
Stamping.

—  
Fillers.

[No. 10.] *Starch Paste*. Prepare by boiling common rice starch as if for starching clothes. Reduce with water as in No. 8. I can recommend this pure and simple starch filler principally for sprinkled work, and especially where iron is used for sprinkling. But use it only as long as it is sweet. It will sour quickly, and in warm weather it is not advisable to prepare more than you expect to use the same day.

[No. 11.] *Vinegar-Starch Paste*. Below I recommend Elastic starch for this preparation. However, common lump starch (rice) may be used with equally good results.

Simply boil starch in vinegar instead of water. It should be about the consistency of syrup. Place a heaping teaspoonful of Elastic starch in a quart china bowl and add to it a sufficient quantity of cold vinegar to form a thin paste. Next, put a pint of vinegar into an agate-ware vessel, bring it to the boiling point and add it gradually to the starch mixture in the bowl, stirring briskly with a stick of wood to prevent the formation of lumps. It should be kept in a preserving jar, never in a tin dish, nor must it be stirred with a knife unless the same be nickel- or silver-plated. Extreme care is also necessary in the selection of a dish in which the vinegar is to be boiled. An agate-ware vessel is the most suitable, but its lining must be perfect, and not chipped off here and there, for we all know what the combination of iron and vinegar means

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FORMULAS FOR BOOKBINDERS

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same proportions exactly as was given in Formula No. 19. [C No. 21.] *Bleached and Refined Shellac Size*. Put eight ounces of crushed, bleached and refined shellac into a one-gallon vessel, add to it two ounces of ammonia carbonate, commonly known as smelling salt, and two teaspoonfuls of oil of spike, which should be absolutely colorless and clear as water. Mix it well with either a folder or a stick of wood, and add gradually one quart of boiling water, stirring briskly for a few moments, until the mixture ceases to sizzle. Place the vessel on a stove and allow the solution to simmer until every particle of shellac has been dissolved; then add another quart of boiling water and strain through a piece of coarse cloth into an earthen crock, where it may be kept. However, to prevent thickening, it is better to bottle it.

In this consistency it is just right for finishing, and makes an admirable size for leathers of Class I, or, in fact, for any material where gloss is not objectionable. But it must not be used over acids and vinegar, as it will coagulate at once and spoil the work. If this has happened accidentally, the size may be removed with a sponge and a weak solution of ammonia and water, but, by all means, it is better to avert it, as washing with ammonia is apt to injure delicate shades of leather. You must also be careful not to go over the same spot a second time in sizing, as this is liable to produce streaks. But when you have adapted yourself to these few characteristics, you will prefer this size to anything else. It is waterproof and fetches a high polish with moderate heat. Never apply more than one coat of size, and do not use the

Finishing and  
Stamping.

—  
Bleached  
Shellac Size.

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## FORMULAS FOR BOOKBINDERS

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¶ For stamping leather, dilute this glair with from twenty-five to one hundred per cent of water; for cloth, one hundred to three hundred per cent of water may be added, according to the material and the work.

Finishing and  
Stamping.

Commercial Egg  
Albumen Glair.

[No. 20.] *Commercial Egg Albumen Glair.* Put half a cupful (one-fourth pint) of the purest egg albumen procurable into a quart china bowl, add one even teaspoonful of acetate of soda, three cupfuls (three-fourths of a quart) of cold water, and two teaspoonfuls of fresh milk. Stir up well with a folder and let stand until the following day. Then remove the scum with the straight edge of a piece of reasonably stiff paper, stir again thoroughly, as a goodly portion of the egg albumen will be found in a thick mass at the bottom of the bowl; let it stand at least five hours, or better, over night, so that all impurities may settle at the bottom. When this has taken place, and the solution appears perfectly clear, pour off into another bowl, taking care not to disturb the useless sediment. Now add a half-teaspoonful of oil of wintergreen and a like quantity of oil of sassafras, beat the mixture well with an egg-beater, and pour it into an earthen crock. In this state it will keep indefinitely, be pleasant to use, and not froth a great deal. If convenient, keep the crock in a dark, cool place; on the floor under your work bench will do. Take from the crock only as much size as you intend to use the same day and never under any circumstances return to the crock glair that has been used, no matter how clear it may be. This rule applies to any other preparation. The crock should be covered.

¶ For stamping purposes, dilute the glair with water in the

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## FORMULAS FOR BOOKBINDERS

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when applied to leather, especially if delicate shades. The least trace of iron will more or less darken light shades of leather, so be cautious. Put into a preserving jar and stored away in some dark, cool place, this preparation will keep indefinitely. Numbers 12 to 18, inclusive, comprise glue fillers. As the raw material varies much in quality, the consistency of these preparations must be modified to meet the requirements of the work. Moreover, most finishers take glue from the nearest pot, which already contains more or less water. Therefore, I shall not attempt to give exact proportions for the preparation of this line of fillers. With a little practice and judgment the finisher will soon learn to find the consistency most suitable for the different classes of work. These fillers are especially adapted to leathers of Classes II and III.

Finishing and  
Stamping.

Fillers.

[No. 12.] *Isinglass* (a certain brand of Russian fish glue). In its raw, dry state it comes in broken tablets, generally about three-sixteenths of an inch thick, with uneven surfaces and of a cream color. In this state it is not very soluble. It can, however, be procured in a prepared state, usually shredded. This article, known as prepared isinglass, can be bought of Messrs. William Zinsser & Co., 197 William St., New York. ¶ Prepare thus: Fill a half-pint cup half full of prepared isinglass (packed moderately solid), add an even teaspoonful of cream of tartar; now fill cup three-fourths full with boiling water, stir well and add sufficient grain-alcohol to fill cup; stir again and strain through a piece of coarse, unbleached toweling, preferably an old piece. A pinch of salicylic acid or a few drops of formaldehyde, added just before the boiling

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## FORMULAS FOR BOOKBINDERS

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water is poured in, will help materially in keeping it sweet for some time. It is now only necessary to dilute it with warm water to the consistency required. It should be used while it is rather warm.

Finishing and  
Stamping.

Fillers.

[No. 13.] *Gelatine*. There are many brands of this article on the market, varying greatly in quality and price. For this particular purpose a fancy article is not required, still, the question of cost is of no serious consideration, because a pound will be sufficient for a long time. An imported gelatine of "gold label" quality, at about sixty cents per pound, will be found a good article. It comes in the form of very thin tablets, measuring about three inches in width and nine or ten inches in length, and should be nearly as clear as glass. Break up in small pieces one of these tablets into a half-pint cup, and fill with hot (not boiling) water. This consistency will be about right for any kind of leather. It must be applied quite warm. I cannot recommend gelatine as a good filler; I merely quote it here because some finishers insist upon using it.

[No. 14.] *Le Page's Glue*. This is a superior grade of fish glue, prepared and sold in liquid form in cans of various sizes. It makes a fine filler, but is rather quick-drying and a little brittle; this, however, can be remedied somewhat by mixing in a little glycerine before diluting with the necessary amount of water; warm water is preferable. It can be used warm or cold. It may also be used for metal stamping.

[No. 15.] *Ordinary Glue* (hide or bone). Get a cupful of rather warm water and add to it from the nearest pot a few drops of hot glue—from 10 to 25 drops, according to the work.

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## FORMULAS FOR BOOKBINDERS

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by combining these two ingredients in certain proportions. Absolute perfection is an utter impossibility, but the combination referred to comes pretty close to it. The respective formulas give the way they should be combined so as to get the best possible results. Fifteen formulas for preparations especially adapted for finishing and stamping, are here given.

Finishing and  
Stamping.

White of Egg  
Glair.

### FORMULAS

[No. 19.] *White of Egg Glair*. To the white of one egg add as much pure cider vinegar as would be equal in volume to one-sixth part of the white of egg. In other words, combine one part vinegar to every six parts of white of egg; then add six drops of oil of wintergreen, six drops of oil of sassafras, and six drops of syrup of squills. For a receptacle use a china or earthen bowl (never tin). Beat the mixture well with an egg-beater, and let it stand over night. In the morning remove the crust which has formed on the surface, pour off slowly, taking care not to disturb the white sediment at the bottom, which is useless and must be thrown away, and put the clear liquid into a bottle or well-covered earthen crock. Keep it in a dark, cool place, and never take out more glair than would be used in half a day, for it readily evaporates and thickens upon exposure to air. Do not put any back into the receptacle after it has been used, even if it is not soiled. If too much oil is added, the glair will soon coagulate, that is, it will thicken and turn white. In this state it is, of course, useless. However, the cause of this trouble may also be attributed to the oil having been of more than usual strength.

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## FORMULAS FOR BOOKBINDERS

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beyond question, the best gold lustre obtainable. It brings out very clear impressions and possesses the admirable quality of fixing the gold more permanently than any other substance, if the tooling is done with the proper heat. The reason it is remarkably suitable for this purpose is easily demonstrated. If you drop a small quantity of white of egg into boiling-hot water, it is almost instantly converted into an insoluble, hard mass, a substance which is no longer affected by any acid, water, or even high temperature.

This same process of transformation goes on in tooling if the proper heat is employed. This accounts for the fact that the gold on law book titles, stamped with egg glair, is not affected by the subsequent polishing, although the gold rests on the very surface of the leather.

With all these excellent qualities, glair would be highly commendable, did it not possess many characteristics which render it objectionable for finishing purposes—at least for certain divisions of this work. I will enumerate the weak points of glair: It is very sensitive, requiring every impression to be struck with absolute steadiness and without the slightest hesitancy; it is not waterproof, and the finished work will easily stain in handling, leaving finger-marks plainly visible. When the glair is once dry, only very hot tools will affect the fixing of the gold, and if mending is necessary, it can only be accomplished by a re-glairing of the imperfect impressions.

In comparing the advantages and disadvantages of the two mediums, shellac size and glair, the question how a really good finishing size can be prepared, is easily answered, viz.,

Finishing and  
Stamping.

—  
The properties  
of Glair  
critically  
considered.

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## FORMULAS FOR BOOKBINDERS

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[No. 16.] "*Glutino.*" This is one of the many flexible glue preparations now sold. It is extensively used for lining-up, head-banding, etc. White, Sons & Co. of Boston have the sole agency for this particular brand called "*Glutino.*" I mention this brand, because in my practice it has given me very satisfactory results; but there may be other brands equally good. It has only to be dissolved in a little hot water, like ordinary ground glue, and then further diluted in the same proportions as given in No. 15; and like it, should be used warm. As a filler it has many fine qualities which place it at the head of the list of glue fillers, especially suitable for levant and morocco.

[No. 17.] *Parchment Glue.* Obtained by boiling parchment scraps, either calf or sheep, in water. Use a double boiler, to prevent burning. It is a slow process, but the result is a glue, or size, of excellent quality. As a filler it should be applied warm, and must not be used strong.

[No. 18.] *Fish Glue.* Ordinary liquid fish glue (unlike Le Page's glue) is not obtainable at general stores, and has to be ordered either of exclusive glue dealers or of technical supply stores. Diluted with either water or vinegar, sufficiently to merely impart a little color to the water or vinegar, whichever is used, it makes an effective filler for levant and morocco. If liquid fish glue cannot be procured, use the dry article. This can be bought of nearly all local druggists. It usually comes in long, narrow pieces, with pointed ends, of all sizes, and irregular shapes, about three-sixteenths of an inch thick; is of a yellowish brown color, and decidedly opaque. For direc-

Finishing and  
Stamping.

—  
Fillers.

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## FORMULAS FOR BOOKBINDERS

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tions of dissolving the same, see "Fish Glue," under the heading, "Sizes and Glair."

[No. 18a.] *Dennison's Glue*. A superior brand of liquid fish glue, which, diluted with either water or vinegar, or both, makes a good filler for levant and moroccos.

This ends the chapter on fillers. As the chemicals and ingredients enumerated in this list have in my long practice proven especially adapted for this purpose, I am confident that they will be serviceable in all instances.

Finishing and  
Stamping.

Fillers.

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## FORMULAS FOR BOOKBINDERS

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### GLAIR AND SIZE

**A** SOLUTION of shellac in water is in some respects an excellent finishing size, possessing the following good properties: It imparts a brightness and lustre to the gold impression, preserves the original brightness and clearness of the leather, does not stain to the touch, is quite water-proof and polishes well. But the disadvantages of this size are of such a nature and proportions as to render the practicability of the preparation questionable as a finishing size. These are: It will readily coagulate if brought into contact with vinegar, or any wash or filler containing even the slightest trace of acid. It is true that this can be overcome by washing with the glycerine and rose-water "wash," or any wash slightly alkaline, and using a filler containing neither acid nor vinegar. But the main objections, which time and study have not been able to remedy, are the "filling in" of the gold and the fact that the heat of the tools must be very closely watched, rendering rapid working impossible. Thus it will be seen that such a size would not be entirely satisfactory to the needs of the busy finisher, to whom "time is money." **Q** A really good finishing size must, in addition to all the good features contained in shellac size, possess the property of bringing out every impression clearly, without even a tendency to "fill in," and above all, in order to permit rapid working, it must be qualified to fix the gold perfectly under varying degrees of heat.

*The Properties of Glair.* Glair, made of the white of egg, or egg albumen, both being practically the same, produces,

Finishing and  
Stamping.

Glair and Size.

Shellac Size  
not satisfactory  
for Finishing.