

# How to Choose a Hardwood Floor Finish

## — One That's Perfect For Your Home

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One of the most common questions we get asked is – What type of finish should I put on my floors?

That's a great question to ask for two reasons, first because it can greatly affect the overall look and color of your floors and second because it has a great impact on the durability of your floors. So obviously choosing the appropriate finish for you and your floors is important.

In this article we will look at the different finishes available and discuss the pros and cons of each to help you decide which is best for your hardwood floors.

*If you're short of time and you don't need a long, detailed answer, you can skip to page 5 and read the section "So What Finishes Do We Recommend?"*

"Finish" is the layers of coatings that are applied in liquid form to your hardwood floors to help protect them from wear, grit and moisture. They also accentuate the wood's natural beauty and color and provide a nice sheen.

These finishes can be split up into three basic groups, surface finishes, penetrating finishes and a new breed of finishes that have come out in the last few years that we'll refer to as hardwax oil finishes.

Let's discuss them one-by-one...

### 1. Surface Finishes

Surface finishes are very popular because they are durable, water-resistant and need very little maintenance.

These finishes are basically combinations of resins mixed with solvents or water. The solvents or water allow the resins to be fluid. Once the finish is applied the water or solvents evaporate and leave the resin to set up a thin "plastic" film on the surface or the wood.

They're commonly referred to as urethanes or polyurethanes because that is what remains on the surface of the wood to form the protective coating. This creates a protective barrier between the wood floor and the surrounding environment.

When you walk on the floor you are really walking on the finish. As wear occurs on the floor, it's the finish, not the wood, that's wearing away.

They're generally available in high-gloss, semi-gloss, satin and matte sheens.

Surface finishes in general are very durable and make cleaning easy, but they can be difficult to repair and patch without refinishing the entire floor.

There are four basic types of surface finishes available for site finished floors:

#### Oil Based/Oil Modified Polyurethane

Oil based finish is a solvent based urethane. In the past this was the most common surface finish used in Naperville and the surrounding Chicago areas. It was durable and the wood turned a beautiful rich amber color when it was applied.

Recently the powers to be have begun to outlaw this type of finish because of the high VOC's (Volatile Organic Compounds). Finish manufacturers have been scrambling trying to come up with new formulas that meet the new low VOC laws.

The downside of oil based finish is that it has a somewhat strong solvent smell for a day or two after application and it will change color and darken over time when exposed to sunlight.

#### Water Based/Waterborne Polyurethane

Water based finishes are polyurethanes, acrylics or a blend of both. They come as either a single or a two component product.

The two component products have a separate catalyst that is added to the finish just prior to

These finishes are the way of the future

use. They are fast drying and the finish is clear when dry.

They have far more wear resistance than most oil based finishes. Being water based, they have extremely little odor. There are no solvents released as it cures, only water vapor. They also have the lowest VOC's among surface finishes.

Two component water based finishes are among the most advanced types of finishes. Every finish manufacturer is putting lots of effort into making these the best finishes available and these finishes are the way of the future.

They're among the most durable finishes as well. They are generally the most resistant to chemicals, scratches and abrasion when compared to other types of commonly used residential finishes.

Of all the finishes, high-end two component water based finishes are the most expensive. Most have the benefit of having built in UV inhibitors so your floor won't change color anywhere near as fast as it will with an oil based finish.

Cheap single component water based polyurethanes (found in big box stores) are nowhere near as durable as professional systems. These low quality finishes won't last as long and are affected by UV much quicker .

### Moisture Cured Urethane

Moisture cure is a solvent based urethane finish. As its name implies, it reacts with moisture in the air to cure.

It's one of the most durable and moisture resistant finishes available. It's mainly used on commercial projects. It is extremely difficult to apply, very toxic and has an extremely high amount of fumes and smell.

Not many homes have this finish, it's used more in commercial settings and it's now banned in many areas because of the very high VOC's.

### Swedish Finish/Acid Cure

Most commonly referred to as Swedish finish, acid cure is a very durable finish. This finish was quite popular in Naperville and the Chicago area years ago. You may recognize the name Glitsa, this is a Swedish finish.

It provides a nice amber color to the wood similar to oil based finishes.

Swedish finish has extremely strong fumes that smell terrible (similar to moisture cure) and comes with a very high VOC level. It will also change color over time and it takes quite a long time to cure.

## 2. Penetrating Finishes and Wax

Penetrating finishes, as the name implies, penetrate into the wood pores and then harden to form a protective penetrating seal.

So instead of walking on the finish, like you would with the finishes we talked about above, you are actually walking on the actual wood and it's the wood that wears down, not the finish.

These types of finishes include tung oil, linseed oil, Danish oil and other specialty oils. Most of these oils take a much longer time to dry compared to other finishes.

Penetrating finishes don't offer a lot of resistance to staining from solvents, water, alcohol, and urine. But on the positive side, most scratches can easily be repaired by simply recoating the affected area.

Another advantage of penetrating finishes is that they are flexible and move with the wood, this can be beneficial especially on softer or wider plank floors and in areas with high swings in humidity like Chicago where wood moves a lot.

After some types are applied, wax is sometimes buffed into the floor to give them a higher sheen and for durability. In this case, wax needs to be regularly maintained with additional thin applications of wax buffed into the floor.

Only certain cleaners can be used on the floor with these penetrating oil finishes otherwise they will be ruined.

### 3. Hardwax Oil Finishes

This group of finishes are the new kids on the block. They've been around for a few years here in the States and longer in Europe (where they originate from). Finally we have enough real world data and experience with them to be able to talk about and recommend certain ones with confidence.

These finishes are blended from natural, environmentally friendly ingredients like plant oils and waxes.

One of the biggest benefits is that they are extremely low in VOC's. In fact a few of them have absolutely no VOC's at all. That's good for the environment and good for the nose as well. At the very most they will have a slight cooking oil aroma for a little while as they dry.

Unlike surface finishes that lay on top of the wood and penetrating oils that sink into the pores of the wood, hardwax oils are designed so that they impregnate the pores of the wood *and* leave a protective surface—although not a hard “plastic” looking or feeling one. The finished product is more like a hand rubbed velvety matte look.

Some are 1 coat systems and others are 2 or 3 coat systems. There's also the option to add a little sheen with additional steps if you like.

One of the great things about these finishes are that they combine a lot of the benefits of surface and oil finishes and they remove many of the disadvantages.

For example, hardwax oils are much easier to spot repair than surface finishes. They don't have the headache of constant maintenance and waxing like penetrating oils.

Plus they don't stink up the house and drive you

out of your home like some finishes will.

We've been spending quite a bit of time and effort testing them the last few years\* and we feel there is definitely a very bright future for hardwax oils in the professional refinishing world.

*\* We have links to our 4 month Hardwax Oil Experiment at the end of this report.*

### So How Do You Go About Choosing Between All Of These Finishes?

Choosing a finish is not an easy or obvious decision to make as there are many factors that you need to consider about each of them.

We'll talk about each of these and then line up each finish in a side by side comparison chart.

### Durability

One of the big deciding factors when it comes to choosing between these finishes is their durability and how they will hold up over time.

Below we've listed the three areas that affect the durability of a finish:

#### Abrasion Resistance

Abrasion resistance refers to how well a finish stands up to everyday wear from shoes, dirt or other things rubbing and wearing against the finish.

#### Scratch Resistance

Scratch resistance refers to the finish's resistance to damage beyond everyday wear. Things like furniture and kitchen appliances being dragged across the floor, rocks brought in by shoes and pets running across the floor with unkempt claws etc.

#### Chemical Resistance

Chemical resistance is the measure of a finishes ability to be unaffected by a variety of chemicals such as nail polish remover, blood, coffee, wine, ammonia (pet urine) and alcohol within an allotted time.

These finishes are the new kids on the block

**Hardwood Floor Finish Comparison Chart**

Type of Finish ⇨	2 Part Water	Single Water	Oil Based	Swedish Finish	Moisture Cure	Penetrating And Wax	Hardwax Oils
<b>Durability</b>							
Abrasion	5	4	3.5	4.5	5	3	4
Scratch	4.5	4	3.5	4.5	5	3	4
Chemical	5	5	4	5	5	2	4
<b>Other Factors</b>							
Looks	4	4	5	5	5	5	5
Aging/Yellowing	5	4	3	3	3	5	4.5
Fumes/Smell	5	5	3	1	0.5	3	5
Maintenance	4	4	4	4	4	3	5
Time	5	5	4	3.5	3.5	3	5
<b>Total Out of 40</b>	<b>37.5</b>	<b>35</b>	<b>30</b>	<b>30.5</b>	<b>31</b>	<b>27</b>	<b>36.5</b>

The numbers above are the general average and our personal opinions for each finish type. Specific products may perform better or worse.

**5 – Excellent    4 – Very Good    3 – Good    2 – Fair    1 – Poor    0 – Horrible**

**Other Factors**

While durability is a very important factor in a finish, there are other things to consider as well when choosing which finish to use.

**Looks**

You want to choose a finish that accentuates the wood's natural beauty and color and provide a nice sheen. Most surface finishes are available in four sheens: gloss, semi-gloss, satin and matte. Penetrating finishes have a beautiful hand rubbed look unless they are waxed and buffed. Hardwax oils can be either matte or satin.

**Aging/Yellowing**

As floors age some finishes start to yellow or amberize because of the affect of UV rays. This will be especially noticeable in areas where you have furniture and area rugs that have been moved after a long period of time.

**Fumes/Smell**

More and more people are concerned about the environmental impact and emissions (VOC's, solvents and off-gassing) from the products they use. This is a good thing for not only the protection of our planet but also for your families and pets health.

Some of these finishes have such strong off-gassing as the solvents evaporate that you can't be anywhere near them for days, sometimes weeks if you're very sensitive. Others have zero VOC's and extremely minimal smell.

**Maintenance**

You also want your floors to be easy to look after, clean and maintain.

Surface finishes provide a hard, durable surface that is very easy to sweep, damp wipe and keep clean in general. If properly maintained they

provide excellent moisture and chemical resistance. However, when the surface is scratched or damaged, they can be more difficult to repair without professional help.

Penetrating finishes on the other hand can be easier to repair if they've been scratched, most scratches can be repaired by simply recoating the affected area. But they offer minimal resistance from water and chemical damage and thus need to be maintained often.

Hardwax oil finishes really excel in this regard because they have great moisture and chemical resistance and are also easy to repair and maintain.

## Drying Time

You want your floors looking great but you also don't want to be out of your home for any longer than you need to be. Because of this the drying, application and curing time becomes important, especially if you need to move back in a hurry.

## So What Finishes Do We Recommend?

That's a lot of information to take in about finishes. It may be hard to believe, but we haven't even begun to scratch the surface when it comes to information about all of these finishes.

This article could be ten times longer if we wanted to provide every single detail.

We've had the benefit of testing all of these finishes in many different circumstances over many years. We continually test new products that come on the market as we like to be up to date with what's happening in the industry so we can provide the best options for you and your floors.

So what finish systems do we use and recommend at Tadas Wood Flooring Inc?

Well, we ruled out moisture cure and Swedish finishes (like Glitsa) because of their toxicity,

safety concerns (fire hazards, combustibility etc) and horrible smell and fumes from the solvents evaporating as they dry. We don't like subjecting ourselves to that, let alone others.

Yes they're durable finishes, but the two component water based finishes are just as durable and they don't have the stinkage or safety factor.

We also ruled out penetrating finishes because most people in the Chicago and Naperville area are used to the convenience of surface finishes and aren't willing to spend the time maintaining a penetrating oil or wax floor like their grandparents were.

A lot of the floors we refinish here have been sanded many times already and are now quite thin, so walking on the actual wood and wearing it down would not be a good idea either. Plus they take far too long to dry and cure.

We also don't use cheap single component water based finishes you can find in big box stores because they're *nowhere* near the quality of professional finishes. Some guys will use these to save themselves some money but they end up cheating their customers out of a strong, long lasting floor.

Recently, we've also had to stop using oil based finishes as well. The new lower VOC finishes just aren't up to the standard we have promised to maintain for our clients. It's unfortunate really because these were among the nicest looking finishes available. They had a beautiful amber glow and were quite durable for the investment.

This may change in the future though as the manufacturers keep trying to make them work. We'll be keeping on top of this and if they come up to our high standard once again we may offer them once more in the future.

So depending on your answers to the questions below, we'll recommend 3 different finishes...

1) either a **high quality single component water based** finish or 2) a **commercial 2 component water based** finish or 3) a quality **hardwax oil**.

We've tested all of these finishes over many years

Our answer will depend on a number of factors:

- What type of wood floor you have and what setting are they in—residential or commercial?
- How many kids/pets/customers do you have using and abusing your floors?
- Will your friends, family or customers be walking on your floors with dirty/wet/muddy outside shoes?
- How regular will you be at cleaning them?
- Do you want the best finish available regardless of cost, or would you like a tough finish with a more reasonable investment?
- How “green” do you want to go?
- Do you want your floors to be easily repairable?
- What type of look and sheen are you going after for your floors—shiny gloss, satin, matte or a hand rubbed look?

## High-End Single Component Water Based Finish:

As we talked about at the start of this article, high-end water based finish systems are on the cutting edge of technology and are among the most durable finishes available.

But to be completely upfront with you, I'll go through the minor drawbacks of these finishes so you have the full picture.

One downside to water based finishes, if you have oak floors, is the color. If you just apply a clear water base finish to red or white oak, it looks terrible. It's dull, flat and lifeless.

So... your floor will either need to be stained first or we can use an oil based quick dry sealer that's compatible with this finish as the base coat. This way you'll get a rich, deep color and durability.

Another downside is the price. These are among the most expensive finishes. A gallon of high-end finish is in the triple digits—compared to maybe \$30.00 for cheap “handyman” finish.

They're also more far challenging to apply because of their extremely fast drying times.

This means if your finisher isn't an expert at applying them and he messes a coat up, the entire floor will have to be re-sanded (meaning more flooring removed) and the finish reapplied from scratch.

Now for the good points...

Like we've already discussed, these high-end finishes are very durable, they provides a very nice build layer and they're very easy to clean and look after.

Another huge benefit they have is they don't have the horrible fumes all the other solvent and oil based finishes have (although the stain and sealer will have a slight odor to them if they're used).

They also have built in UV inhibitors, so they won't change color anywhere near as quickly as the oil based finishes.

**Our Choice:** After years of testing dozens of professional quality finish systems we have finally decided on a product from a German company called Pallmann. The finish is called **Pall-X 96**. We're convinced this is the best single component water based finish on the market today.

Numerous tests have been done amongst high end finishes and this system constantly ranks higher than even many of the very well known 2 component finish systems commonly used here in the Chicago area.

If you're looking for a finish with amazing durability, great looks, very low VOC's and is easy to clean and take care of, then this system is going to be an excellent investment for your floors.

This finish is going to be an excellent investment

## Commercial Grade 2 Component Water Based Finish:

If you want the best of the best in surface finishes, this is it. It's called 2 component because it's made of two parts — the finish and a catalyst.

The catalyst is an industrial grade hardener and when it's mixed into the finish, the chemicals blend and mix to form an extremely tough and extremely durable and scratch resistant floor system when it's dry and cured.

This is the finish we use for our commercial projects like retail stores, hotel lobbies, dance floors, cafes and restaurants.

We also offer this system to homeowners that want the absolute best surface finish system they can invest in for their home.

If you have a high traffic home with lots of dogs or children, or you're always walking across your wood floors with your dirty shoes, then you might want to consider this commercial grade option.

You may also want to look into investing in this finish system if you have old antique hardwood floors that have been sanded and refinished many times before and now don't have a lot of wood left to sand. In this case you will want to protect what flooring you have left with the best finish available.

The downside to this finish system — expect to pay around 30% more compared to other finish systems.

**Our Choice:** After considerable time and expense spent testing of dozens of two component finishes we decided on a product from the same German company, Pallmann. The finish is called **Pall-X 98**.

This is as good as you can get if you're looking for a surface finish that looks great, is

low in VOC's, is incredibly durable, won't yellow and is easy to clean and maintain.

## Hardwax Oil Finishes:

These relatively new finishes have been a big welcoming surprise to us over the last two years. As you can see from the Finish Comparison chart on page 4, their overall score comes in second only to the 2 component water based finishes.

Like the other two finish systems we recommend, these finishes are highly water resistant, very durable and they're easy to look after and maintain.

They have a lot of things going for them over conventional surface finishes.

For one thing, they are the most "green" and environmentally friendly finishes available at the moment. One that we use and recommend has zero VOC's!

The highest one is 50g/liter — compared to oil based finishes that are around 500g/liter and Glitsa that has 725g/liter!

That means no more being driven out of your home for days on end by strong fumes and toxic chemicals.

Because hardwax oils don't form a plastic film that sits on top of the floor surface, it makes them far easier to spot repair than surface finishes if you ever do any damage to them. You can repair the damage in the middle of a room and it will be virtually impossible to see if you didn't know it was there.

To do the same with a surface finish we would need to re-coat the entire area so we could ensure that the new finish and sheen blends in properly.

These finishes can be used in domestic as well as high traffic commercial applications. In fact they're becoming very popular in commercial projects because they dry fast and don't stink up the whole building.

If you want the best of the best in surface finishes, this is it

With certain systems (particularly Rubio Monocoat), the custom colors and mixes you can achieve is incredible. If you want something completely out of the ordinary and unique then you'll definitely want to consider this option.

The downsides — if you love super glossy finishes then hardwax oils won't make the cut.

The highest gloss level they can attain is a satin sheen, usually with extra steps in the finishing process. But most people that choose hardwax oils love them for their hand-rubbed matte, natural wood look.

And unlike high quality surface finish systems, hardwax oil finishes need to be properly maintained and refreshed several times throughout their life to maintain their protective coating.

But this is a good thing too because if you stay on top of the maintenance schedule you potentially will never have to sand your floors again. Just keep looking after them, spot repair damaged areas, do the proper maintenance coats and the finish should last a very long time — as long as you still take good care of the actual wood and don't gouge, chip and dent your floors.

A hardwax oil system could be perfect for your home

**Our Choice:** After 4 months of testing all the leading hardwax oil finishes we have decided to offer 3 options (depending on the look, color and sheen you are hoping for) — **Pallmann Magic Oil** (our #1 choice) followed by **Rubio Monocoat** and **OSMO**.

You can see the results of our months of testing and more detailed information about these finishes here:

<http://napervillehardwood.com/blog/the-hardwax-oil-experiment-the-winner/>

Hardwax oils have definitely added viable options to the hardwood finish mix. If you're open to a non-conventional finish approach,

appreciate the many benefits they offer and can live with the minor downsides, then one of the three hardwax oil systems above could be perfect for your home.

## In Conclusion...

So there you have it. Hopefully this article has helped educate you on the basics of hardwood floor finishes and has shown you a clear choice as to what finish system you'd like to invest in for your hardwood floors.

If you have any other questions pertaining to hardwood floor finish systems or you would like to see samples of our recommended finishes in person, please feel free to call us and ask. We're always happy to help.

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