

Paint and Varnish Removers

Learn the differences between the six types of strippers on the market.

No step in refinishing is as messy and unpleasant as stripping off old paint or finish. Though stripping can't be made clean and enjoyable, it does help to know something about the stripping products available so you can choose intelligently among them.

Fortunately, in the case of strippers (unlike other finishing products), the primary ingredients are almost always listed on the container, so it's possible to make sense of the products by separating them into types.

There are four types of strippers that are solvents and one type that is lye. You also can buy a stripper that combines two of the solvents, so there are actually six types of strippers on the market today:

- Methylene chloride (MC)
- Acetone, toluene and methanol (ATM)
- N-methyl pyrrolidone (NMP)
- Di-basic esters (DBE)
- A combination of methylene chloride plus acetone, toluene and methanol (MC/ATM)
- Lye

MC, ATM and MC/ATM are available in various thicknesses, ranging from liquid to semi-paste. The thickness makes a difference in how well the stripper clings to vertical surfaces, but not in its strength or effectiveness.

Lye is available in both a powder form, which you have to mix with water, and in paste form, which is ready for use.

Methylene Chloride (MC)

The strongest and fastest-acting of the five solvent types is methylene chloride. You can identify this stripper in two easy ways: by the statement it's "non-flammable" on the can, and by the listing of only MC and methanol as the solvents. (A little methanol is always added to MC as an activator.)

Methylene chloride is very effective at removing all types of coatings, and even though it is moderately expensive, it has been the primary solvent used in strippers for the last four decades. About 15 years



ago, the Environmental Protection Agency listed MC as a probable human carcinogen, though the evidence for such a listing remains highly controversial.

Some manufacturers add acids or alkalis to their MC strippers to increase their strength, but these additives are seldom listed on the container. Almost all manufacturers add wax, which rises to the surface and retards the evaporation of the MC.

The wax residue must be washed off before finishing the wood, or the finish may not bond well. Manufacturers misleadingly call this washing step "neutralizing."

Acetone, Toluene, Methanol (ATM)

This is the cheapest solvent stripper and is essentially nothing more than lacquer thinner. It's effective at removing shellac and lacquer, but is slow on all other coatings.

When manufacturers add wax to slow evaporation, they call the remover a "stripper." When they don't add wax, they call it a "refinisher." To use refinisher, you must

work on very small sections at a time due to the fast evaporation of the solvents.

Other members of the three solvent families — ketones, petroleum distillates and alcohols — are sometimes added to or substituted for acetone, toluene and methanol to change evaporation rates, but the stripper is still in the ATM category. All of the solvents used in this category are extremely flammable, and mention of this is made on the can.

MC/ATM

By combining MC and ATM in varying proportions, manufacturers produce a stripper that is in between in both effectiveness and cost. Combination strippers list a number of solvents, including methylene chloride, and also warn of flammability. These strippers are effective on all but the most stubborn coatings.

N-Methyl Pyrrolidone (NMP)

The possibility that MC could cause cancer and the high flammability of ATM and

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STRIPPER TYPE	HOW TO IDENTIFY	DESCRIPTION	POTENTIAL PROBLEMS	COMMENTS
Lye	Contents list sodium hydroxide or caustic soda. Available as powder or paste. Warns of severe burns if it comes in contact with your skin.	The most effective stripper.	Damages wood. Darkens many woods and can cause finish problems.	Very dangerous to use because it causes severe burns to skin and eyes. Keep clean water close by for washing.
Methylene chloride/Methanol (MC)	Contents list methylene chloride and methanol. Non flammability is usually mentioned.	The strongest and fastest-acting solvent stripper.	Contains wax which must be removed before applying a finish.	Fumes are a health hazard. Work outside or in a room with cross ventilation.
Methylene chloride/Acetone, Toluene, Methanol (MC/ATM)	Contents list methylene chloride, methanol, and a combo of acetone, methyl ethyl ketone, toluene, xylene.	The weakest and cheapest methylene-chloride stripper.	Contains wax which must be removed before applying a finish.	Fumes are a health hazard. Fumes and liquid solvent are a fire hazard.
Acetone, Toluene, Methanol (ATM)	Contents list some combo of acetone, methyl ethyl ketone, toluene, xylene and methanol	Almost as effective as MC/ATM but without methylene chloride.	Contains wax which must be removed before applying a finish.	Fumes are a health hazard. Fumes and liquid solvent are a fire hazard.
Acetone, Toluene, Methanol (ATM) "Refinisher"	Contents list some combination of acetone, MEK, toluene, xylene and methanol	Very inefficient as a stripper because no wax is included to slow evaporation.	Too slow on everything except shellac and lacquer.	Fumes are a health hazard. Fumes and liquid solvent are a fire hazard.
N-methyl pyrrolidone (NMP)	Contents list n-methyl pyrrolidone and possibly one or two additional ingredients	Effective on most finishes, but two or three times slower and more expensive than methylene-chloride strippers.	Trying to rush it.	Fairly safe to use because of slow evaporation rate and non-flammability.
Di-basic esters (DBE)	Contents list "ester" or names of solvents ending in "-ate," which are esters.	The slowest of the strippers.	Trying to rush it. Included water may blister veneer and warp thin wood.	Fairly safe to use because of slow evaporation rate and non-flammability.

MC/ATM strippers opened the market to two alternative solvent strippers. The more effective of the two is n-methyl pyrrolidone (NMP). It is non-flammable and is thought to be less toxic than MC and ATM.

It's not that NMP is safe to work with, but that it evaporates so slowly that the air in a room has time to replace itself several times over before toxic concentrations are reached.

Slow evaporation translates into reduced effectiveness (consider that these strippers are usually packaged in plastic containers), but an NMP stripper will remove all but the most stubborn coatings if you give it enough time — overnight in many cases.

The reasons NMP strippers haven't caught on better are their expense (about three times that of MC unless other solvents are added to reduce the cost) and the misleading claim listed on most containers that the stripper works in 30 minutes.

Claiming too much for a product may get a customer to buy it once, but rarely a second time.

Di-Basic Esters (DBE)

The first of the alternative strippers to appear on the market is based on several esters, called di-basic esters, combined with 50- to 70-percent water. These esters are very slow-evaporating, and thus weak as strippers.

DBE strippers work even slower than NMP strippers, especially on shellac and lacquer, but just as with NMP strippers, manufacturers exaggerate the speed. The problems this has caused, in addition to the damage the included water causes to veneer and wood, has led to the virtual disappearance of this stripper from stores.

Lye

Though it's rarely used, lye (sodium hydroxide) is both cheaper and more effective than the solvents discussed above. The problem with lye is that it will burn you severely if it gets on your skin, it can cause significant damage to the wood by making it soft and punky, and it may darken the wood and cause finishing problems.

You can buy lye in powder form at paint

stores and sometimes at supermarkets, and mix it with water, about 1/4 pound of lye to one gallon of warm water. Pour the lye into the water, not the other way around or it may boil over and burn you, and use a steel container like a coffee can, not aluminum, plastic or glass. The heat that is created by the chemical reaction of the lye and water will heat the container, so don't hold it while mixing.

You can also buy lye in powder or paste form packaged with a cloth that you can apply over the lye to aid in the removal of paint or finish.

Conclusion

For difficult coatings such as paint, polyurethane and catalyzed (two-part) finishes, you should use a strong MC or lye stripper. For weaker shellac, lacquer and oil finishes, any of the strippers will work, given enough time. Next issue, I'll tell you how to use these strippers effectively. **PW**

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