



***A Guide to the Care
and Feeding of Your
License Plate
Collection***

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First Edition

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Disclaimer

Hopefully this book will be a guide to the answers to many of your license plate cleaning problems. However, total success cannot be guaranteed in every case. Care and caution should be exercised when using chemicals, products, and formulas presented in this book. All cleaning treatments should be tested prior to application. This is highly recommended and strongly encouraged. Please read and follow all information contained on product labels and material safety data sheets with care. The author and the publisher hereby disclaim any liability and damages from the use and/or misuse of any product, formula, or application presented in this book.

Introduction

Like most collectibles, license plates are generally becoming more valuable. The number of collectors is growing, and the growth of the Internet continues to feed this interest. As with any other asset, there are ways to enhance the appearance and preserve value of the license plates in your collection.

This book provides a brief outline of methods for cleaning license plates and making them more displayable. It does not address repainting of license plates. That is an area that requires varying degrees of skill, and collectors have been successful with a variety of techniques. It is preferable not to repaint or fully restore a plate unless all the original paint is completely gone. Only rarely do repaints look like the original. Almost invariably, a decent looking original will have more value than a repaint of the same type, year, and jurisdiction. If the paint is completely gone it cannot be brought back, but very often at least some the original paint is present under a coating of dirt, grime, or surface rust, waiting to be restored. The four plates pictured on the cover were partially cleaned to illustrate what can be accomplished.

There is no singular way to clean a license plate and make it more displayable and desirable for your collection. Collectors have been successful using a wide variety of techniques and materials. This book outlines methods that have been used successfully, and there is no intent whatsoever to imply that there are no other possible methods or products to address a particular cleaning problem. There is no guarantee that what one person has used in a given situation with one plate will be successful on other plates.

Words of Warning

The pages that follow describe cleaning methods that use a variety of different cleaners and chemicals. Extreme caution must be used when using *any* cleaning agent. Care should be taken even when using something as seemingly harmless as soap and water. Simple washing has been known to remove chalky or badly weathered paint.

As a general precaution, acids, solvents, or any agent with a strong odor should be used in a well-ventilated area. By law, material safety data sheets (MSDS) must be provided upon request when purchasing products of this type. MSDS sheets provide information on the hazards of individual chemicals and chemical formulations and what precautions need to be taken. Know as much as you can about what you are using and follow the precautions explicitly to avoid personal injury!

Good old elbow grease is an important component of many cleaning methods. It is wise to start gently and work up, after you get a feel for what the paint on a given plate will withstand.

Getting Started

Know your materials before you start. License plates have been made from a variety of different materials, including porcelain, flat steel, embossed painted steel, brass, embossed painted aluminum, fiberboard, beaded paint, uncoated reflective paint, and coated reflective paint. Treatment that is suitable for one type of plate may not be suitable for some or all of the others.

When tackling a cleaning project, it is better to start with the simpler less aggressive methods and work up to the more advanced techniques, where harsher cleaning agents may be needed. Once you have had some experience and gained familiarity

with the plates you work with most often, then it is possible to proceed directly to using the more advanced methods. For many of the methods outlined in this book there is often as much art as there is science. Generally, collectors have found success and have become comfortable with some methods but not others. Results can vary widely. Sometimes you will be very pleasantly surprised and other times greatly disappointed.

If there is any doubt at all about the integrity of the paint on a plate, it is wise to test whatever you intend to use on the back of the plate or on a small area in a corner on the front, especially with the more chemically aggressive methods. The quality of paint has varied from year to year and from state to state. Whereas plates for some years for a given state may respond well to a particular treatment, the same treatment could be disastrous for other years. Weathered paint, or paint that was of lesser quality, could be lost unless proper care is taken. This is especially true for older plates or plates that have been exposed to the elements.

Take a Bath

The simplest cleaning starts with soap and water. This will remove most of the common dirt and grime. Almost any soap will do, but soaps specially formulated for washing cars are probably the best to start with. Since vehicles and license plates are exposed to the same types of dirt and grime, using soaps of this type makes sense.

Dishwashing soap is also recommended. It has good cleaning power, but at the same time it is not harsh toward the skin. This has been a selling point for these products for years. Here again, it makes sense to use something that has good cleaning power, but yet does not have harsher characteristics that other types of soap might have.

There are dozens of soaps and cleaning products available for nearly every cleaning job imaginable. You may find that one of these suits your needs, and you may become comfortable using it. In any case, it is highly recommended to test the behavior of the cleaner toward the paint before attempting to clean the entire plate.

Do not scrub any more than necessary. A sponge works very well, but too much elbow grease can damage the paint on older plates that have been exposed to the elements. Paint that has decomposed to the point of becoming chalky could be scrubbed away.

Do not use abrasives as these can scratch the paint. Non-abrasive scrubbing pads, however, can be used to good advantage, again being careful not to scrub too hard until you get a feel for how good the paint is.

Cotton swabs or Q-tips are an important tool in practically any cleaning technique. These help clean in those small areas that cannot be reached with your fingers.

When a Simple Bath Won't Do

There is a variety of other kinds of dirt and material that may not be removed readily or completely with soap and water. Common ones are grease, oil, road tar, and other organic crud. Gasoline can be used to remove these types of material. This can be done either by soaking the plate in gasoline or using a cloth wetted with gasoline to scrub off the material. Since gasoline is used in automobiles, it makes sense that the paint and the clear-coating used on license plates be compatible with it. Again, do not overdo it on the elbow grease. Gasoline is highly flammable, so be sure to take the proper precautions and use it in a well-ventilated area.

Avoid using acetone, alcohol, paint remover, nail polish remover, or other cleaning solvents. These are often used to remove

various types of coatings, and some are components of paint remover. Consequently, these can remove or damage the paint and the clear-coating found on many plates of more recent vintage. Do not use these without first very carefully testing how they will affect the paint or the clear-coat on the plate being cleaned.

Special Cleaning Problems

License plates that have glass beads for reflective purposes pose a special cleaning problem. The cleaning methods described so far in this book, are often not sufficient to remove all the dirt and grime. Vigorous scrubbing should be avoided as this can remove the glass beads. However, a soft toothbrush can be used to good advantage. White wall tire cleaner has been used very effectively to soak out the dirt from among the beading on plates of this type. The cleaner is simply sprayed onto the plates, allowed to set for a while, and washed thoroughly with water. Be careful when cleaning colors other than white. Some cleaners of this type will decolorize the paint under the beads.

Paint overspray or other stray paint not related to the manufacture of the plate itself poses another cleaning problem. Collectors have had varying degrees of success with Goof Off®, a product designed to remove unwanted paint of this type. Rubbing alcohol, or isopropyl alcohol, can also be used. Be careful using these products, since they can attack the paint that you want to keep. It is best to soak the unwanted paint away as much as possible and minimize rubbing.

Magic marker can be removed with brake fluid. Again, it is generally best to let soaking do most of the work and go easy on the elbow grease. With the newer clear-coated plates, too much rubbing can cause damage to this coating.

Bugs can be removed with soap and hot water and a bit of scrubbing with a non-abrasive scrubbing pad. Alternatively, there are a number of auto detailing products, which are specifically formulated to remove bug residue from automobiles. Bug residue is acidic and, over time, can etch paint. Even after the residue has been removed, the surface of the plate may be dulled or discolored where the bug residue was. Often, waxing will be successful in restoring at least some of the original paint luster.

Rust stains on the newer clear-coated plates can be removed by wetting the affected area with a mixture of vinegar and water and rubbing the stained area very lightly with a piece of aluminum foil. Once the rust stain is gone, rinse thoroughly with water. Be careful not to rub too hard as the clear-coating can be scratched.

Removing masking tape, pricing stickers, and the like can be accomplished by applying butter to the material and allowing to sit for at least 24 hours. The tape and butter can then be scrubbed off under running warm water. This can be one of the more difficult things to remove, so pricing stickers or tape should not be placed directly onto the front of a plate.

The waxed paper that is placed between pairs of plates after they are manufactured can pose a removal problem. In some cases, particularly on older plates, this paper becomes bonded to the paint and cannot be removed. However, if this is not the case, hot water and rubbing with a scrubbing pad will remove the paper. Again be careful not to damage the paint.

Surface Rust

There is a wide variety of products designed to remove surface rust. Naval Jelly® is a widely used and commercially available product designed for this purpose. However, this product should not be used on porcelain, as there are reports that it dulls the gloss.

Surface rust can be removed using acid. There are many commercially available acid formulations that are intended for use in restoring old cars. These products have different acid compositions and concentrations. The time required to remove surface rust will depend on the severity of the rust and the concentration of the acid. These commercial products are formulated so that only the rust is removed without damaging the underlying metal. There are still other products that are designed to remove not only rust but old paint as well. Obviously, these should definitely not be used unless you intend to repaint the plate.

Acids should be used only for cleaning steel plates. Do not use acid to clean aluminum plates. Aluminum is a more reactive metal, and will be attacked readily unless the acid mixture is specifically formulated for use with aluminum.

Generally, commercially available acid formulations contain phosphoric acid. Phosphoric acid is a strong acid, but it primarily attacks the rust and passivates any newly exposed metal surface causing it to be resistant to further rusting. This acid, at various concentrations, can be applied with a paintbrush, or a spray bottle, or the plate can be immersed in the acid solution itself. After the rust has been removed, thoroughly wash the acid away with warm water.

Other acids, such as hydrochloric acid, also known as muriatic acid, can be used, but this acid will continue to attack the metal after the rust is removed. This is more of a problem with more highly concentrated solutions. If you are using this acid, closely watch the progress of the reaction, and thoroughly wash the acid off the plate with water as soon as the rust is removed. Until you gain some experience using acids, it is advisable to stay with phosphoric acid formulations or others that are designed for automobile restoration.

There are some problems in using acids. Hydrochloric acid can form oxychloride, which is the active component in household bleach. Exposure of this acid to a plate can adversely affect the color of the paint. In some cases waxing can restore the original color, but in other cases irreparable damage is done. Hydrochloric acid should be confined to removing surface rust from black and white plates, where bleaching is not a problem.

Stronger concentrations of phosphoric acid can also cause discoloration, but usually the damage is reversible by waxing. This has been noted particularly for blues, greens, and reds.

Keeping What You Have

Once a plate has been cleaned it is important not to lose the benefit of what the cleaning process has done. Harsher cleaning methods take away not only the dirt, but also any passivating layer of dirt or oxidation that may have been protecting the paint and bare metal where the paint is gone. If left exposed to the air, rusting or other decomposition will soon begin all over again.

Treating the plates in your collection with car wax is the easiest way to seal the surface and protect the plate from the elements. Invariably, the original luster of the paint is at least partially restored, improving the appearance of the plates. It is important to know what a given plate looked like originally. The luster of paint can vary, so providing high luster to paint that originally had lower luster is self-defeating.

There is a wide variety of car wax, ranging from those that merely restore luster to the paint to those that provide various degrees of cleaning as well. It is largely a matter of finding one that you are comfortable with and that suits your purposes. A non-yellowing wax is preferable to avoid the appearance of discoloration that could occur over time. Some collectors routinely wax all their plates, even their trade stock. Waxing cannot be used on beaded plates as the wax cannot effectively be buffed out from among the beads without removing them.

An abrasive car wax, polishing compound, or rubbing compound can be used to remove organic crud, bugs, surface rust, and

many of the materials discussed earlier. This can require a great deal of work, but some collectors have consistently used this method to improve the appearance of their plates by a grade or more. Again, care needs to be exercised with the more abrasive formulations to avoid damage to the paint.

Paint that has become chalky or is flaking, peeling, or bubbled but still in place and intact can be “reglued” back onto the plate using a soft paste wax. The wax is carefully dabbed onto the affected paint. Allow the plate to sit overnight, and carefully press the loose paint into place. Remove the excess wax carefully, and re wax the whole plate. This technique requires considerable patience, but it is very satisfying when it is successful.

Another means of restoring luster to a dull plate or to protect the paint is to use motor oil. Simply pour some oil onto the plate, spread it around with a cloth, and wipe away the excess. Spraying a plate with WD-40® aerosol and wiping away the excess will achieve the same result. Mineral oil can also be used.

The final step in keeping your plates looking great is to keep them in clear plastic bags when they are not on display. Plates banging against each other in a box or on a shelf sooner or later get minor dings and scrapes, and these multiply over time. This is commonly known as box wear and detracts from the appearance and value of a plate. An alternative to plastic bags is paper, cardboard, or other similar type material placed between the plates. Plastic has the advantage of completely encasing the plate to provide the desired protection, while allowing you to see what is inside.

Plastic bags are not without possible problems, however. If they become wet for any reason, moisture can be trapped inside and sooner or later rust or corrode the plates. A stack of bagged plates can be slippery, so be careful when carrying them outside a box or other container.

Metal Straightening

Extensive metal repair may be needed before a plate is repainted. Tears, bends, flattening of uneven areas, and more thorough repairing of holes would need to be done to complete a proper restoration job. These require varying degrees of skill and are beyond the scope of this book. However, there are some simple things that can be done to straighten the metal in a plate that does not need repainting. These should be done last, after the cleaning process is completed, and the paint has been protected by waxing or other treatment.

When straightening plates, look at the plate from all four edges to observe any bends. Often just a corner is bent and can be straightened easily. Dents can be removed by hammering on a flat hard surface. A metal hammer should not be used to strike the painted areas of the plate directly, as the paint will likely be damaged. Striking a piece of wood placed in contact with the dented area and hitting the wood instead of the plate is recommended to avoid paint damage. It is advisable to place a piece of cloth between the piece of wood and the plate as an additional precaution against paint damage.

Removing dents from embossed areas is trickier. Placing a properly sized piece wood on the opposite side of the dent and hitting with a hammer will flatten out the dent. The piece of wood should not be wider than the embossed character, or the desired embossing will be distorted.

Many plates have an embossed bead around the edge. By using a metal rod about the same size as the bead and piece of hardwood with an appropriately sized groove, it is possible to restore this bead. Straightening the bead also tends to restore the plate to its original shape, unless there is other serious metal damage. Simply place the metal rod on a hard clean surface and place the underside of the bead requiring straightening over the rod. Place the grooved piece of wood over the top portion of the bead

and strike it with a hammer to achieve the desired straightening.

Nail holes very often leave a star-like pattern splayed out on one side of the plate, where the nail punched through the metal. It is possible to carefully bend these back, and, using a punch and a hammer, gently tap them back into place. This requires some patience and practice, but it is possible to close a nail hole so that it is barely noticeable afterward.

Porcelain Plates

Many of the same techniques described in this book for cleaning metal plates can also be used to clean porcelain plates. Just as the quality of paint on metal plates can vary, the same is true for the quality and thickness of porcelain on plates of this type. Here again, anything you want to use should be tested either on the back of the plate or in a corner on the front to ensure that the plate will not be damaged. However, there are some major differences to be noted for metal and porcelain.

Porcelain is a form of glass and is more durable than a painted metal surface. Thus, steel wool can be used along with other cleaning agents to clean the surface of a porcelain plate without causing damage. It is even possible to scrape unwanted paint or other crud off a porcelain surface with a razor blade or similar tool. However, do not use sandpaper or other sand or silica-containing abrasive as this can scratch the surface and detract from the value and appearance of the plate.

Acidic chemical formulations containing fluoride should not be used on porcelain plates. These effectively contain hydrofluoric acid, one of the few chemicals capable of chemically attacking glass, and will etch and dull the porcelain surface. While Naval Jelly® does not contain fluoride, this product has been known to dull the gloss on porcelain plates, and its use should be avoided.

Whereas waxing will, in most cases, restore some if not most of the original luster to the paint on a metal plate, mixed results have been observed with porcelain that has been dulled by exposure to the elements. Generally, there is much to gain and little to lose by waxing.

Finally, straightening a porcelain plate is a much more difficult task and is not recommended. When a porcelain plate is bent, the porcelain in that area of the plate is almost invariably either missing, loose, or cracked. Further bending the metal base of the plate will only cause the loss of more porcelain or further damage, neither of which is desirable. Waxing or other surface treatment that would protect the paint on a metal plate will not protect porcelain in the same way.

Things Not To Do

In the early days of license plate collecting, collectors used clear lacquer to seal the surfaces of their plates and to protect the paint. While this was a well-intentioned effort, it actually proved to be disastrous. The lacquer yellowed to varying degrees over the years and distorted the original color of the plates, giving them the appearance of a lesser quality repaint. This old lacquer can rarely if ever be removed without ruining the original paint.

Avoid abrasives such as steel wool and sandpaper. Abrasive waxes, polishing compound, and rubbing compound can be desirable tools for restoring license plates, but care should be taken not to overdo it with the elbow grease. Some collectors have had success in removing surface rust with fine steel wool. Steel wool or other abrasives should be used very carefully and only as a

last resort. In any case, extreme care needs to be taken to avoid scratching the underlying paint.

If you are using a homemade acid solution to remove surface rust, do not forget about your plate or it may be gone when you come back. This is more of a problem with hydrochloric acid, particularly at higher concentrations, than with phosphoric acid. Commercially available acid mixtures designed for rust removal are formulated so that the rust, and not the metal is attacked.

Epilogue

There you have it. As you clean the plates in your collection, you will probably become comfortable with some but not all the individual cleaning techniques. Most of them require some patience to achieve the best results. Veteran collectors can point to their successes, but they also have horror stories to tell about things that went terribly wrong, even when the proper precautions were taken. Hopefully, this book will be a helpful guide for you as you tackle your plate cleaning problems.

About the Author

Tom was born in Colorado Springs, Colorado in 1946. He was raised and educated there, graduating from Palmer High School in 1964. He was a Barnes Scholar at Colorado College and received a B.S. degree in chemistry, cum laude, in 1968. From there, Tom went to the University of Illinois at Urbana and received a Ph. D. degree in inorganic chemistry in 1973. Since completing his formal education he has worked in the chemical industry as a researcher and laboratory supervisor. While at the University of Illinois, Tom married Margaret Lynn Atkinson in 1973. They are the parents of three daughters, Ann, Lynne, and Jenny and reside in Boulder, Colorado.

Tom first became interested in license plate collecting in the late 1970s when a number of states issued special Bicentennial plates. Upon returning to Colorado in 1981 after working in West Virginia for over six years, he became more involved in the hobby and joined ALPCA, member #3753. He has been secretary-treasurer of the Rocky Mountain Region of ALPCA since 1983. Along with fellow collector, George Sammeth, Tom co-authored a book entitled "Colorado License Plates: Facts, Figures, and Folklore", and later co-authored another book with Eric Tanner and Bill Davis, entitled "License Plate County Codes of the United States and Canada". Tom served one term as Vice President of ALPCA and was the editor of the ALPCA Newsletter from 1996 through 1999.

Tom brings many years of experience as a professional chemist and a license plate collector together in this guide for collectors. Every different plate material and proper cleaning methods are summed up concisely in a simple, easy-to-follow description. Very few plates should remain obscured by dirt and rust once the word of this guide gets out. (**Eric Tanner**, ALPCA member #3148 and authority on license plate information.)

Ever notice how some guys' plates are in amazing condition - clean, shiny, not bent or rusted? More than likely, that collector has a trick or two up his sleeve. The plates may not have been that nice when they were obtained. Tom has brought to light some of the best tricks - methods really - of upgrading a collection without changing the plates themselves. (**George Sammeth**, ALPCA member #4013 and past Vice President of ALPCA.)