

Headlight Polishing Technique

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The following is a writeup I have created to aid in polishing scratched or pitted headlights. This was performed on a 2003 BMW M5 w/ 46k miles. The techniques should be applicable to other vehicles' headlights. This procedure restored my headlight covers from heavily pitted and somewhat hazy to almost 90-95% the look of new (this is up close, from afar it does look 100% new and crystal clear).

As usual, all the regular disclaimers, apply: should you decide to follow this procedure, you're doing it at your own risk. The use of all eye/nose/mouth protection gear and gloves are highly recommended. Use caution as damage could occur to your headlights. Take your time and be gentle with process.

To get started I picked up some 3M wet/dry sandpaper and used some 3M rubbing compound, hand glaze and Zaino Polish and Wax. Most of these items I either had laying around or picked up from Pep Boys.

Read this thoroughly prior to actually performing the steps to ensure that you understand what you'll be doing. I'd allot 45-60 minutes per headlight, from prepping, procedure, to cleanup. In other words, take you time and be patient.



The following are 5 packs of 3M 600, 800, 1000, 1500, 2000 grit sandpaper. (The higher the number, the finer the grit).

When using the sandpaper sheets, you probably want to cut it in half, then fold it over and apply even pressure while following the curves of the headlight cover.



Zaino Wax/Polish (though any wax would do). Use the wax AFTER the compounds/polish as a final protection for the plastic.

3M Rubbing compound (rated to remove scratches caused by 1400 or greater grit sandpaper).

3M Hand Glaze (helps to use prior to wax, removed any leftover "fog" from headlight covers after using the rubbing compound.)



A bucket of water. You'll be regularly dipping the sandpaper in the water to help act as a lubricant while sanding and also to help minimize dust.

The water also helps to remove the sanded particles from the sandpaper, helping maintain its effectiveness.



The following photos are before/after shots of the headlamp covers for comparison. They were taken prior to detailing the car, so you may notice some wax, etc on the paint. You'll probably want to wash the car after the polishing process since you'll probably have wax, water marks, etc on the car.

This is a before shot of the passenger headlight, notice the pitting, and the dusty look of the plastic cover.



This is an AFTER shot of the driver headlight after the process is completed. Even up close it looks clear and pit free. From a far, the plastic is almost indistinguishable from a new headlamp.



Here's an up-close photo of the passenger side headlamp, again notice the pitting. As one friend pointed when the lights were on at night, "Is that dust in the headlamp?" This polishing process will fix that.



An up close of the driver headlamp, with greater clarity and reflectivity. The feel of the plastic is greatly improved as well, being much smoother to the touch. (The white marks are dried wax, as the photos were taken prior to washing the car after the procedure).



Polishing procedure:

1) Mask off the paint and other areas around the headlight cover that you won't be sanding. I used painter's tape, but any tape w/o a strong adhesive should work. Also, you want to remove the rubber thing that attaches on top of the headlight, should be pretty easy to figure out, it just snaps on/off.



2) Using a soft cloth and rubbing alcohol (70% isopropyl worked fine), rub down the headlight cover to remove any bugs, dirt, grime, etc. The dirt you see on the cloth was AFTER the headlight had already been thoroughly washed. The next step is the actual sanding process. The first time you start sanding the headlamp, it may be a bit disconcerting, but it does get better as you use finer and finer grit sandpaper.



3) Starting with the 600 grit sandpaper, dip it in water, then start rubbing back and forth in a horizontal motion (not circular). Do this until the cover turns a bit hazy, then keep doing it. You're not trying to get rid of all the scratches/pits at this step. The subsequent steps help do that. You're just starting the process. Don't rub too hard and keep using more water to keep the sandpaper from drying out. You'll find that that you'll know when you need to add water. I gently but thoroughly sanded for at least 5-10 min. Don't feel rushed, take your time and be gentle (don't push down too hard).



4) Here's how it looked like midway through step 3. I dried it with a terry cloth towel to see how it was turning out. Notice how the bottom of the cover is still a bit shiny? That means that my sandpaper missed it, so I kept sanding, paying more attention to that area, while drying it off every now and then. That helped tell me what areas I missed as well as clean off the clumps of plastic that was accumulating on the lens.



Again, maintain the horizontal motion when sanding. Here's a close up of the cover, half way through step 3. Notice that you can still see the pits, but also notice how the sanding marks are horizontal. This is key. Keep it as horizontal as you can, no diagonal motions and definitely not circular!



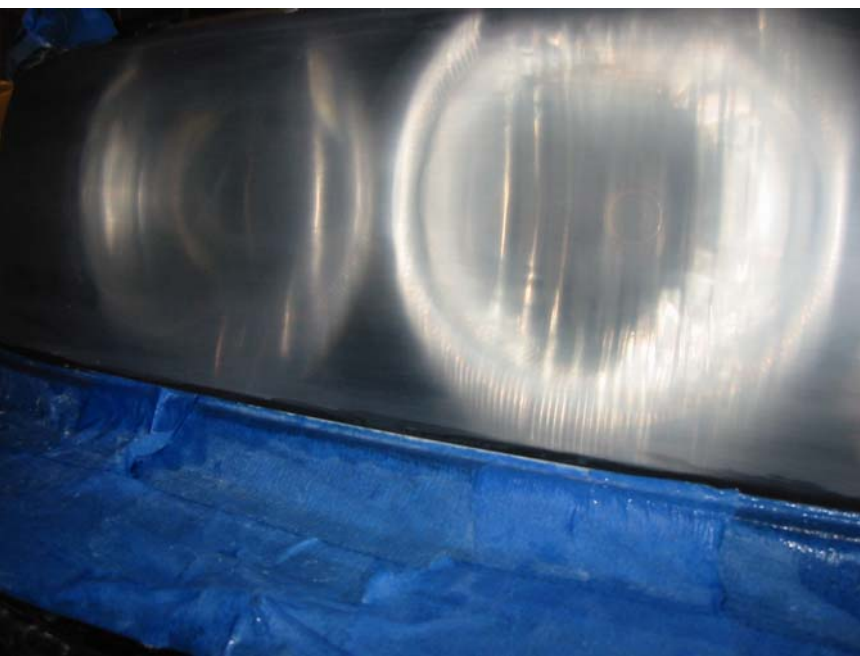
5) After you've sanded the cover using the 600 grit, clean the cover with the towel. Then switch to 800 grit and this time, you'll alternate to a Vertical back and forth motion. Going perpendicular to the previous movement helps to sand down the previous marks. Be as thorough and gentle as possible, take even more time on this step. You want to keep sanding until the original horizontal marks are no longer that prevalent.



Here's that same lens halfway through step 5. Notice how it's mostly vertical sanding marks that you now see? Of course the cover is hazy. Note also, that during this process, there may be some parts of the plastic that is shiny looking, at this time, it's mostly due to the sanding "evening" out the previous step. There's no particular need to sand extra hard over these areas, just keep the pressure the same and take your time.



After drying again with a towel, this is how it looked like at the end of step 5. Notice the prevalence of the vertical sanding marks and overall cloudiness. Pretty scary huh?



6) At the end of step 5, get the 1000 grit sandpaper and start sanding Horizontally again. Keep the surface wet at all times. This photo was taken after drying off the cover with a terry cloth. Yet again, for every new grit, you want to alternate the sanding direction and keep sanding until the previous sanding's directions are no longer prevalent.



7) With the 1500 grit sand paper, and the surface wet, start sanding again, but this time with a vertical motion.



Here's how it looks after step 7 after it's been dried with a towel.

You may continue on to the next step, using the next sanding grit, (2000 grit) and again, sand in a horizontal motion.

You can actually keep sanding using progressively higher grits, (ie 2500, 3000, 3500 etc), but I found that it worked fine stopping at 2000 for me. If you are going to keep sanding, just make sure that you alternate the sanding movement, from horizontal to vertical as applicable.



8) The next step is to buff/polish the cover using a polishing compound. I used 3M Polishing compound on a Porter Cable Random Orbital Buffer. Which is something I'd used to detail paint, but never on plastic, though it worked great!

I don't think you'll actually need a random orbital buffer though, a regular buffer or even by hand w/ a cloth should work, it will just take slightly more time and patience.

If using a buffer, use lots of compound as it acts as a lubricant and helps keep surface from overheating.



This is how the cover looked after polishing. It was still a bit hazy, so I kept polishing. Notice though how the cloudiness has practically disappeared.



9) After polishing with compound. I used the 3M hand glaze and applied it with the buffer, then rubbed it off.

Then I placed the wax on the headlight, waited a few minutes and wiped it off and this is what I ended up with!



Here's a final shot of the passenger and driver cover after the polishing procedure is complete. What an improvement!

