

SHARPIE VERSUS BLEACH

Experiments by Mark Favreau





We LEGO faithful have all witnessed the carnage of a nine-year-old's epic Star Wars battle: LEGO Stormtroopers covered in red Sharpie blood, torsos blackened to become ersatz Darth Vaders, and various other minifigure atrocities. The question is whether or not, months or years later, these valiant warriors can be resurrected from their permanent marker deaths.

I have seen articles describing the use of various substances and methods for removing Sharpie from LEGO pieces... dry erase markers, isopropyl alcohol, toothpaste, baking soda, and various others, usually combined with some rubbing... and a warning that too much of anything will remove prints as well as the Sharpie ink.

What I had not seen was any mention of bleach. And I probably would not have thought of bleach except for my practice of reusing old spray bottles. Once emptied of their original contents, I repurpose the bottles by filling them with home brewed cleaning concoctions or try to save some money by buying a large commercial refill instead of a new sprayer. Because the spray bottle gets reused and re-reused, I tend to write on the bottle whatever liquid I have put in it so I know what's in there as time goes on.

Some time ago I noticed a spray bottle containing a bleach and water mixture had dribbled and the more recent Sharpie-on-plastic label I had placed there was partially missing. And it wasn't just faded, it was pretty much gone altogether in one spot. Older Sharpie was there and faded, too, but more faded where the bleach had dribbled. A dim bulb in my mind flickered.



Yep. The spray bottle that used to say BLEACH.

So I marked up a yellowed white brick and a bitten yellow head with some gratuitous Sharpie scribbles and let those pieces sit for two weeks. Then into a small container they went



Day 0: Into the bleach.

along with the bleach and water from the aforementioned spray bottle, and I waited.

The ink was substantially reduced after the first day. It was more reduced on the third day. At this point I took the pieces out to inspect them and took a cotton swab and gave them a rub. A little bit of Sharpie ink did come off on the swab, but there was still a noticeable amount on the brick, appearing as a sort of faded brown on the white brick and gray on the yellow head. So back into the bleach they went.

On day six I took the pieces out of the bleach and inspected them again. On both pieces the ink was just barely noticeable, and then only in spots where the coverage had been heavier. I dried the pieces off and took pictures. Then back into the bleach the pieces went again.

The next morning I couldn't find any traces of ink on the head or the brick. And for what it is worth, the bleach seemed to have no effect on changing the yellowing on the white brick.

To this point it seemed pretty definitive that bleach was an effective solution (hah! pun) for



Day 6: Staining drastically reduced.



Day 6: Some Sharpie is still evident, barely, on the side of a stud.

Day 7: Another half day in the bleach and Sharpie is no longer visible.



Day 0: Sharpie scribbles on the head; photo for comparison purposes.



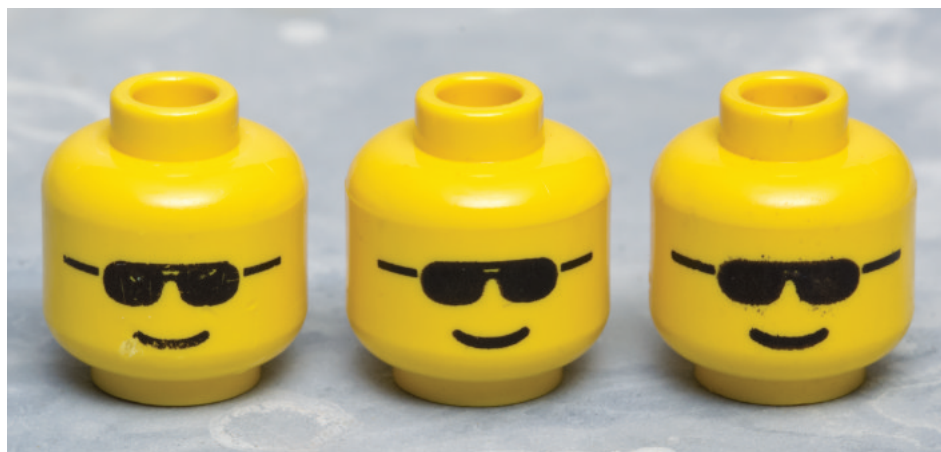
Day 6: Staining much reduced, but still evident behind the bows of the glasses and elsewhere.



Day 6: Opposite side of head, staining is still evident here, too.



Day 7: Staining appears to be completely gone.



Comparison of bleached head on left and un-sharped heads center and right.

removing Sharpie. The next things to try were
1) seeing if Sharpie over stamp pad ink came off as cleanly or if it permanently stained the print,
2) trying out the bleach on transparent bricks, and
3) some red and blue Sharpie for the heck of it.

Red and blue were applied to a white brick. Transparent bricks were selected from different time periods with older bricks being definitely yellowed. The smaller transparent bricks had a generous amount of ink applied to the top of one stud and a one-pass on the side. On one of the longer faces of the 2x4 transparent I put a larger spot of ink on the left side. Ink was applied and reapplied repeatedly to build up a thick layer of ink. Next to that were five lines of ink, the first line of ink with a single application, the second line with two applications, and so on up to five. Two 1x2 printed “control panel” tiles had ink applied, one with ink completely covering portions of the print and the other partially covering the print. The ink was allowed 14 days to dry and then into the bleach.

After one day the blue was barely noticeable on the white brick, which was not really a surprise given that blue colorants tend to come from dyes and red colorants from pigments. That difference in layman’s terms is dyes are soluble (e.g. berry juice) and pigments are insoluble (e.g. clay) substances. After the first day continued color removal was less dramatic. As it took a week to completely remove the black Sharpie off the earlier bricks it wasn’t a particular surprise. What was surprising was the persistence of the color. While the blue faded out completely after 23 days, the red had staying power. It took 52 days for the red to fade from the side, but the studs took longer. One particular stud—in the red/blue pictures the third stud from the left, which was colored with two layers of red topped with two layers of blue, and which happened to have the injection pip—took 104 days for the red to finally fade out around the pip.

Also interesting were the transparent bricks. While the newer bricks held up well, the older bricks were affected by the bleach, turning the plastic cloudy and soft. A fingernail could easily scratch the surface, almost like peeling dead wet skin. After drying, the plastic rehardened but the surface retained the scratches and what had been cloudiness when wet dried to a chalky appearance. For more specifics, see the photos and captions on the following pages.

The bottom line is there may be hope for resurrecting *some* of those sharpied-up stormtroopers if you can be patient.



Day 0: Into the bleach.



24 hours: Staining dramatically reduced.



Prior to bleach bath.



Day 1: blue drastically reduced, red less so.



Day 2: color further reduced, but less dramatically.



Day 3: blue drastically reduced, red less so.



Day 4: fading continues, more evident on the studs.



Day 6: blue now almost gone with more evident fading on the studs.



Day 12: blue is just barely discernible, significant reduction on studs.



Day 30: the barest hint of red remains on the side, but persists at the pip.



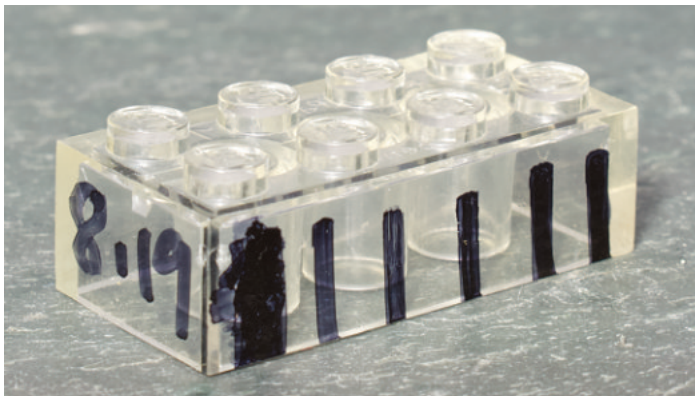
The Pat. Pend. 2x2 brick prior to bleach bath; the Sharpie did not like the side of the brick. Stud heavily coated.



24 hours: Black on side completely gone, a little bit left around the edges of the logo on the stud. Plastic on sides has become noticeably cloudy.



48 hours: Black is completely gone. Transparency has given way to translucency. Plastic has softened such that it can be peeled with a fingernail.



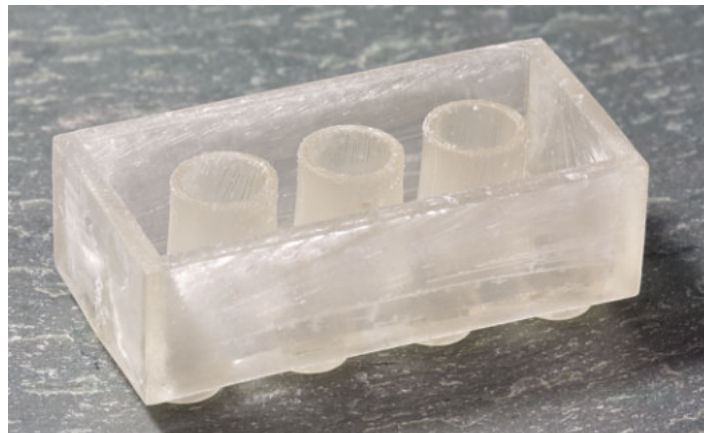
The Pat. Pend. 2x4 brick prior to bleach bath; the Sharpie did not have any trouble marking this brick. The 8-19 marking is a single pass.



24 hours: The 8-19 marking is gone from the side. The one and two pass stripes are barely visible. The 3, 4, and 5 pass stripes are mostly gone. The heavy stripe is mottled.



48 hours: Sharpie marks are completely gone, and as with the 2x2 brick the sides have gone cloudy and can be easily scuffed with a fingernail.



The underside of the 2x4 brick. It appears that the bleach has actually etched the plastic. Note striations in the tubes.



Comparison of bleached and unbleached transparent Pat. Pend. bricks.



The 1x2 brick with underside bar prior to bleach bath. Writing on side is one-pass, ink on stud is multiple coats.



24 hours: Black on side completely gone, a little bit left around the edges of the logo on the stud. Plastic remains clear.



48 hours: Black on stud completely gone. Plastic remains clear and hard.



The 1x2 brick with no underside bar prior to bleach bath. Writing on side is one-pass, ink on stud is multiple coats.



24 hours: Black on side completely gone, a little bit left around the edges of the logo on the stud. Plastic remains clear.



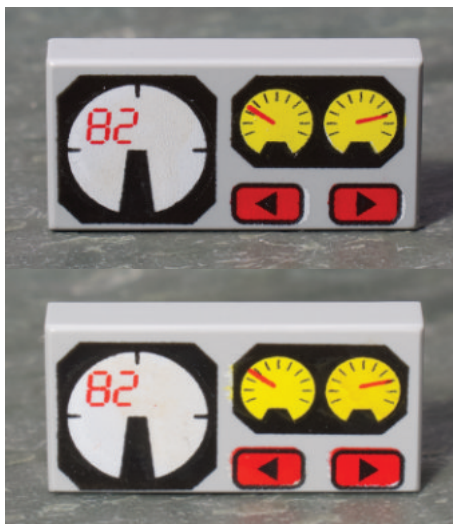
48 hours: Black on side completely gone, a little bit left around the edges of the logo on the stud. Plastic remains clear.



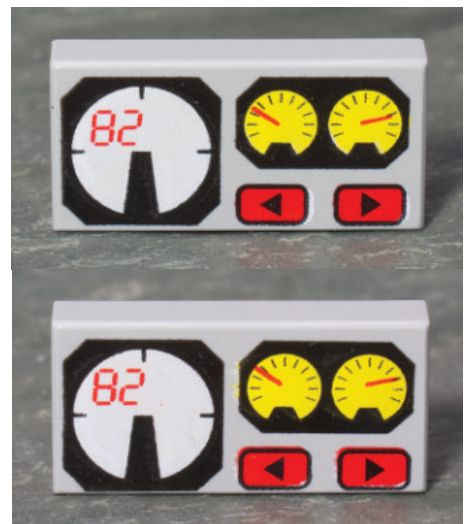
1x2 printed tiles. On the left is an unmarked tile. Center and right have sharpie applied.



24 hours: sharpie substantially reduced but still clearly evident.



48 hours: sharpie still slightly evident.



48 hours: sharpie gone.