

Pattern Flaking Off the Liner

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In order to understand why the printed pattern can flake off of the pool liner, there must be a basic understanding of the manufacturing techniques involved in the printing of your pool liner. The print pattern is applied using a printing process referred to as rotogravure printing. The inks used are solvent based, containing vinyl resins and various pigments. The solvents in the inks "bite" into the vinyl and enable the pigmented resins to bind themselves to the vinyl surface. Patterns can contain several different colors of ink applied to the vinyl by a series of engraved cylinders that have been made based on the designer's artwork for the pattern. Following the application of the different colors, a clear "topcoat" is applied to improve the abrasion resistance of the printed surface. This topcoat also contains additives to further prevent damage from UV radiation from the sun. The topcoat layer is similar in composition to the inks except it does not contain pigments. It does contain additives to prevent damage from UV radiation of the sun.

While the inks do bind themselves to the vinyl during the printing process, there are environmental factors that can weaken and destroy these bonds allowing the ink to scrape or flake off. One cause of the ink flaking off the vinyl is low water pH. An acidic environment will weaken the bond by softening the topcoat and eventually, the ink. The more acidic the environment, the greater the likelihood of damage. The effect is cumulative and irreversible. Once this softening occurs, the coating and the ink are susceptible to abrasion and flaking.

Pattern flaking can occur above the waterline. Many times, this can be attributed to a tight-fitting pool cover combined with the use of Tri-chlor sanitizing systems that make it difficult to regulate pH in the recommended range of 7.4 to 7.8. When using a pool cover, lesser chemical amounts may be needed since they will not evaporate as readily. However, the cover should not be closed immediately after chemicals are added and circulation should be run for several hours before closing the cover. If the cover is not vented, concentrated gases can build up in an area approximately two to three inches above the waterline. These gases are generally acidic in nature and will eventually degrade the ink bonds.

Pattern flaking can also occur below the waterline and be more prevalent on the bottom of the pool. There can be several causes in addition to low pH. Some pool cleaners are very abrasive to pool liners and, in fact, almost every pool cleaner on the market carries a disclaimer on damages to vinyl liners. Some manufacturers make different models for use on vinyl liners versus fiberglass or gunite since they have learned that certain components of the cleaners are more damaging to vinyl than others. The set-up and maintenance of pool cleaners are critical. While pool cleaners are meant to be automatic, the pool owner should always monitor the operation of the pool cleaner to make sure that it is not getting "hung-up" in a certain area, is running too close to the edge of the pool, or has a hard component that is scraping against the liner. A typical area of damage by a pool cleaner is at the "break-line" where the shallow end of the pool starts the transition into the deep end. This occurs because the pool cleaner is basically "bottoming out"; the wheels are not contacting the surface at this point but rather a hard component of the bottom of the pool cleaner is rubbing consistently on that area. Some manufacturers have avoided this problem by incorporating mechanisms that effectively lift the pool cleaner over this spot without bottoming out.

Another cause of pattern flaking to the bottom of the pool liner is the practice of dispensing undissolved, solid chlorine granules. There are many different products on the market and not all of them dissolve as readily as others. If solid granules are dispensed and allowed to settle on the bottom of the pool, this creates a concentrated area of the chemical. Chlorine has a much higher density than water and will tend to stay on the bottom of the pool longer, especially if the circulating system is not allowed to run for a sufficient length of time after adding the chemicals. Solid chemicals should always be dissolved thoroughly in a bucket of water before adding to the pool.

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There are also many other chemicals that can remove the print from a vinyl liner. Many solvents or solvent-based products will strip the ink off of the vinyl. Anything containing mineral spirits, such as paint thinners, and any lacquer removers such as nail polish remover can also remove the ink from a liner. When trying to remove stains or built up debris, use only products that are designed for use in pools. Avoid acid-based chemicals that can also damage the liner when improperly used. When in doubt, contact your local pool professional.

The best defense against the pattern flaking off is a good offense: regular, thorough cleaning, good water circulation, and proper use of pool chemicals. It all goes back to good maintenance and the chemicals used. When adding chemicals, less is best.

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