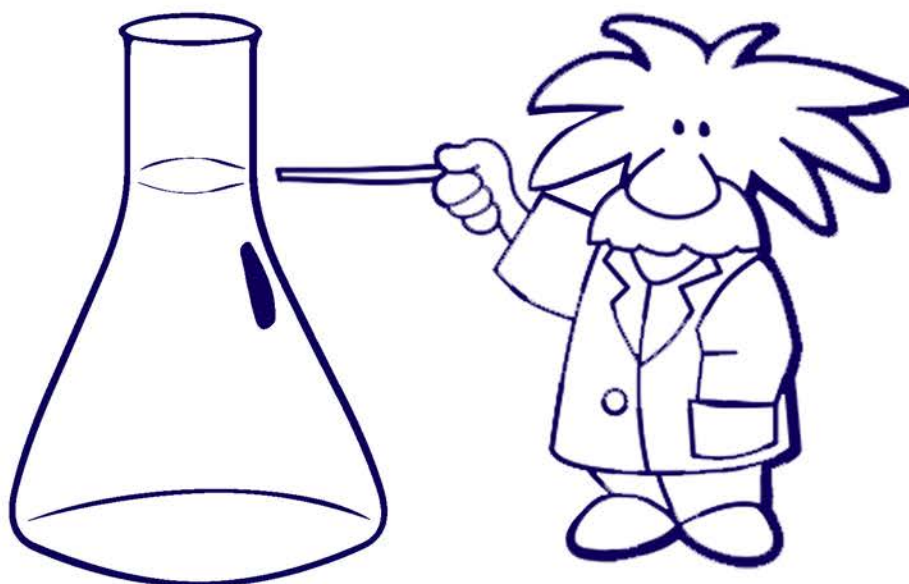




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Skate Floor Rx

The care and feeding of your roller skate floor coatings

Skate Floor Coating • Skate Floor Preparation • Skate Floor Maintenance

Air Quality & Compliance Considerations

Introduction: OUR START LINES ARE DIFFERENT

Everyone in this industry has a different start line. When it comes to flooring and what we know, what we trust and the actions we're confident in, it is always the sum of our personal experience that we must finally rely upon. It is our only foundation.

Mr. Finchum, Mr. Morgan, Mr. Wall, and other good men from trusted flooring sources and (me) Joe Nazzaro – have each delivered good finished products to critical customers. And each one of us will do so with slight differences every time. If one of us suggests to the other a tweaking of a nuanced step in installations, it may even be met with blustering defiance. We proceed with what has worked for us in the past. Ironically, though different in methods, we achieve satisfactory results nearly every time.

Largely self-taught, completely self-reliant, we must fall back on our own credits in years and numbers of successfully completed projects, whether these be actual ground-up installations, retro-fittings, salvages from the edge of destruction or simple recoatings. Today, we point proudly to our successes and time in service.

In 1952 – over 60 years ago – I was placed atop the motor housing of a floor machine – 35 pounds and six years old; they used me for added weight. I gripped the bar leading to the handles of the Clarke 1600 and held on while it scrubbed the syrup from the tile floors after a sweating week-end session. I was helping.

By 1958 – at the age of 12, I was operating the same Clarke machines and shown how to operate a 12 inch American drum sander in order to participate in a “brush-cut” of the maple floor at Redwood Roller Rink, Redwood City, CA and at 14 years old, I performed the same operation at the Rolladium in San Mateo, CA. The machines we used still outweighed me. In those days, the floors had to be periodically “brush-cut” to return the grip of the maple to the wood and compound wheels we skated on. There were no coatings. From that time on, in all our rinks, I was the “go-to-guy” for floor and rink maintenance – not for advice, but to get the work done.

In 1968, after a tour in Vietnam (leaving behind only half my hearing), I returned to school and later, using the only skill I learned while growing up in a rink, I was able to undertake post-graduate work at UCLA by refinishing the floors in homes on Mulholland Drive, in Santa Monica and West Hollywood, building a good clientele base with familiar names. During those years, my father facilitated the invention and perfection of Roll-on®.

1980 found me back in skating on the downward slide off of the disco boom, helping my dad and brother in their West coast skate distributorship, and still building rinks in the Northwest and Southwest territories. In the early 80's, on a plane out of Albuquerque bound for Jack Breen's rink in Massachusetts to fix yet another floor job someone had screwed up, I decided to total up the square footage of epoxy and urethane coatings I had installed in just those couple of years. I stopped the calculation at one million square feet.

From that time to this, I have functioned as trouble shooter for Roll-on® – not by phone, but by plane, by push broom, bath towels and vacuum cleaners: by drum sander, floor polisher, squeegee, rollers, lamb's wool, E-Z-ways and Padcos.

In 1985, leaving California for Texas to grow a new skate distributorship out of Chuck Kurp's KC Skate Company, I was joined by Charlie Taylor, previously employed by Tillinghast Flooring and one of the few men remaining who knew how to install a Rotunda skate floor. For the next ten years, Charlie was the foreman overseeing two to four maple, concrete and particle board installations a year.

Finishing a 20+ year run in Euless, Texas, I liquidated Express Skate Supply in August of 2008. My son took over Rebecca's®, a company started on a dare that finally overgrew Express Skate Supply, and I headed into retirement.

My brother, John, had the helm of Roll-on® for the past twenty years, but in August of 2009, I was handed the wheel from my brother John after a heart attack, from which he has made a full recovery, and I operate it today as comfortably as if it had been mine all this time.

I now face each morning knowing that every twelve months many hundreds of skating center operators of varying time in service, experience, education, with good days and bad days, varying economic concerns – even fears – and varying opinions on how it is to be done, will coat their floors with my products. Through climate, preparation and “magical” variations, most of them will be successful. Some will have “issues” resulting from wrong information, assumptions, misunderstandings, old habits and bad ideas.

My job is to help anyone who calls. Most often I will wish they had called sooner than they did. The help I offer is the sum of my experience starting from the top of that Clarke 1600 through every attempted substrate for skating to the chemists who I now communicate and work with. I try to stay open minded about procedures others have mastered in the field allowing for the effects of new technologies in coatings and my own limits. I occasionally get the upper hand on the guys in the lab – but I nod to their formal education and slide-rules as they also nod to my field experience and hands-on feed-back.

My toughest clients are often the seasoned ones – the ones with many successes behind them. After some inquiring – interrogation, actually – I often hit on a bad habits picked up over years of preparation and application that may have been forgiven by the attributes of the product. The product does allow for a wide margin of errors in the field – even repeatedly. These forgiving margins, due to the passage of time as well as new regulations, are narrowing.

My start line changes each day and my annual samplings are different from the other installers and re-coaters out there. It is different in context, tone, texture, content, volume and the dynamic variables effecting outcomes. My sampling does not – cannot – invalidate theirs. It's just different. But I'm only as good for my clients as my conclusions drawn from my samplings. I can make mistakes on the phone, not complete my thoughts, interrupt the caller's thoughts or, worst of all, assume certain facts that were not in evidence and conjure up the wrong picture from the spoken words I'm hearing. My job is to get your job right at any distance.

Regardless of our start lines – all I care about at the end of each day is the finish.

CONFUSING LAWS ARE NOW AFFECTING SKATE FLOOR COATINGS

AIR QUALITY LAWS resulting from accumulated legislation under the Clean Air Act of 1970 are now affecting skate floor recoating choices. Solvent as well as Water based coatings now fall under Federal regulations. Complicating the flow of information to the public regarding the Environmental Protection Agency (EPA) rules are laws passed by more than 20 separate state agencies exceeding the current EPA standards.

The permissible EPA minimum standards for all States are no longer accepted in Illinois and what is allowed in Illinois is prohibited in California. The classification of environmentally “Good or Bad” things for our environment is in VOCs. The term, “Volume of Contaminants” has been used interchangeably and accurately with a different term “Volatile Organic Compounds” – VOCs.

VOC LIMITS VARY FROM STATE TO STATE

ALL coatings and evaporating compounds are now scrutinized by Federal (EPA) as well as separate State and County air quality commissions established with authority to prohibit their manufacture or use. Owing to the type of chemicals and use, a skate floor coating is categorized as an **“Industrial Maintenance coating,”** escaping the more stringent VOC limits of “Floor Coatings.” The VOC levels discussed below address **Industrial Maintenance** coatings for skating center application unless or until the category is changed or the VOC limits are changed by the various oversight authorities.

Per the EPA, the Federal minimum Industrial Maintenance coating levels may not exceed 450 grams of VOC per Liter – expressed as **450 g/l**. Most of the popular skate floor coatings are at or below this level today.

SEPARATE STATE REQUIREMENTS AND THEIR AUDITING AGENCIES

Separate state regulatory agencies have adopted tighter limits in all (Over 100 separate) categories of coatings specified by the EPA. These states have formed regional commissions in order to work collectively but without

surrendering their autonomy within the group. The largest collective is the Ozone Transportation Commission (OTC www.otcair.org) at this time. The OTC limits Industrial Maintenance coating VOCs to 350 g/l. This 350 g/l limit is being adopted by states outside the region as each state considers their commitment to the Clean Air Act. Unfortunately, some of the more popular skate coatings exceed this 350 g/l limit.

The states and districts with OTC rules include **Connecticut, Massachusetts, Maryland, New Jersey, New York, Pennsylvania, Delaware, Maine, New Hampshire, Rhode Island, Vermont, the District of Columbia and portions of Virginia. Virginia counties include Arlington, Fairfax, Loudoun, Prince William, and Stafford, including the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park and the Fredericksburg area.**

The Lake Michigan Air Director's consortium (LADCO www.ladco.org.) has also adopted the limit of 350 g/l. LADCO is a cooperative air quality group of states comprised of **Illinois, Indiana, Wisconsin, Michigan and Ohio.**

CALIFORNIA AIR RESOURCES BOARD (CARB www.arb.ca.gov) Limit: 250 g/l. Only one solvent based skate floor coating can reach this limit, but is not yet available. Few water-based coatings suitable for skating can achieve this limit.

South Coast Air Quality Management District – SCAQMD www.aqmd.gov
- This commission writes its own rules separately from CARB. Limit: 100 g/l. At this time, no skate coating can reach this limit. **This part of California includes Los Angeles, Riverside, San Bernardino and Orange Counties.**

Other States with separate local Counties already adopting or considering the adoption of more stringent VOC limits than the federal 450 g/L EPA limits include Kansas, New Mexico, Colorado, Texas, Missouri and Florida.

Although the new regulations affect what products distributors in these areas can buy and warehouse, coatings manufacturers are working to keep abreast of these new laws and restrictions at Federal, State and down to local county levels. When considering the purchase of a coating the customer as well as the vendor must know in which region the product can be used. Contact skate distributors and vendors to determine compliance of coatings available to you.

ADD LIFE TO YOUR SKATE FLOOR COATING – A REFRESHER

GETTING YOUR MONEY’S WORTH

Even though we understand that skate floor coatings wear over time from regular use, skate floor coatings wear out sooner from excessive dirt. The maintenance policy of a skate center that ensures the longest life of its floor coating is three-fold, (1) stopping the sources of dirt from entering the rink (2) removing the dirt that gets through, and (3) identifying contaminants accumulating in your center.

TAKE IT TO THE MAT

There is simply no better way to reduce the input of dirt into a skating center than to direct foot traffic onto a **three-part entry matting system** just outside or just inside the front door. These are usually 12 feet long or more. By simply walking on the mats, the soles are first treated by a Scraping Mat of high stiff bristles picking at the shoe treads; then a Wiper Mat of shorter bristles removes the loosened dirt and a Cleaning Mat removes finer particles. You don’t have to clean dirt that doesn’t make it into your rink!

MACHINE WASHABLE

Clear water cleans a skate floor coating extremely well. *Non-residue cleaners* are effective, but difficult to find. Most skate distributors, however, stock non-residue skate floor cleaners. All coated skate floors are best cleaned with the aid of an automatic scrubber – the Zamboni of roller skating rinks. This battery operated machine spreads water onto forward rotating pads while a rear squeegee and vacuum system pulls the dirty water back into a reservoir. Those who operate an “automatic,” owing to its ease of use, often clean their floors twice a week.

UNPLUGGED – NO STRINGS ATTACHED

There is no greater waste of time, and no justification for the delusion that a skate floor is being cleaned, than by using an ordinary janitor’s string mop and bucket. Repeatedly pushing dirt from left to right with the barest amount of it reaching the ringer and bucket will eventually cause a dirt build-up on your floor. When an “automatic” is not available, the most effective method of cleaning a skate floor is to “tack the floor.”

Soak a large terrycloth towel in a bucket of **clear water**. Wring out the towel of excess water. Be prepared to change the water frequently. Using a 24” or 36” push broom or squeegee, push the towel across the width of the floor, not the length. Reaching one side, turn the towel over. Push it back to the other side. Overlap a little. Soak the used towel in clean water, wring out and repeat the process. Many operators use 3 persons – one pushing the towel, one preparing a second towel for the pusher and one changing the dirty water. A 10,000 skate floor can be cleaned in an hour with three “regulars.”

BUBBLE TROUBLE – PILING UP

The surest way to contaminate a skate floor, dull the coating, shorten its life and face dirt-packed rental wheels is to clean your carpet using any other method than Hot Water Extraction. No “wet” solutions, no “dry” cleaners – just plain old, plentiful and cheap clear water is heated and passed through a carpet extractor. Carpet cleaning additives leave residues. “Hot Water” extraction is recommended by nearly all carpet manufacturers today. It takes a day or two to dry out, but there is little lurking in the pile ready to bond with humidity and popcorn butter or ground-in Snickers sprinkles.

BLOOD, SWEAT AND TEARS

Water is the basis of cleanliness – even life itself. Water is also an activating medium and transporter for all the wrong things in a rink. If 150 skaters have remained active on your floor for 2 hours, over 45 gallons of water (sweat) was released into your enclosed atmosphere. Overnight, this water gathers on your walls, settling on countertops, carpeting and the skate floor, it has entered the filters and ductwork of your ventilation system. A portion of this water has crept into the revealed sides of hardwood or particle board flooring. If residues from carpets and floor cleaners exist, they have been lifted onto skate wheels during sessions. All dust and dirt from outside the center has been laid out and mixed with this humidity for the duration of the session and is being transformed into a paste and added to the sugared mixture deep in the floor crevices and carpet pile. Not a pretty picture, really.

So why *IS* my floor dull now? Why *ARE* my rental wheels picking up dirt? Where *IS* all this dirt coming from? What *CAN* I do to improve the life of the skate floor? The answers to these questions are never simple or easy, but a review of what is covered here, might lead to money or time saving answers to one or all of them.

THAT'S THE WAY WE'VE ALWAYS DONE IT!

THE BUSINESS OF *BEING* OR *BECOMING*

The way we process, accept and then graft new information into our own preferences creates a habit. Repetition strengthens habits. The good news about a habit: *“it works.”* The bad news? *“It has always worked.”* Misinformation, bad habits, laziness, arrogance and complacency (Complacency: The feeling that we have sufficient information to survive, therefore no further need to learn more.) all head toward risky results when brought to skate floor maintenance, floor repairs and recoating preparations. Most habits are made worse by an accumulation of time, staffing changes, taking “logical” shortcuts or a defective memory. Once learned, we gain confidence from our knowledge and a kind of self-certainty that can inhibit the acceptance of new information. We usually implement practices trusting completely in information we received early in life or just days ago. And, if it's working, we don't go looking for new ways to fix it. That is, we rarely challenge what we know when it seems to work for us and that fact slows or prevents us from taking steps toward continuing our education or updating our information. When it comes to bad habits and wrong practices, one area where these remain on the edge of disaster are those applied to skate floor maintenance, floor repairs and floor recoating preparations.

THE EVOLUTION OF THE STRING MOP

In a previous article I mentioned the Battery Operated Automatic Scrubber. Back in the “heyday” nearly every skating center built was supplied with one. There is no better way to clean a skate floor than with an “Automatic” usually with clear water. No other skate floor cleaning method is easier, faster and more efficient. The recommended frequency of use back then was often three times a week. But some operators found it effective enough to clean the floor just twice a week; once on Fridays before a weekend of skating and a second time on Mondays, to clean up from the heavier weekend traffic. Sometimes the operator resorted to “towel” the floor between weekend sessions or during the week-days with terry cloth towels and clear water because someone forgot to put the charger on the Automatic. New maintenance personnel found it simpler, to grab towels and a bucket on Monday to “tack” the floor and give the Automatic a full charge for Friday, cutting

its use to once a week. Later, forgetting again to charge it, the Automatic was passed over and the floor towed on Friday instead of scrubbed. After years pass, a newly hired maintenance assistant turns to a supervisor and asks, “What is that big machine in the janitor’s closet?” “It’s a floor scrubber,” is the reply. “Here, grab that old string mop over there, I’ll fill the bucket; we’ve got to clean the skate floor.” The new guy then asks, “Wouldn’t that floor machine make it easier to clean the floor?” “That thing? I don’t know anything about that,” says the supervisor, “this is the way we’ve always done it.”

THIS IS THE WAY WE’VE ALWAYS DONE IT.

As a result of this often heard phrase, which is a bar against new understandings, “*this is the way we’ve always done it*,” an upcoming series of RSB articles for the 2012 skating season will focus on recent discoveries and currently recommended maintenance, repair and pre-coating procedures for specific skate floors. Each article will separately address the good care and feeding of hardwood, particle board, concrete and asphalt skating surfaces.

Common practices and new technologies will be explored to determine whether or not some procedures are still worth while. Where did the idea of using white vinegar as a floor cleaner come from? Does it work? What completely cleans a floor when a day-care skater throws up on it? Why does a skate floor get oily? Where does dust really come from? Can a skate floor (or a snack bar counter top, for that matter) be cleaned without using water? Why does a hardwood or particle floor grow? When do they shrink? What causes edge boards to “cup” or “lip up?” What causes “humps or bulges?” How do you fix them? What can level an uneven concrete slab? Why does auto body filler work in some places on a concrete floor but not in others? Many operators reading this know the answers to these questions and have ready solutions for the problems they have confronted on their own floors throughout the years.

We will discover and review what is known today and compare similarities or differences in current practices. We will reveal recent developments and others soon to be introduced. One article may confirm what is known while another might recall something forgotten, yet another may strengthen an already solid maintenance program contributing to its growth and evolution and help to change this aspect of the operator’s business from simply *being* to aggressively *becoming*.

SKATE FLOOR R_x

CHECK UPS AND PREVENTATIVE MAINTENANCE

It is said that, “We don’t wear out, we rust out.” Preventative Maintenance is the expression we use for the work of preserving or extending an intended life span of things from lawn mowers to lungs; from sky scrapers to skate floors. When properly maintained, we keep the silent corrosive and destructive elements of abuse and neglect at a lower value on the aging equation. Clearly, when it comes to skate floors, the economies are always in favor of maintenance and repairs over replacement. However, like the character in a popular old movie that treated ALL his ailments with Windex, when we discover a successful remedy for one malady, we sometimes begin think of it as a cure for other similar symptoms and justify the treatment as being the only logical one to fix the problem, even though it isn’t especially successful. Bondo® and auto body filler is to some Skate Floor maintenance personnel as Windex was to our old movie hero: a great product with especially limited application.

MISDIAGNOSIS

Of all the misused and misunderstood repair or maintenance materials applied to roller skate floors, Bondo® and other epoxy auto body fillers can be relied on to fill dimples and gashes but NOT joints and cracks. They are quite successful filling and leveling pitted areas and gouges but almost always fail when attempting to fill separations in concrete, asphalt, particle board or even hard wood skate floors. I have spoken with many who fill the cracks and separations in their skate floors annually, sometimes quarterly, after the material itself begins to crack, separate and eject from the repaired locations. Perhaps you are one who is experiencing this now. Many in charge of skate floor maintenance believe this cycle of filler application - followed by the material releasing - which is then followed by reapplying the same filler - is somehow part of the maintenance required their type of skate floor. It is actually an unnecessary cycle – or at least one whose frequency can be reduced by using a more appropriate remedy. Also, the use of auto body filler for crack repairs can be a risky practice that may result in the cured product protruding or dislodging onto the skate floor over time.

TREATING THE CAUSE

Cracks and joints are in constant motion. The movements can be caused by changes in temperature and humidity as well as vibrations from nearby street traffic or a powerful bass in a sound system. Don't underestimate the dynamics of the weight of a skating crowd and the resulting stresses and tension affecting your skate floor. Auto body filler dries extremely hard and brittle. The material cannot respond to the movement of a crack or joint. Upon curing, vibrations and movement causes its release from the slightest motion or contraction in the floor and is forced to protrude or fracture, coughing up fragments onto the skate surface.

More resilient epoxies stretch with the movement of the floor yet may be sanded smooth when cured and are porous enough to accept new skate floor coatings. Except for more severe cases where a concrete slab has "heaved," causing a distinct shift from level at the fissure, all skate distributors carry epoxies that offer longer term and safer repairs to cracks and separations. Auto body fillers, as difficult as they are to work with, are still an acceptable solution to patching dents, dimples and gashes. Resilient epoxies, however, should be used for patching cracks and joints.

SAY AH

Tongue-and-groove hardwood floors also experience splits or fissures. Small gaps are, as in concrete and particle board, in motion throughout a hardwood floor. Because a wood skate floor responds more often, more rapidly and with more extremes of movement than any other skate floor, small gaps between boards can be desirable, permitting subtle expansion and contraction of the entire floor. However, if a seasoned hardwood floor begins spreading with increasingly wider gaps, there likely is a more serious problem than a simple patching will remedy. Good results in filling the occasional splits and gaps that do not need aggressive repair in a hardwood floor come from a paste made of sawdust (cut up a pine board to create a handful) and ordinary wood glue. Simply use the sawdust and glue paste as wood filler. The dried mixture accepts coatings easily and blends well with the flooring. We don't recommend this paste for any other purpose and encourage our maintenance crews to save the Windex® for entry door windows and the restroom mirrors and remind them that neither one will serve as a good breath freshener.

SKATE FLOOR R_x Part II

TONICS, POTIONS, POWDERS AND PILLS

“Repetition strengthens and confirms.” – Military Mantra

Troubles on skate floors are most often traced to accidental or sustained use of contaminating agents, chemicals or cleaners. Previous articles have mentioned some of the substances and habits. Here is (yet another but different) look at a few old nostrums and spells still being brewed up today.

MINERAL SPIRITS – *Eye of newt, toe of frog*

When added to solvent based floor coatings, mineral spirits cause serious drying problems and later, even more serious peeling of a skate floor coating. Deregulated years ago, mineral spirits were once added as a way to get a few more square feet out of the bucket. Once a logical cost saving measure, the addition of mineral spirits will become a costly disaster if taken up again these days. Mineral spirits can contain everything from recycled lubricants, citrus cleaners and animal and vegetable “stuff.” Peeling can result when preparing the floor by “cleaning” with mineral spirits, as was also done back-in-the-day. The solvent components of the mineral spirits may not dry out as quickly as they once did. In fact, they may leave an oily film behind, inhibiting the adhesion characteristics of solvent based coatings. Adding mineral spirits to solvent based coatings can have additional risks. The mineral spirits may not thoroughly mix and bond with the compounds in the bucket, inhibiting dry times as well as proper adhesion. Mineral spirits, if used for cleaning purposes, just as most detergents, will always leave an oily residue leading to slippery floor conditions and dirt build-up where ever the oils are tracked by the skate wheels.

DETERGENTS – *prickly pairs picked under a pale moon*

Urethane skate wheels will move contaminants quickly around any skating center. Nearly all experienced operators know that the addition of a detergent to floor cleaning water is not advised. Detergents leave oily films on all floor surfaces unless they are specifically formulated as “non-residue” floor cleaners. Detergent residue causes slippery or reduced grip conditions on skate floors. Tracked onto snack-bar and restroom floors, it creates more slippery problems. Often overlooked, detergent residue from floor cleaning products are tracked and absorbed into the lobby carpet where it binds with and holds more and more dirt. When skate floors are regularly cleaned by detergents and the carpet cleaning companies arrive with their own wet or dry detergent cleaning methods, it is not usual to hear of an outbreak of dirty wheels soon after the carpet cleaners leave.

CARPET CLEANING – *hair of bat*

Of all the panaceas causing the patient more troubles; every known cleaning solution or dry compound used throughout the entire carpet cleaning industry is not as safe to use as a simple water only extraction process. Now this is a statement may sound bolder than it really is. Today’s extractors are effective, efficient and, when handled by qualified professionals, will leave any carpet as clean and free of dirt, and nearly as fresh as the day it left the mill. Why take chances debating dry or wet mixtures used in commercial shampooers when a simple hot water extraction does the best job? Be sure to remind the carpet cleaners that yours is a “glue-down” carpet installation and that too much water pressure will break the bond between

the carpet and concrete beneath. If your skate center's carpets have been historically cleaned by shampoo systems and you have experienced the frustration of watching an accumulation of dirt on skate wheels within days or soon after shampooing, the cause may be the residue from carpet cleaning solutions that wreak havoc on your maintenance programs – especially as they attract and hold soil in the carpet that was just cleaned.

VINEGAR – *One for a man, two for a horse*

When we research it online, we learn that white vinegar is called an “acetic acid.” It derives from an ethanol bacteria. It is a “green” cleaner. We see that it has been in use as a non-residue cleaner eliminating streaks from windows washed with a detergent/water/alcohol mix. We read testimony raving about its many cleaning applications, clean scent and even its powers to heal ailments known through the ages. Since we have been in the skating industry, stories of using vinegar to increase a skate floor's grip have filtered into our consciousness for decades. However, there are circumstances in which vinegar will not clean a skate floor and should not be used until certain other maintenance procedures are brought in line. The most dramatic instance of “floor failure by vinegar” goes like this: It has been two years since the floor was coated. The floor has been cleaned using a solution of 1 cup vinegar to 1 gallon of cold water, a bucket with a ringer and string mop about every ten days or so throughout the years. The skate floor has been mopped about 70 times in 2 years. About 6 months after coating the floor – the floor begins to lose some of its grip. About a year later, it is losing its luster. Within 18 months the floor is losing its grip *sooner* between mopping. It's time to recoat. The floor is prepared by mopping it twice with vinegar and water and then coated with a skate floor coating. Some spots wrinkle and take longer to dry. The rink is opened four days after coating and the floor peels up in strips during the first session.

This was an actual occurrence. Mopping with the vinegar mix merely changed the Ph of the moistened dirt film, softening the dirt, and then moving it around. Some dirt found its way onto the mop strings and into the bucket, leaving the mop operator believing the dirt was removed from the floor, even though it was actually accumulating on it. As the practice of using vinegar continued, the dirt film became more uniform on the floor, which was losing its gloss and grip became troublesome. The wheels were also redistributing the thin softened film into the lobby and on to the carpet, snack bar floor and rest rooms. Finally – the toxic habit of mopping with vinegar and the belief that it removed dirt justified its use as a preparation for a new floor coating, which was destined to fail.

Even though warm water, in and of itself, is actually an efficient cleaner of any coated skate floor, its efficiency can only be realized, just as the efficiency of vinegar can only be realized, by what we call the best known floor cleaner and all time remedy: *Elbow Grease*. Fortunately, elbow grease (on our hands and knees with a scrub brush, bucket and towels) has been replaced by labor saving devices – such as scrubbing machines and a terry cloth towel tacking technique using plain water or a vinegar/water mix (1 cup to the gallon of water) to tidy up the streaks left behind by a scrubbing machine that loosens the dirt so that the water can carry it away at least once a week.

The important thing to remember about the presence of dirt in a skating center is that it is *plentiful and often*. Since it arrives daily, if not dealt with daily and aggressively it will surely overwhelm the patient. The best modern medicine is often frequent moderate doses of clear water, under pressure.

SKATE FLOOR Rx Part III

Trouble-shooting Wood Flooring

Testing, Diagnosing and Healing Skate Floors

A moisture meter is to your skate floor what a stethoscope is to your heart. It tells you more about the condition of your floor than any human can easily detect and points to trouble, often before symptoms worsen and it does so in seconds. Simply said, any reading above 12% when testing a skate floor indicates a possibility of excess moisture. Readings exceeding 20% in hardwood or particle board is a signal for further investigation. The moisture meter can be used to point toward spreading moisture beneath the surface as well as sources of the moisture. However, as with any other diagnostic instrument, the moisture meter is as good as the limits of its operator.

Readings reveal the presence or absence of moisture in a specific location. Once discovered, more readings are needed to determine the source, severity and direction of the water moving beneath the surface. For example, I have a heart murmur. My physician can hear it clearly through his scope. The difference between me and the physician, who remains awfully calm about a thing like that, is his education and experience. He explains to me that a murmur of this type is common and nothing to be concerned about. My recent “Echo Stress Test” proves him right. This article is designed to guide you to better interpret the signals being sent to you by your floor through the probes of the moisture meter. With practice, you may know as much about how to use a moisture meter as my doctor knows about his stethoscope.

All skate floors absorb, conduct and may also channel *sub-surface moisture*. Whether the floors are hardwood, particle board, concrete or asphalt, when water is introduced from poor foundation drainage below or roof leaks above, the path of travel and its effects are unpredictable. When moisture is known or suspected, a moisture meter calibrated for wood or concrete can direct a more confident remedy or check the progress of actions taken to solve moisture problems as they are discovered.

911 - HEMORRHAGING! Incoming! Broken pipes, roof leaks, flooding from door thresholds – **Stop the flow quickly!** For us humans, we apply a tourniquet, for a rink, we quickly locate the water main, sandbags or plastic garbage cans. After the flow is arrested, the real chaos begins and precious time passes while the unseen destruction has already started. Mops and buckets and fans - even dehumidifiers – are mobilized to remove the water quickly from the floor surface. The water is removed and the problem solved. We dry and air out the wound and commence a normal life again. Unfortunately we didn’t treat for infection. The water has found its way beneath the skin of the skate floor. Within hours after we’ve cleaned up and dried out the surface, the water that found its way below the surface has infected the under side of the floor and started radiating, in a selective manner, beneath it. Although this radiation is worsened when occurring under hardwood or particle board floors, it also occurs below flooded concrete and asphalt slabs as well. The water that has stood on the top of a 400 square foot area will have migrated beneath the floor and found ways to travel and spread across parts of a 6,000 square foot area, becoming involved in half the skate floor. Days, or even weeks after the flood, the floor begins to grow – perimeter expansion gaps begin to close, possibly moving the floor edges against side walls. On hardwood floors, 50 feet from where the leak occurred, boards begin “cupping.” Common to flooded hardwood and

particle board floors – a “hump” appears from nowhere days later. The hump can rise high – 8 inches or more – and be no where near the original leak. I have entered a skating center that had been completely submerged to find a corner of the floor “curled,” not humped, with its corner above my head like one side of a skate-boarder’s half-pipe. (Because it was still wet, I was able to save this floor.)

HYDROSTATICS 101: Gravity (the extreme pressure caused by the weight of your skate floor), Water (a substance that can not be compressed), Softer materials below the level of your skate floor – your “underlayment” (forming routes of least resistance) trigger two natural laws: Capillary Action and Hydrostatic Equilibrium (let’s call them “Wicking and Squirt”). We observe capillary action when leaving a paint brush in a can of paint – the paint “wicks” up the brush fibers past the level of paint in the can. Hydrostatic Equilibrium is when the water beneath your floor has been drawn (wicked) over to a depression where it is no longer under pressure and where it remains in a “puddle” somewhere beneath the floor’s surface – possibly a hundred or more feet from where the leak was located. And there it sits, trapped in a reservoir beneath the floor’s surface slowly releasing water vapor which is gradually absorbed by the material above it while elsewhere, another hundred feet away, more moisture has traveled to another comfortable location where it is also working into the pores of the wood above it. The infection has settled in, the damage will soon appear.

DIAGNOSTICS: Don’t worry. You own a moisture meter! Since the “Great Flood,” you have been pressing the probes of the meter into the immediately effected area and in a pattern all around the area and throughout the floor. Often right away, although it can take a few days farther out, you have identified the early onset of the infection 20, 30 even 60 feet from where the water entered the floor. You know exactly where your floor is being attacked by the “shape changing” water molecules.

AGGRESSIVE TREATMENT: In the areas measuring above 20% moisture, you have drilled small ¼” holes, about one foot apart, through your wood surface, through the 1 inch or more thickness of your underlayment until your drill bit bottoms out onto the concrete below. You have purchased one or two dehumidifiers which you now bring out and place on or near the areas you have drilled. Setting the dehumidifiers to run on “Constant,” you can leave the rink knowing you are making a difference in the patient’s outcome. The sooner the subsurface moisture can be found, the sooner decisive action can take place and the sooner the remaining moisture will be eliminated beneath your floor.

Today, most skating centers have been on the ground for many, many years. Subterranean invasion of moisture from poor drainage at foundations or even underground wells and springs have been discovered and remedied. Obviously, these causes of encroaching moisture are as serious as the flooding described above, but may require city or contracting engineers to affect a permanent remedy. However, any noticeable physical changes in an established skate floor can, with the aid of a moisture meter, be investigated and a cause verified or ruled out. Meters are made separately for wood flooring material and for concrete. They are available on eBay, and should be priced at \$100.00 or more. The meter is, as the doctor’s stethoscope, our most reliable device to look into the very heart of our skate floors and, as we learn and experience all aspects of our business, our long-term good health and prosperity.

SKATE FLOOR R_x Part IV

PRESCRIPTION SIDE EFFECTS

TAKE THREE AND CALL ME IN THE MORNING - Previous Rx articles emphasize the simplicity of basic maintenance concepts: (1) Catch dirt before it enters the rink using a sequential cleaning of the soles of your patrons shoes with an entry matting system. (2) Avoid cleaning carpets with detergents – wet or dry – using warm water extraction instead. (3) Implement a floor maintenance schedule focused on frequent clear water tacking as well as weekly scrubbing with a mild, non-residue surfactant (cleaner). Basic Rules of threes – Scrape, Brush, Rinse (even your dentist recommends it) when practiced habitually will eliminate most of the dirt effecting the life of your carpets, your floor coating, air filters, frequency of over-all maintenance from walls to ceilings, restrooms to snack-bar – even the cooling fans in your video games and computers. Remember, once your rink is clean, the dirt can only come from the outside, traveling on the shoes and in the clothing of your skaters.

SHADES OF GREEN – Note the emphasis on clear water and only a casual mention of a cleaning solution above. Often surface oils must be removed with the use of a non residue “surfactant” (a solution that “lifts” the oil, allowing the water to do its thing). Cleaning with most detergents actually deposits surface oils that attract and bind dirt to a surface. This emphasis on clear water as the ideal BASIC cleaner brings us into even deeper waters of “Green Cleaning.” Going Green can get a bit bumpy. We hear of some pretty peculiar ideas coming from the Shady Green Corner – from earth friendly soft drink bottles to biodegradable coffins. Still, the public and those in the maintenance game understand that at the base of the green movement is a sound premise – that many of the 85,000 identified variations of, but untested, cleaning chemicals we use are most likely unnecessary and possibly harmful. The public is so convinced of “stepping back” and taking a closer look at the past century of progress affecting the quality of their lives that in 2010 the Green Movement received \$800 billion in consumer spending embracing things “natural,” “organic,” “eco-friendly,” “certified,” “healthful,” or just plain “green.” Food-stuffs, cosmetics, vitamins, cleaning compounds are included in this stormy sea of Green.

GREEN-BACK-DOLLARS – Unfortunately, with consumers responding on this magnitude, false and misleading claims from producers are rampant yet cannot be corroborated by environmentalists who are often at odds on the topic of what is truly green. Independently researching the topic yields little clarity but considerable suspicion. Television infomercials recall a time of 19th and 20th Century Horse and Wagon Medicine Shows. Claims are made that range from ridiculous to comical. Setting aside the other categories of Green – from organic chicken to acupuncture – focusing only on cleaning a well-run skating center, the sales of “natural” household cleaners normally used in skating centers were \$300 million in 2010. Consumer Reports lists ammonia, corrosives and phosphates as things to avoid. The EPA has a labeling program for cleaning products. Clorox Company and Martha Stewart feature their own Green brands. The result of the movement toward Green is not only a grab for market share through the age old “new and improved” advertising ploy, it has dramatically increased awareness and the curiosity of the consumer. Over-hyped and over-

priced eco friendly imposters abound. 40% of consumers who believe that going Green is a good buying decision admit they don't know how to verify claims of the brands. Half of all consumers are willing to pay more for a product if convinced it is better for the environment. Why go green, as the operator of a skating center, in the midst of such confusion and flat-out dishonesty?

WHEN STUDENTS ARE READY, TEACHERS APPEAR – Through all these dizzying contradictions stand important pieces of information for the operator: More than half your skater's parents literally buy into the Green concept and believe that Green maintenance programs are preferable to ones that ignore the issue. As a result of the Green wave awash in the media, parents with school age children are now hearing more about the Green emphasis in their schools as well. They are receiving bulletins and references to resources published by school districts claiming newly implemented "Healthy" school maintenance procedures in class rooms, cafeterias, gymnasiums and locker rooms. Schools are now responding to parental concerns about communicable disease controls on campus and are taking more action to protect students from disease when once their position regarding student body health was that problems of this sort were best dealt with at home. "If he's sick, keep Johnny away from school." Disease *prevention* is now part of facilities maintenance. The trusted deodorizer is now seen as an addition to indoor pollution, its elimination leads to correcting with the sources of noxious odors instead resorting to the old "cover-up." Schools are now issuing bulletins identifying and eliminating chemical cleaners that are hazardous to staff and students, irritants that are challenged by state health laws and chemicals that are dispensed in unsafe concentrations. What percentage, then, of the parents who drop skaters at the front doors of skating centers would appreciate knowing that their skating center has implemented the same Green cleaning procedures of their own local schools? The answer is built into the question.

SIDE EFFECTS – It is safe to say that implementing green maintenance procedures in a skating center is not only effective in controlling and offering a healthy environment to your skating public, but the fact that doing so is also worth promoting within your community. People want to know. Skater's parents want to know and will respond favorably to your rights to brag about your concerns and the actions you take intended to ensure their child's health, safety and well-being while in your facility. Consider adopting Green methods and promoting that fact on all your literature, hand-outs, website – even passes and business cards. Be careful about the claims made, of course. Although a skating center is eligible to qualify as a Green Building by State or Federal agencies, it takes a year or two, audits, inspections and some paper work to accomplish it. Green with Envy? The side effects of a maintenance program with a Green basis then are health, parental approval and profits.

Please find more detailed information about Green Cleaning Online:

BASICS: www.epa.gov/epp/pubs/cleaning.htm

HEALTH: www.webmd.com/health-ehome-9/green-cleaning

SCHOOL INFORMATION: www.greencleanschools.org

SKATE FLOOR R_x Part V

THIS SKATING SEASON'S 10 RESOLUTIONS FOR A HEALTHY AND HAPPY SKATE FLOOR

Every year we heard it: “Where is your heavy jacket?” “Cover your mouth when you sneeze!” “Don’t track that mud into my kitchen!” It was the loving and nurturing language of Fall and Winter spoken by mothers everywhere.

As we heard the same repeated cautions about health and hygiene and preventative maintenance in the changing seasons year after year growing up, true or not, they are a part of our behavior and habits today. In the same spirit of strengthening good habits, its time for a review of what we know about keeping our floors healthy and our skaters happy about it.

As you know, the presence of dirt in a skating center is *plentiful and often*. Arriving daily, it must be dealt with daily and with discipline, or it will overwhelm the rink.

1 – STOP IT AT THE DOOR

Eliminate dirt with a three-part ENTRY MATTING SYSTEM placed outside or just inside the front door. Scraping mats pick at the shoe treads; a Wiper Mat removes loosened dirt and a Cleaning Mat removes finer particles. You never have to clean what is prevented from entering the rink.

2 –DAILY DUSTING

As much fun as a skater has when pushing a 6 foot wide dust mop around the floor at top speed, dust mops pushed at high speeds toss the dust up and over the mop. Go easy and daily. Never spray or treat the dust mop – it’s a sure way to end up with a slippery floor.

3 –STRING THEORIES AND THE SCIENCE OF CLEAN

Using an ordinary janitor’s string mop on a skate floor pushes dirt from left to right. The barest amount of dirt reaches the ringer and bucket. The practice will eventually lead to a dirt build-up on your floor and slippery skating. STOP IT!

4 –THROW IN THE TOWEL

A moistened terrycloth towel cleaning procedure should be used at least twice a week. A 10,000 skate floor can be cleaned in an hour with three “regulars.” See the simple instructions posted at popular skate floor coating web sites.

5 – AVOID TROUBLES THAT PILE UP

The surest way to contaminate, dull, and shorten the life of a skate floor and pack dirt onto rental wheels is to clean carpets with any other than a *Hot Clear Water Extraction Method*.

6 –BURP THIS BABY

Moisture is an activating medium and can be unhealthy in a rink. 150 persons skating for 2 hours, produce 45 gallons of sweat released into your *enclosed* atmosphere. Settling on countertops, in carpeting and the skate floor, it has also enters the filters and ductwork of your ventilation system. On cold days or nights continue ventilating the rink for several hours after closing to avoid unhealthy mold and mildew accumulations caused by condensation forming after skating sessions.

7 –FACE WINDS OF CHANGE

Regulations within the Clean Air Act of 1970 are now affecting solvent as well as water based coatings under separate state authorities. See skate floor coating websites or contact them directly to determine the limits in your state or county.

8 – REMOVE MARKS AND SPOTS

Black marks on floors are “burned in” tar – cheap bulk-extenders found in rear brake and toe stops. Removal may require the use of flammable substances such as Zylene or Acetone. Test such chemicals to determine their effect on floor coatings, be careful disposing of cleaning clothes and storing all chemicals. Be weary of paint thinners and mineral spirits leaving oily residues.

9 –ADD A FLOOR STETHASCOPE TO THE MEDICAL KIT

A moisture meter is to your skate floor what a stethoscope is to your heart. When moisture is known or suspected, a moisture meter calibrated for wood or concrete can solve moisture problems as they are discovered. GET ONE!

10 –AVOID KNOWING EVERYTHING

It’s the surest way to miss out on new information. When we know that we don’t know, we are called, “students.” When we don’t know that we don’t know something, we’re called, “double-dumb.”

Question where the information used for actions taken in habitual – year by year – season by season – maintenance procedures has come from. There might be a different way. There might be changes in regulations or discoveries published to improve results safely and economically.

CONCRETE SOLUTIONS

THIS LAST RESORT HAS BECOME MY FIRST CHOICE

It happened about twenty years ago: “There I was, knee deep in buffalo chips, trying to build a fire!” My Texas-born neighbor uses that expression when finding himself in a tough spot. I had faced many troubles during my thirty years converting asphalt, particle board and concrete into smooth and safe skate floors, but nothing like this. Always the last contractor to step into a job site, during new rink construction or for a conversion – the floor guy – I took pride in completing over 1,000,000 square feet of applications of base and top-coatings and solving the usual problems along the way – never leaving the site without accomplishing my mission and watching the smiles on the faces of the new operators and their families as I rode off into the perfect sunset. This was going to be different.

I found myself standing in the middle of the most marred, scraped, and unevenly finished 11,000 square feet of fresh concrete ever intended for use as a skate floor. After walking the floor, occasionally extracting protruding cigarette butts, candy wrappers, bits of cut wire and insulation from the surface with my pocket knife, I finally stopped, turning to survey the distortions left from a careless contractor, completely “bum-fuzzled” (another Texas expression). I had to allow the idea to take hold that I might not be able to save this one. In all other jobs, I could apply a remedy (heat, cold, chemical, sander, grinder, air or dehumidifier – sometimes Time itself would solve a problem) but how was I going to tell this hopeful couple – their rink nearly complete – that their dream was now a nightmare from which I could not wake them?

Calling my factory, I described the situation, desperate for a solution. No one on the other end of the line could give me a way out but I was told to wait while they researched the issues within their network. The answer, the remedy – the perfect solution – came the following day. But a second and more devastating problem also came to the surface of the concrete that night. When attempting to determine how the imperfections might be overcome in some places using the coatings that had been shipped into the site for me to apply, I discovered that an additive had been mixed into the concrete during the pouring (used to accelerate curing) which we specifically prohibit when working with a contractor. The nature of the additive prevented our coatings from adhering to the concrete. All was lost.

ZAMBONI® ON CONCRETE

Many of us have heard of the Zamboni® – a machine developed 60 years ago by Frank Zamboni for use in ice skating rinks. The machine “shaves” a fine layer of the ice from the frozen surface while laying down a thin layer of water which immediately freezes behind it. It creates a brand new, clean, smooth and level ice rink in no time at all. Abrasive Blasting, although completely unrelated to the ice resurfacing machine, is the general category of equipment designed to propel particles under pressure. We are most familiar with Sand Blasting which uses the process patented in 1870 by Benjamin Tilgham. At first designed to prepare smooth surfaces for painting, plating and even shaping objects,

pressurized fluids were initially used to forcefully eject the abrasive materials. Air pressure is used for somewhat larger jobs. The process that was introduced to me to solve the first, as well as to prepare for the solution to the second problem on this floor uses high velocity centrifugal wheels (patented in the 1930s by Wheelabrator) to propel hardened metal shards or buck-shot depending on the condition and hardness of the sub-straight being treated or the condition and hardness of the film (surface) being removed. The process used on concrete surfaces is called Shot Blasting. One of the more impressive uses of this technology came about in the late 70s when Burlington Northern railroad developed repainting stalls similar to a car wash where paint and rust on rail cars would be stripped by shot-blasting heads and emerge repainted and numbered in a single pass. On concrete, an experienced shot-blasting operator can salvage disastrous results from a careless contractor. More commonly, shot blasting is utilized to correct uneven pavement on roads and bridges as well to clean and resurface airplane hangers. When watching the equipment run, once having seen the Zamboni® in operation, it is natural to compare the two. Equipment and experienced crews are becoming more and more common throughout the country.

A most important advantage in the use of this type of equipment over ordinary floor machines and grinders is in the Shot Blaster's consistency of finish. Grinders, even when used by careful and experienced operators, can leave a concrete floor with "new-moon" shaped abrasions that become another part of the problem while working toward a solution. (Some of you know exactly what I'm talking about.) It has often been the case that a grinder causes more trouble than it was brought in to solve. Until learning of and bringing in the shot blasting crew to help level the floor discussed above, our only remedies were long hours, added expenses in labor and coatings and imperfect results. The Shot-blasting crew arrived (from a distance of 400 miles at that time). Using a dustless machine cutting 36 inch swatches, they completed their work in less than 8 hours and left me with a surface I could easily handle. What about the concrete additive blocking adhesion of the coatings? By the time the crew had arrived, my factory informed me that they had recently completed research and production of a "barrier coating" they developed for Terrazzo – concrete and granite that is polished to a glass-smooth finish. They were sure that it would anchor into the pores of the concrete and give the skate floor coatings something to hang on to. I applied the barrier coats when the crew left and the remaining skate floor coatings as well. As I had come to expect, the smiles on the operator's faces were the last image I took from the job. The rink opened the following week-end.

I share this story with you here to stress the importance of keeping up with ever changing technologies. One of the more prohibiting factors in converting existing buildings into skate centers is that their floor specifications deviate too far from our industry standards or the flooring materials used cannot easily be removed. I am receiving calls from more and more prospective rink operators in small and large communities looking to convert an existing building in order to create new skating centers. Shot Blasting will reduce the floor problems most commonly faced in such conversions and improve possibilities for growing our industry. Where once chemical stripping followed by laborious grinding was the only solution to the creation of an economical skate floor, Shot Blasting is now the first recommendation I ask prospective rink owners to consider in a conversion or as a remedy to resurfacing their existing concrete skate floor.

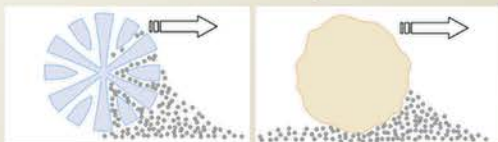


MICROFIBER FLOOR MAINTENANCE

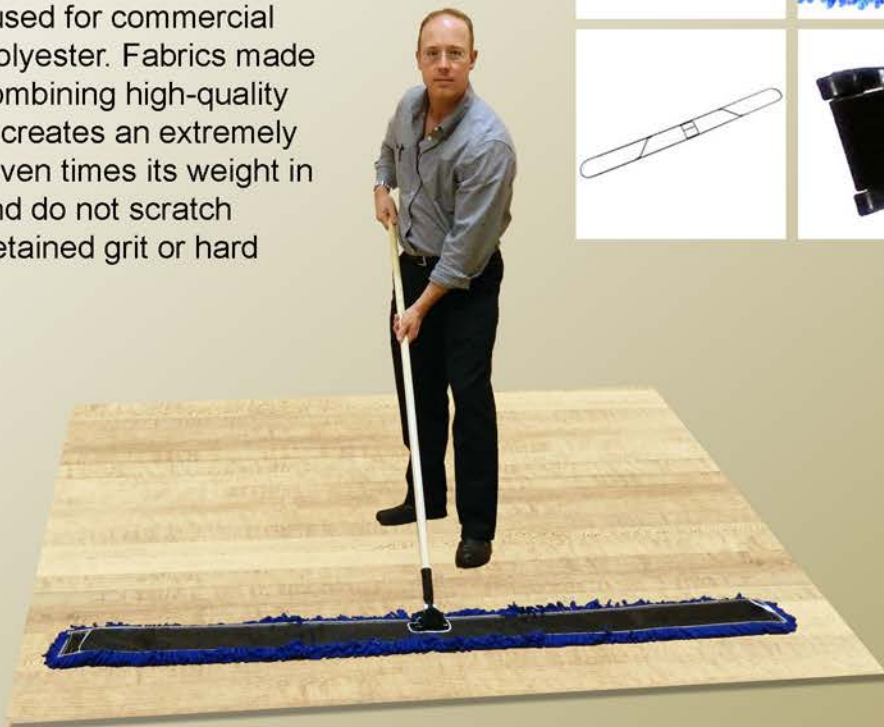


CLEANING: Our microfiber fabrics are used for commercial cleaning and are constructed of 100% polyester. Fabrics made with microfiber are exceptionally soft. Combining high-quality microfiber with the right knitting process creates an extremely effective cleaning material, absorbing seven times its weight in water. Microfiber products absorb oils and do not scratch finishes or paintwork unless they have retained grit or hard particles from previous use.

Cross section of microfiber vs. cotton threads.
Microfiber leaves no residue compared with cotton fiber.



(Cleaning fabrics made of microfiber are only washed in regular washing detergent, never oily, soap-based detergents. Fabric softener must NEVER be used. Oils in the softeners and detergents will clog the fibers making them less effective until the oils are washed out.)



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Frame:

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Handle:

item# MHAND.....\$10.50 each

60" Kit (Mop Head, Frame, & Handle):

Kits save you 10%

item# MF5.....\$31.50 set

72" Microfiber

Mop Head:

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Frame:

item# MFRAME72.....\$13.50 each

Handle:

item# MHAND.....\$10.50 each

60" Kit (Mop Head, Frame, & Handle):

Kits save you 10%

item# MF6.....\$37.50 set

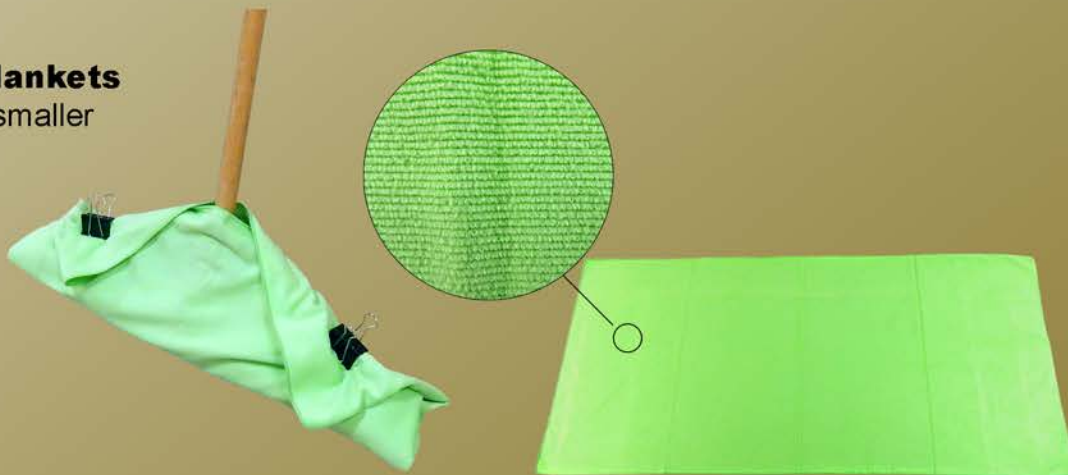
27 x 59 inch Microfiber Blankets

Use them on floors, or cut into smaller squares for counter tops!

item# MT70140.

\$5.75 each

\$60.00 per dozen



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INTRODUCING



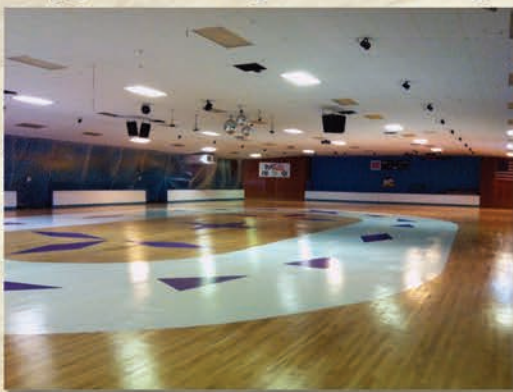
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** Both skate floors are converted from oil based finishes (Roll-on and other brands) using clean, environmentally friendly and proven water based Skate Floor Coating Systems - coating systems per square foot costs above do not include labor and shipping charges.*

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