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Air Temperature

***Pool room air temperatures and environments***

There are many variables concerning the air temperature and humidity levels in an indoor pool. The following information is backed by experience, antidotal evidence and research data from our USA Swimming preferred provider Desert Aire (the largest HVAC manufacturers for pool room heat and dehumidification).    
   
Decades ago when most pools were 4-lane, 20-yard tanks in the basement of brick buildings, someone came up with the observation that the air was easier to breath when the water and air temperature were within a couple of degrees of each other.  From this common sense observation parameters were developed.  This was when boilers heated most indoor pools and the water temp was always around 84 degrees.  The air handling systems were usually steam (hot water) and there was really no such thing as dehumidification.  So bringing steam heat (no forced-air) into a room with the thermostat set at 74 degrees F (23 C) was no problem. There was no draft and by the time the air contacted the warmer water, the room temp leveled out about 78 degrees F (25.5 C).  
   
Now we are in the age of forced-air gas or electric heat and steel buildings rather than brick and mortar.  The steel is susceptible to moisture and the air has to be dehumidified. Everything is the building can be adversely affected by too much humidity. It’s a new ball game but some are still trying to play by the old rules.  We would like to give a formula, but the systems vary too much as does the air duct configuration.  Even warmer air blowing across the client’s wet body can be uncomfortable.  So we have come full circle to using common sense supported by pages of formulas and calculations.   
   
So, definitively, here is where we are:

1. Room size – the larger the room the harder it is to find a comfortable air-water temperature balance.
2. Pool size (surface area) - the more surface area the more the water will heat the air and add humidity.
3. Pool agitation and bather load – the more jets and bubblers and the more people splashing, the more interaction between air and water.
4. Chemical treatment of the water – the type and brand of chemicals greatly affects air and water quality.
5. Type and size of filter – the more efficient the water filtration the better the air quality.
6. Type and brand of Heating Ventilating Air Conditioning (HVAC) system and dehumidification system.
7. Pool patrons – the age, abilities of clients as well as the type of programming will influence how the temperature is perceived and accepted (e.g. high intensity exercise & therapy/rehab; children or seniors & active young adults, etc.)
8. Use of medium pressure Ultraviolet (UV) technology.

These variables are why there is no “set formula” to calculate air temperature for an indoor pool. Some other related situations:

Almost every properly designed pool room is designed to have a negative pressure. That means there is more air being exhausted than is being brought in.  If there is a steam room or sauna adjacent to the pool room, every time someone opens the door of the steam room or sauna – hot moist air immediately is being drawn into the pool room.   This is where the perception of “heavy air” is coming from.  It is humid and warm.

Other than people with “acute” respiratory problems, fresh humid air should not be harmful. The problem comes from the pool evaporation if the water is not balanced properly.  When that happens, Chloramines are released in the air resulting in potential health risks, such as Lifeguard Lung. This problem is common across the country and has a few solutions, one being a medium pressure Ultraviolet pool water treatment system.  There is an easy water test to check for this, it is the “free and available chlorine comparison”.

Bottom line – you are correct in being concerned about water and air quality and temperature. If your water is 83-86 F (28-30 C) – keep the air at 78-80 F (25.5 – 26 C) and drafts off of clients in the pool. Have the HVAC filters checked every 3 months and check water chemistry at least twice a day.

Some things you can do that can help improve the pool environment and also cut operational cost:

1. Cover the indoor pools every night. Lightweight covers with aluminum reels do not have to cost a fortune. Residential 14 mil thick solar pool covers can be used the width of the large pools. Usually 5 covers can be used on a 25-yard pool at a purchase price of less than $2000. These covers can lower the utility bill by at least 30%, save 35% on pool chemicals, and greatly reduce the corrosion on the structure itself.

For those in a “budget crunch” there is an option for 25-yard pools. The typical short course pool is 75’ long x 45’ wide. Residential solar cover reels can be bought and installed along one side of the pool. 5 of the 18’ reels can be installed with reel #2 and #4 being set back about 24” farther from edge of the pool and overlapping width wise with the reels (#1 #3 #5) co in front of them. This allows the 16’ covers to be reeled properly lined up with the other covers. There are some reels that may be able to handle more than one cover alleviating the necessity to offset 5 reels. Check with the manufacturer regarding cover capacity. The covers need to be slightly wider than 15’ and slightly longer than 45’ because they will shrink. We suggest 16’ x 46’ covers which fit nicely on 18’ reels.

5 each 12 or 16 mill solar covers 16’ wide x 46’ long can then be purchased. This size can be custom ordered or if cheaper a larger stock size can be ordered and then cut on site when delivered. The web is the best place to get pricing on the covers and reels. Many distributors will pay the freight on this size of order. Shop around.

<http://www.solarcovers.com/blue-solar-covers.asp>

<http://www.swimmingpoolsetc.com/rectangle-solarcover12mil.htm>

Our experience tells us that you should be able to get the reels and covers for between $1600 and $2200 for a 25-yard 6 lane pool. Prices vary depending on the time of year you purchase. The best time to buy is the fall or winter. The products will probably not be discounted during the spring or summer.



Covering the indoor pools allows the pool room to “dry out” overnight which is much better for all of the equipment and building itself. There are also more expensive versions of the covers and reels made specifically for large commercial pools. [Emailmick@totalaquatic.llc](mailto:Emailmick@totalaquatic.llc) for more information on these covers.

No matter how well we take care of our pools and their buildings, maintenance issues will always be present. Unless everything is made from titanium, it will eventually corrode. The secret to controlling corrosion is to “keep up with it”. When you first see it – treat it. The easiest way is to spot coat rusty metals. There is a product available at most building stores that does just this.

<http://www.rustoleum.com/Product.asp?frm_product_id=30&SBL=1&dds=17>

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| [Rust-Oleum Brands](http://www.rustoleum.com/default.asp?SBL=1) | Stopping Rust is Just the Start | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | |

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| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | |  | For our Canadian customers, visit [www.rustoleum.ca](http://www.rustoleum.com/can_home.asp?SBL=5) |   What's Your Project? [Select \/]  What's Your Surface? [Metal - Rusty \/]  Search by Color [Select \/]  Explore Finishes [Select \/]  Where to Buy? [United States \/]  Got a question? Rust-O University [Select \/]  Language [English \/] | | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | | **Rust Reformer**Stops Rust | | Rust Reformer  **Rust Reformer chemically converts rust into a smooth, paintable surface, so there's no need to sand to bare metal. Compatible with most solvent or oil-based paints.  *Instantly* converts rust to a non-rusting surface!**   * **Superior formula stops existing and future rust** * **Black flat finish can be top coated with any color** * **Ideal for rusty mailboxes, bikes, railings, patio furniture and much more!** * **No need to wire brush rust down to bare metal**   **Available in: 10.25 oz. Spray Item #215215**  **8 oz. Brush-on Item #225222** | | |  | | --- | |  | | | | |  | | --- | |  | | |

We have found that the brush on works better with less mess. Use this product on any metal except stainless steel.

Stainless Steel – Stainless Steel comes in various grades and is highly impervious to corrosion. The most common grades for pool accessories and equipment is T-304. The better grade is T-316. When stainless steel poles are subjected to a humid environment they can develop “rust spots”. This can be an eye-sore on back stroke flag poles, ladders, diving board frames, starting blocks, pool gutters, etc. I most cases the metal is not rusting but rather water is evaporating leaving behind metal residue or deposits.

If taken care of, these will not turn into actual rust on the stainless. If ignored the rust can compromise the stainless steel.

For stainless steel – wipe down rail or pole with a scotch guard pad.

[](http://content.etilize.com/images/400/11965513.jpg)

Then wipe poles with damp towel (good quality paper towels also will work). The residue on the towel may be black or rust color.

Then apply a liquid silicone car wax – any brand will do as long as it is silicone based

[](http://www.amazon.com/gp/product/images/B000DZXIJM/ref=dp_image_0?ie=UTF8&n=15684181&s=automotive)

This cleaning and recoating process is usually necessary 3-4 times a year. This will protect the stainless. If this becomes a problem that has to be treated more often then the HVAC system and humidity needs to be evaluated. If the air has chloramines the corroding process can also be accelerated. The same with salt generated chlorine pools.

One other note: If you have problems with corrosion on the surface of stainless steel, imagine what is happening with the interior of your HVAC system, your door and window hardware and casings, your light fixtures, your roof beams, and about every other metal part of your building.

This is why proper pool chemical readings and quality HVAC are so important.

For more information contact: [mnelson@usaswimming.org](mailto:mnelson@usaswimming.org)