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Safety Standards for Canadian Swimming Pools and Waterfronts Swimming Pool Standard

Swimming Pool Basin Colour Standard

Standard

The submerged surfaces of a public pool, except those required for safety or sport markings, shall be highly reflective in colour to a minimum light reflectance value (LRV) of not less than 70%.

Definitions

Aquatic facility: any swimming pool, wading pool, waterpark, waterfront, or similar location that is used for aquatic activities such as swimming, wading, diving or aquatic sports.

Aquatic sports: may include scuba diving and snorkeling, competitive swimming, lifesaving sport, diving, artistic swimming, water polo etc.

Bather: a person whose intent is to use the swimming facility.

FINA: Fédération Internationale de Natation (FINA) is the international federation recognized by the International Olympic Committee (IOC) for administering international competition in six (6) water sports: swimming, open water (swimming), artistic swimming, diving, high diving, and water polo.

Lifeguard: a person with a current National Lifeguard certification appointed by the owner or operator to supervise bather safety while bathers are on the deck or beach, or in the pool or body of water.

Light Reflectance Value (LRV), is a measure of visible and usable light that is reflected from a surface when illuminated by a light source.

Operator: the trained individual designated by the owner to be responsible for the day-to-day operation of an aquatic facility.

Owner: the person or corporation who is the owner of an aquatic facility

Safety supervision: a lifeguard's active scanning of their zone to ensure that bathers in that area remain free from harm. While providing safety supervision lifeguards must be on the pool deck or beach, vigilant, and at their station.

Swimming pool: an artificially constructed basin, whether indoor or outdoor, lined with concrete, fiberglass, vinyl or similar material in which a person can swim, wade, or dive.

Visual acuity: a measurement of the ability to distinguish details and shapes.

Rationale

Being able to see swimmers at all times is critical to bather safety and drowning prevention efforts¹. Swimming pool basin colour combined with good water clarity (see Water Clarity Standard) and appropriate pool lighting (see Lighting Standard) all help to improve the visual acuity of submerged bathers². If it is not possible to see the bottom of the pool at its deepest point, pool users and lifeguards may not be able to identify people in distress^{1,3}. In addition, a person entering the pool may not be able to see someone under the water or may not be able to judge the configuration of the pool bottom. A high reflective index to the pool basin is critical to visual acuity inside a swimming pool, including to the pool bottom.

Within Canada, various swimming pool basin colour and pattern guidelines and regulations have been established by regulatory agencies and government^{4,5,6,7,8,9,10,11,12,13,14,15,16}. International standards have also been developed and adopted^{18,19,20,21,22,23}. These standards and guidelines all recognize the importance of basin colour to bather supervision and safety.

Studies have demonstrated that it is easiest to discern objects on the pool bottom when the pool bottom is white in colour³.

In the absence of a universal colour code, this standard recognizes the preference of white as a basin colour and the importance of a minimum light reflectance value (LRV) of 70% to the safety of all bathers in swimming pools⁴.

Implementation

To ensure swimming pool basin colour is compliant to all related applicable codes, owners and operators should review design, including construction materials, and basin colour scheme with local government prior to construction. The following are noteworthy:

- Markings such as deep water drop-off indicators, stair nosings, water level coping, promotional designs, and swim lane lines should be clearly demarcated without imposing significant dark areas to the basin.
- Safety markings must comply with all applicable building code(s)²⁴.
- Competition markings should adhere to accepted industry criteria and published sport standards (eg. FINA and Swimming Canada standards)^{16,21,22}.
- Building materials and basin components that cannot be modified or are not available in a highly reflective colour should be limited.

It is important to recognize that pool basin colour may change over time. Painted surfaces are susceptible to fading and staining, stippled surfaces can attract algae and trap dirt, while glazed tile tends to resist colour loss or trap surface impurities.

Owners and operators have a responsibility to ensure that swimming pools always remain compliant to standards. To ensure the basin colour remains at a compliant light reflectance value (LRV), a schedule of inspections across the lifespan of the facility along with a regular preventive maintenance program should be maintained to keep basin surfaces in optimal condition.

Following a Standard Operating Procedure (SOP), pool basin surfaces should be:

- Inspected visually each day;
- Inspected monthly to ensure good physical condition;
- Maintained through a preventative maintenance program.

In well-maintained pools, the LRV of most surface materials is not likely to change significantly. However, under exceptional circumstances where the LRV of a pool basin is considered to have significantly changed, it should be confirmed and/or tested. Specifications on coloured products such as paint, tile, vinyl, and other materials are often readily available from the manufacturer(s) to confirm original design manufacture (ODM). Pool specific paints are generally only available with an LRV value of at least 70% or greater. A quick visual check of an original product or swatch to installed product can provide insight. For more accurate and exact comparison, the LRV can be easily measured using a hand-held spectrophotometer calibrated to international standards^{25,26}.

Light reflectance values range from 0% to 100%. A value of 100 (%) indicates absolute reflectance; conversely zero (0) is assigned to the total absorption of light^{25,26}. On the colour spectrum, pure white is considered to have a value of 100, while absolute black a rating of zero (0). International design standards typically assign a light reflectance value of greater than 80% to all shades of white^{25,26}.

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Approval

- Approved by the Lifesaving Society Canada Board of Directors on 10 April 2012.
- Revised:

Disclaimer

Lifesaving Society Canada's National Safety Standards are developed using Coroners' recommendations, the latest evidence-based research, and reflect the aquatics industry's best practices at the time the publication was approved.

The purpose of these standards is to encourage swimming pool, waterpark and waterfront owners, managers, operators and regulators to adopt these standards, in order to prevent drownings in aquatic environments.

Lifesaving Society Canada's National Safety Standards do not replace or supersede local, provincial/territorial or federal legislation or regulations, but they are considered the standard to which aquatic facility operators should work towards, in order to enhance safety within their operations and to prevent drowning.

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