

## NFPA 70®-2014 and 2017 Editions

National Electrical Code®

TIA Log No.: 1530

**Reference:** 680.2 Storable Swimming, Wading, or Immersion Pools; or Storable/Portable Spas and Hot Tubs, and Informational Note (new)

**Comment Closing Date:** October 12, 2020

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[www.nfpa.org/70](http://www.nfpa.org/70)

### Wording for the 2014 edition:

1. *Revise 680.2 Definitions to read as follows:*

#### 680.2 Definitions. ...

**Storable Swimming, Wading, or Immersion Pools; ~~or~~ and Storable/Portable Spas and Hot Tubs.** Those that are ~~constructed~~ assembled on or above the ground that are intended to be stored when not in use and are designed for ease of relocation. ~~and are capable of holding water to a maximum depth of 1.0 m (42 in.), or a pool, spa, or hot tub with nonmetallic, molded polymeric walls or inflatable fabric walls regardless of dimension.~~

Informational Note: Historically, a 1.0 m (42 in.) wall height accommodated most storable swimming pools. Modern manufacturing methods have allowed storable pool manufacturers to increase wall heights while still permitting ease of assembly and disassembly of the pool.

### Wording for the 2017 edition:

1. *Revise 680.2 Definitions to read as follows:*

#### 680.2 Definitions. ...

**Storable Swimming, Wading, or Immersion Pools; ~~or~~ and Storable/Portable Spas and Hot Tubs.** Swimming, wading, or immersion pools and spas and hot tubs assembled on or above the ground that are intended to be stored when not in use and are designed for ease of relocation, ~~constructed on or above the ground and are capable of holding water to a maximum depth of 1.0 m (42 in.), or a pool, spa, or hot tub constructed on or above the ground, with nonmetallic, molded polymeric walls or inflatable fabric walls regardless of dimension.~~

Informational Note: Historically, a 1.0 m (42 in.) wall height accommodated most storable swimming pools. Modern manufacturing methods have allowed storable pool manufacturers to increase wall heights while still permitting ease of assembly and disassembly of the pool.

**Substantiation:** This proposed TIA addresses significant issues with a steadfast limit of 42 inches for a storable pool.

It is extremely important to understand the history behind the prescriptive 42-inch limitation. In the 1971 edition of the NEC, no prescriptive wall height existed. In 1978 a prescriptive wall

height of 3-feet was added into the definition. The prescriptive wall height of 42 inches was originally added in the 1981 NEC.

This edition of the NEC includes a prescriptive limitation to a capability “of holding water to a maximum depth of 1.0 m (42 in.)”.

The storable pool industry has been manufacturing storable pools with wall heights of 48 inches for over 40 years without any negative impact on electrical safety. In fact, it was Proposal # 13, submitted by the *National Swimming Pool Institute* to section 680-4 during the 1981 NEC revision process that drove an increase in the pool wall height. It is important to read the submitters substantiation in which he states that: “Approximately 85+% of the above ground pools sold today are greater than 3 feet in depth (usually 42 inches to 48 inches), come in a variety of shapes and may have a maximum dimension of greater than 15 feet.” He was referring to storable pools.

The submitter’s intent was to remove the prescriptive wall height. However, the technical committee took an action to increase the height from 3 feet to 42 inches. This was done without any substantiation as to why they chose 42 inches and not 48 inches. The 42 inch maximum water depth is tied to a wall height of 45 inches. It is typical to see pools that exceed the 42-inch water depth, but qualify in every other way as a storable pool. From an electrical safety standpoint these storable pools are no different than a pool that has a 42-inch water depth. The issue here is safety, it is the practical safeguarding of persons and property. Providing requirements for electrical safety around a storable pool is not impacted if the maximum water depth is above 42 inches. The goal must be to identify requirements for the safe use of products such as a storable pool without focusing on prescriptive limitations such as water height which are not relevant to safe use.

Storable pools are easily identified. They are set on level ground. They come in a complete package, are typically set up in an hour without tools and the instruction manual clearly identifies it as a storable pool. Additionally, pump motors are always double insulated and are equipped with 25 foot cords that have a GFCI device installed within 12 inches of the male cord cap.

For decades there were no code issues for these pools, regardless of how they were classified. Today we have requirements in Part II for permanently installed pools for equipotential bonding.

Today, the AHJ is put in a very tough position when a storable pool with a maximum water depth just over 42 inches is installed. The AHJ understands it is a storable pool, that is easily determined, however, the AHJ understands the defined term limits the maximum water depth to 42 inches. The AHJ knows that: (1) the equipotential bonding cannot be bonded to the pool at four points, (2) the pool water cannot be bonded, (3) the pool pump is double insulated and cannot be bonded and (4) the equipotential bonding cannot be connected to the EGC of the branch circuit supplying the pump motor. This situation needs to be addressed.

This TIA is necessary to address multiple adverse impacts created with a prescriptive limitation of 42-inch water depth. Newer designs allow for such depth and an additional few inches of water has absolutely no impact on electrical safety.

This TIA is necessary to address NEC requirements that create conflict, confusion and hardship for installers, homeowners and enforcers.

These pools are sold as a complete kit and are typically ready for water in 60 minutes. No tools are required. They are simply set up on flat ground on a “ground cloth” which also acts to support the pool wall supports. The ground cloth often includes a loop similar to hanging drapes or curtains to hold the pool support which snaps into the pool wall support which is also designed as if you were hanging drapes or curtains. All of these pieces snap together. These pools are sold as complete kits including the ground cloth, supports, pool wall, ladders, filtration systems and pump.

#### Adverse Impact #1:

One significant problem with the prescriptive height of not more than 42 inches is that this industry has improved storable designs allowing for slightly deeper water depths.

#### Adverse Impact #2:

When a storable pool is classified as a permanent pool:

- It violates 680.21(A)(3) which limits cords on the pump to not more than 3 feet in length. These pools come with a 25-foot cord on a double insulated pool pump with GFCI protection within 12-inches of the male cord cap
- Perimeter surfaces require equipotential bonding. It is typical for supports of storable pools to be nonmetallic. Where they are metallic, they act as a support rod for hanging curtains or drapes and do not contact the pool water at any point. If connections are made, there is no benefit to electrical safety as the supports are not in contact with the pool water in any manner and they are removed by the homeowner to store the pool
- The pool walls are typically perforated galvanized steel with nonmetallic coatings/liners on the inside and the outside. There is typically a single corner that gets bolted (no tools) together with short bolts and wing nuts. No way to effectively bond
- There are no locations on the storable pool to properly terminate the solid 8 AWG copper conductor in four locations, in fact you cannot get one location.
- The pool pump motors are double insulated and do not provide a termination point for the equipotential grid. 680.26(A)(6)(a) requires that since there is no termination point for the solid 8 AWG copper, we must connect the equipotential grid to the motor circuit EGC.
  - o How does that happen?
  - o Does the installer cut the 25 foot cord, install a junction box and enter the solid 8 AWG copper?
  - o Does the installer run the 8 AWG copper 20 + feet to enter a JB with the GFCI protected receptacle to connect to the EGC? This is a shock incident waiting to happen.
- How does the installer bond the pool water? Everything associated with the pumping and filtration is nonmetallic. How does an installer get this done? How does an AHJ enforce this?
- How does the AHJ enforce things that are not practical, not feasible and quite literally impossible to achieve?

#### Adverse Impact #3:

These pools have significantly increased in popularity due to the Covid 19 pandemic. Identifying a storable pool as a permanent pool due to a couple of inches in water height has absolutely nothing to do with electrical safety. There are no safety driven NEC requirements for pools that are negatively impacted by a change of a few inches in water height. There is no logical reason to apply Part II of Article 680 to these storable pools.

#### Adverse Impact #4:

The installation of a solid 8 AWG copper or other equipotential bonding grid was never intended for a storable pool because we cannot bond the pool water, we cannot connect to the pool, and we cannot connect to the pump motor or the pump motor branch circuit. Relief is needed.

**Emergency Nature:** The standard contains an error or an omission that was overlooked during the regular revision process. The NFPA Standard contains a conflict within the NFPA Standards or within another NFPA Standard.

This TIA is necessary to: (1) recognize that the design of storable swimming pools was never addressed when the 42 inch height was included in 1981, (2) address serious issues that arise when a storable pool is classified as a permanent pool because of an inch of water and, (3) provide the AHJ with code requirements that do not base electrical safety on limitations which are not relevant to safe use. Additionally, this TIA must move forward to eliminate the conflicts created within NFPA 70, the NEC where section 680.26 is enforced on a storable pool.