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MEMORANDUM

TO: Code-Making Panel 17 and NEC® Correlating Committee

FROM: Sarah Caldwell, *Committee Administrator*

DATE: September 11, 2020

SUBJECT: NEC® Proposed Tentative Interim Amendment (TIA) No. 1524
Public Comment Review

The attached Public Comments are being submitted to Code-Making Panel 17 and the NEC® Correlating Committee for review.

If you wish to change your vote, the change must be submitted through the NFPA online ballot system at the following link: NFPA Ballot Link**.** If you do not wish to change your vote, no response is necessary.

Please complete the ballot on or before **September 17, 2020 by 11:59PM (ET).**

While completing your ballot, please remember the following:

- **A comment is required for both Question No. 1 and Question No. 2 for the online TIA ballot. Comments must accompany all Negative, Abstaining and Agree votes.**

- **If you vote "Agree" on Question 1, simply add "Agree" to the comment field and if you vote "Agree" on Question 2, insert the applicable letter(s) selections in the comment field which can be found in the Instructions box on the ballot site.**

You must hit SUBMIT to SAVE your work**.** **Note**: the system session will time you out after 60 minutes; any work not submitted at that time will not be saved! You may return to finish or change your ballot at any time up to the closing date. Ballot comments exceeding 4,000 characters must be submitted in a Word document via email, to Sarah Caldwell at scaldwell@nfpa.org.

The return of ballots is required by the *Regulations Governing the Development of NFPA Standards.*

Attachment: Public Comment(s)

NFPA 70®-2020 Edition
National Electrical Code®
TIA Log No.: 1524
Reference: 680.2 Storable Swimming, Wading, or Immersion Pools; or Storable/Portable Spas and Hot Tubs, and Informational Note (new)
Comment Closing Date: September 9, 2020
Submitter: James T. Dollard, Jr., IBEW Local Union 98
www.nfpa.org/70

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.
  - How does that happen?
  - Does the installer cut the 25 foot cord, install a junction box and enter the solid 8 AWG copper?
  - 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.

Foran, Rosanne

Comment No. 1
OPPOSE
page 1 of 4

From: Nick
Sent: Tuesday, July 28, 2020 9:57 PM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70
Attachments: above ground pool filter.pdf; water bond fittings.pdf

https://www.nfpa.org/assets/files/AboutTheCodes/70/Proposed_TIA_1524_NFPA_70.pdf

While I can appreciate the passion contained within the proposed TIA, I feel that it is incorrect in several respects. I shall point out a few:

"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."

(1) the equipotential bonding cannot be bonded to the pool at four points,

This simply isn't true. If there is steel or some other kind of metal support, it can be bonded at four points.

(2) the pool water cannot be bonded,

Completely false. There are threaded fitting made expressly for this purpose. They can fit into a "T" fitting of whatever pipe size or inlet opening is being used. **Please see the flyer (attached).**

(3) the pool pump is double insulated and cannot be bonded and

Again, not always true. **Please see the brochure (attached)** of an above-ground pool pump that I found on the internet. The pump isn't double-insulated, and it requires BONDING. This was also the first pump that came up in my search using Google, and the entire search took me less than 30 seconds.

(4) the equipotential bonding cannot be connected to the EGC of the branch circuit supplying the pump motor.

Not necessarily true, except for above-ground pools that have double-insulated pumps. Not all of them do. Some if not most - require bonding.

At face value the proposed TIA appears to be focused towards one manufacturer, and may not necessarily apply to all storable pools on the market today. For this reason, I think the proposal should not be accepted. Speaking as an enforcer for public safety, we do ***NOT*** have a problem with swimming pool codes being too restrictive. I am ***NOT*** put in a hard position.

Conversely, it would be nice to see a concerted effort on the part of NEC code professionals to try and get Article 680 put in proper working order. There is no reason to negate some of the remaining protections contained therein, such as the height limitation. With all due respect the year is 2020, and not 1971.

This appears to be nothing more than a knee-jerk reaction to COVID-19, as above-ground pool installations have skyrocketed in number. With the additional number of permits being sold comes additional enforcement. It isn't always easy enforcing the codes, but it's the right thing to do. There has to be some limitation in NEC as to what "storable" is, and what "storable" isn't. The height limitation draws this line. Above-ground pools have been on the market for a long, long time and NEC has been using the height restriction to make this determination for a long, long time. This proposed TI isn't of an emergency nature, IMHO.

Respectfully,
Nick Sasso
Code Panel 9

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ITEM: 75132

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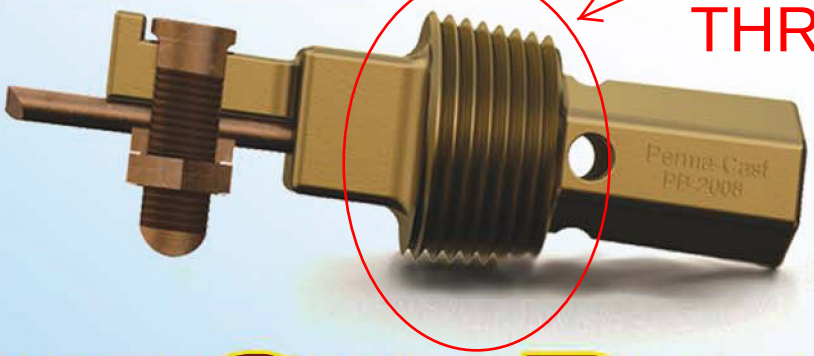

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Patent: UB 9,194,148 B1

Foran, Rosanne

Comment No. 2
SPPORT

From: Bill Fiske Intertek
Sent: Thursday, July 30, 2020 1:31 PM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70

We fully support the TIA as written. In addition, we note that the existing definition contains two requirements. The first is a maximum depth of water, and the second is in specifiying molded polymeric or inflatable fabric walls. Removing those from the definition removes the long-standing violation of 2.3.2.3 in the NFPA Manual of Style, in addition to being technically correct.

Sent from Mail for Windows 10

Foran, Rosanne

Comment No. 3
SUPPORT

From: R Alan Coppage
Sent: Thursday, August 6, 2020 3:40 PM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70

I am in agreement with this Proposed TIA 1524.

As an electrical inspector, it has always been difficult to meet the code requirements on storable pools over 42 inches. This change would definitely create a point of demarcation between permanent and storable pools.

Alan Coppage
Chief Inspector
Middle Dept. Inspection Agency Inc.
Maryland
Md. Master 1841

Foran, Rosanne

Comment No. 4
OPPOSE

From: john mueller
Sent: Wednesday, September 9, 2020 12:55 PM
To: Foran, Rosanne
Subject: NEC TIA 1524 and 1530

Rosanne,
Since I wrote previously on this topic I have done further study. I have learned than many manufacturers mark et above ground pools with water depths greater than 42 inches. Some have wall heights up to 54 inches.

The two TIA's are worded identically; one applies to the 2020 edition and the other to both the 2017 and 2014 editions of the NEC, NFPA-70. Therefore my comments apply equally to both.

1. The proposed TIA's, if adopted as worded, will create a conflict within Article 680.2 because the definition of "Permanently Installed Swimming, Wading, Immersion, and Therapeutic Pools" has a depth requirement confl icting with the proposed new definition of "Storable Swimming,...".
2. There is no "emergency" to the proposed TIA's. The suggested wording can and should be put through the n ormal process for evaluation of code changes.
3. The vast majority of above ground pools are designed for permanent installation, with components, instruct ions, and warranties intended for life spans of 20 or more years. I asked a local dealer about bonding and elect rical connection to the pump, and looked at an on-line company for pumps they sell. NO pumps had a 25-foot cord; they were made with 3-
5 foot cords or designed for connection with conduit. The manufacturer refuses to give any instructions regard ing electrical safety of their pool kits. The dealer says that they have installers comply with the NEC requireme nts for a permanently installed pool.
4. The current definitions in article 680 are quoted verbatim in the International Residential Code and nearly al l state, county, or municipal codes. Changing this definition "mid-
stream" will introduce more confusion to the installers and code officials.

In general, the approach to propose these TIA's is wrong and does not give their content the more careful cons ideration it deserves, with input from manufacturers, code officials, etc. Therefore they need to be denied.

Thanks--John Mueller, master electrician since 1979, NFPA member 2987639

Comment No. 5
SUPPORT
w/comments

Foran, Rosanne

From: david shapiro
Sent: Sunday, August 23, 2020 4:27 PM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70

I believe Mr. Dollard makes excellent points. Whenever a CMP makes an unexplained and seemingly arbitrary decision, however long ago it deserves re-examination. The only element I don't see the same is the emergency nature of this change.

Foran, Rosanne

Comment No. 6
OPPOSE

From: David Zinck
Sent: Wednesday, September 2, 2020 3:10 PM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70

I do not see the value in changing the word ”or” to “and”. It reads the same to me. I do not see a viable or necessary change that it would make in the meaning of the existing text. I remember the incremental changes that occurred in the history of this article. I do not have my old code books in front of me but I thought that at one time it was defined as a pool that could be readily dismantled for storage and reassembled to its original integrity. And I believe that there was a horizontal maximum dimension to it (at one time, maybe not the same time). Then there was a time when the definition was or was going to be, “any pool that can be dismantled and reassembled to its original integrity with simple hand tools” so even the largest Gibraltor pools would qualify as storable. This was tabled for three years so that a committee could study it. What they came back with was that most storable pools were those designed to be emptied out and leaned against the garage during the off season and then set up and refilled again the following year. The maximum height of virtually all of these pools was 42”. Their recommendation was to leave the rule alone.

I also question the 42” dimension for a maximum wall height in all cases. The article reads “…a maximum depth of 1.0 m (42”), OR a pool, spa, or hot tub constructed on or above the ground, with nonmetallic, molded polymeric walls, or inflatable walls, REGARDLESS of dimension.” Do the walls of the pools in question meet these parameters? If so then there is no such height limit for those pools. I just inspected one the other day that was 48” deep, and 20’ by 40’ in size and it must be emptied every season because it cannot handle ice. It is storable, had the long 14 gauge cord, GFCI, plugged into a regular GFCI outlet. No bonding. As long as the pool has nonmetallic walls, they are good to go and the article can be left alone.

If I am reading it wrong, feel free to show me that, but that is the way that I read it.

Dave Zinck
Newburyport Wiring Inspector

Foran, Rosanne

Comment No. 7
SUPPORT
w/comments

From: Keith Lofland
Sent: Friday, September 4, 2020 10:00 AM
To: TIAs
Subject: Comment on Proposed TIA 1524 on NFPA 70

I fully support TIA Log No.: 1524 Reference: 680.2 Storable Swimming, Wading, or Immersion Pools; or Storable/Portable Spas and Hot Tubs, and Informational Note. This has been a stumbling block in the enforcement community for years. I receive at least 3 phone calls a month from an AHJ ask me how to properly enforce Article 680, Part II requirements (such as equipotential bonding requirements) to a storable pool. The trigger for these unnecessary Part II requirements to a Part III pool is the confusing 1.0 m (42 in.) depth line of demarcation. There is nothing magic about a 1.0 m (42 in.) depth to distinguish between a safe installation and an unsafe installation for a storable pool.

I implore you to accept this needed TIA to bring desired clarification to bonding and wiring method requirements to a storable pool.

Regards,
L. Keith Lofland
IAEI Director of Education

www.iaei.org