TO: Joint Committee on Plastics and RV Plumbing Components

FROM: Kevin Kalakay, Chair of the Joint Committee

DATE: August 11, 2022

SUBJECT: Proposed revision to NSF/ANSI 14: *Plastics Piping System Components and Related Materials* (14i125r1)

Revision 1 of NSF/ANSI 14, issue 125 is being forwarded to the Joint Committee for balloting. Please review the proposal and **submit your ballot by September 1, 2022** via the NSF Online Workspace <www.standards.nsf.org>.

Please review all ballot materials. When adding comments, please include the section number applicable your comment and add all comments under one comment number whenever possible. If additional space is needed, you may upload a word or .PDF version of your comments online via the browser function.

Purpose

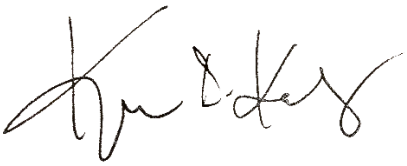
This ballot will revise language in NSF/ANSI 14 to bring it more in line with NSF publishing guidelines.

Background

During a publication review for the 2021 version of NSF/ANSI 14, several NOTEs were identified that contained normative requirements (indicated by the word “shall”). NOTEs are informative, not normative, so to remove the discrepancy, it is being recommended that the word NOTE is removed to clarify that the statements are requirements.

This issue paper was presented at the 2022 Joint Committee on Plastics and Recreational Vehicle Plumbing Components annual meeting, and a motion to send the language to ballot was approved there.

If you have any questions about the technical content of the ballot, you may contact me in care of:



Kevin Kalakay
Chair, Joint Committee on Plastics and RV Plumbing Components
c/o Jason Snider
Joint Committee Secretariat
Tel: (734) 418-6660
Email: jsnider@nsf.org

[Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by gray highlighting. Rationale statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI Standard
for Plastics —

Plastics Piping System Components and Related Materials

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5 Physical and performance requirements

5.8 Chlorine resistance – Equivalency for polyethylene compound modifications

In order to qualify a modification to a compound that already has a chlorine resistance classification, the following minimum requirements shall be met using either Method A or Method B.

5.8.1 Method A (4" DR 11 testing)

a) Test the modified compound per ASTM D3350-14[Error! Bookmark not defined.] Section 10.1.11 with an exception in the number of specimens. A minimum of three specimens shall be tested.

b) Specimens shall be tested to failure or until the log average (geometric mean) test time meets the minimum test time requirement in ASTM D3350-14[Error! Bookmark not defined.] Table 2 for the original compound's oxidative resistance classification.

c) The modified compound shall be considered equal to the original compound if its oxidative resistance classification meets or exceeds that of the original compound.

5.8.2 Method B ($^1/_2$" DR 9 testing)

a) Test six specimens of the original compound per ASTM D3350-14[Error! Bookmark not defined.] Section 10.1.11 with an exception in the pipe size. Test specimens shall be $^1/_2$" DR 9 pipe.

b) Test six specimens of the modified compound per ASTM D3350-14[Error! Bookmark not defined.] Section 10.1.11 with an exception in the pipe size. Test specimens shall be $^1/_2$" DR 9 pipe.

c) Testing shall be performed at 90 °C and at a test stress of 360, 400, or 450 psi as per ASTM D3350-14[Error! Bookmark not defined.] Table 2.

d) Specimens of the original compound shall be tested to failure.

e) Specimens of the modified compound shall be tested to failure or until the log average (geometric mean) test time is equal to or above 87% of the log average failure time of the original compound as determined by the analysis section.

Analysis:

— Failures shall be oxidatively induced Stage II failures.

— Calculate the log average failure time for the original compound (ft_{orig}) and of the new compound (ft_{new}).

— Calculate the % difference in the log average failure time of the new compound relative to the original compound based on the following equation:

% difference in failure time = (ft_{new} / ft_{orig}) × 100%

— The modified compound shall be considered equal to the original compound if:

% difference in failure time ≥ 87%

~~NOTE —~~ Testing of the original compound ($^1/_2$" DR 9 pipe) is only required to be performed once. All modified compounds shall be compared to this original data set.

Rationale: NOTEs are considered informative and cannot contain requirements (shall)

9 Quality assurance

9.4 Verification of the calibration of equipment

9.4.1 Verification

The calibration of all equipment used to check critical dimensions (as defined in Section 5.4) shall be verified weekly.

~~NOTE —~~ Consideration is given to thread gauges and go / no-go socket gauges which cannot be verified on a weekly basis. In lieu of verification, this equipment shall be calibrated in accordance with Section 9.4.2.

Rationale: NOTEs are considered informative and cannot contain requirements (shall)

The calibration of all in-line equipment used to check pipe or tubing critical dimensions during the extrusion process shall be performed at a minimum of once annually.

NOTE — An equipment is defined as being in-line if it is part of the extrusion line and collecting critical dimensions data.

Other equipment, (including, but not limited to pressure gauges, scales, etc.) shall be verified at a minimum of once annually.

Verification shall consist of checking the zero point, if applicable, and the critical dimension or a point near the upper limit of the instrument.

Records of equipment verification shall include the following:

— date that the verification was performed;

— identity of the equipment verified (description and serial number);
— verification data;
— description of any corrective actions taken, if applicable; and
— identity of the person who performed the verification.

Variations from these minimum requirements shall be permitted if an alternate program is established in writing and determined to be equivalent.

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Table 9.10
CPVC fittings test frequency

Test	Frequency
burst pressure[1,2]	weekly
dimensions	
body wall thickness	weekly
socket bottom average diameter and out-of-roundness[3]	weekly
socket entrance average diameter and out-of-roundness[3]	24 h
socket depth[3,4,5]	24 h
socket wall thickness	weekly
spigot ends of fittings, minimum wall thickness	weekly
spigot ends of fittings, average diameter and out-of-roundness[6]	weekly
thread length[4,5]	(see Footnotes 4, 5)
thread gauge	24 h
sustained pressure pipe and fittings assemblies[7]	annually
thermocycling[7]	annually
product standard(s)	ASTM D2846, ASTM F437, ASTM F438, ASTM F439, CSA B137.6

[1] Applies only to products produced under ASTM F437, ASTM F438, and ASTM F439.

[2] Burst pressure requirement does not apply to reducer bushings.

[3] Plug gauges are permitted, provided that the mold has been qualified by complete dimensioning and appropriate testing on all products from all mold cavities to verify compliance with the referenced standard.

[4] Applies only to molded fittings.

[5] Socket depth and thread length are only required to be verified at the time a new tool is "qualified" or when new or repaired cores are made.

~~NOTE — No point anywhere along the length of the spigot shall the OD be allowed to fall below the minimum for equivalent size pipe.~~

[6] Ring gauges are permitted, provided that the mold has been qualified by complete dimensioning and performance of appropriate testing on all products from all cavities to verify.

[7] Applies only to products produced under ASTM D2846 and CSA B137.6 as referenced in Section 2 in this standard.

No point anywhere along the length of the spigot shall the OD be allowed to fall below the minimum for equivalent size pipe.

Rationale: NOTEs are considered informative and cannot contain requirements (shall)

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Table 9.14
PVC fittings and pipe bell ends test frequency

Test	Potable water	DWV	Sewer	Well casing	PSM sewer fittings	Pipe bell ends
acetone	—	—	24 h [1]	—	—	—
burst pressure[2,3]	weekly	—	—		—	weekly
deflection load and crush resistance[4]	—	annually	—	annually	—	—
deflection test	—	start-up[5]	—	—	—	—
dimensions						
body wall thickness	weekly	weekly	weekly	weekly	—	—
socket bottom average diameter and out-of-roundness[6,7]	24 h	24 h	24 h	24 h	24 h	start-up
socket entrance average diameter and out-of-roundness[6,7]	24 h	24 h	24 h	24 h	24 h	start-up
socket depth[6,7,8]	24 h	24 h	24 h	24 h	24 h	start-up
socket wall thickness	weekly	weekly	weekly	weekly	weekly	start-up
spigot ends of fittings: minimum wall thickness	weekly	weekly	weekly	weekly	—	—
spigot ends of fittings: average diameter and out-of-roundness[7,9]	24 h	24 h	24 h	24 h	—	—
thread length[8]	(see Footnote 8)	(see Footnote 8)	(see Footnote 8)	(see Footnote 8)	—	—
thread gauge	24 h	24 h	—	24 h	—	—
flattening	—	annually[10]	—	—	—	—
heat reversion[11]	8 h	8 h	—	—	—	—
impact at 22.8 °C (73 °F)[4]	—	weekly	—	—	monthly	—
joint tightness	—	—	—	—	—	annually
shear test	—	start-up[5]	—	—	—	—

Table 9.14
PVC fittings and pipe bell ends test frequency

Test	Potable water	DWV	Sewer	Well casing	PSM sewer fittings	Pipe bell ends
tup puncture resistance	—	—	—	annually	—	—
threaded joint strength (hydrostatic)	—	—	—	weekly	—	—
unrestrained hydrostatic test	—	start-up[5]	—	—	—	—
product standard(s)	ASTM D2464, ASTM D2466, ASTM D2467, CSA B137.3	ASTM D2665, ASTM D2949, CSA B181.2, ASME A112.4.4	ASTM D2729, ASTM D3034, ASTM F679	ASTM F480	ASTM F1336	ASTM D2672, ASTM D3139, ASTM D3212

[1] Acetone applies only to products produced under ASTM D2729 as referenced in Section 2 of this standard.

[2] Burst pressure requirement does not apply to reducer bushings.

[3] Test does not apply to CSA B137.3 products.

[4] Toilet flanges listed to ASTM D2665, D2949, CSA B181.2, and ASME A112.4.4 are exempt from the QC requirements of crush and impact.

[5] This requirement applies only to products under ASME A112.4.4.

[6] Plug gauges are permitted, provided that the mold has been qualified by complete dimensioning and performance of appropriate testing on all products from all mold cavities to verify compliance with the referenced standard.

[7] Requirements do not apply to F679 fabricated fittings and bell ends.

~~NOTE — No point anywhere along the length of the spigot shall the OD be allowed to fall below the minimum for equivalent size pipe.~~

[8] Socket depth and thread length are only required to be verified at the time a new tool is “qualified” or when new or repaired cores are made.

[9] Ring gauges are permitted, provided that the mold has been qualified by complete dimensioning and performance of appropriate testing on all products from all cavities to verify.

[10] Flattening applies only to products produced under ASTM D2949 as referenced in Section 2 of this standard.

[11] This requirement applies only to products produced under CSA B181.2 and CSA B137.3.

No point anywhere along the length of the spigot shall the OD be allowed to fall below the minimum for equivalent size pipe.

Rationale: NOTEs are considered informative and cannot contain requirements (shall)