1200 New Jersey Avenue SE Washington DC 20590

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

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FEB 1 8 2020

Dr. Randy Knapp Director of Engineering Energy Piping Systems Division Plastics Pipe Institute 105 Decker Court, Suite 825 Irving, TX 75062

Dear Dr. Knapp:

In your correspondence to the Pipeline and Hazardous Materials Safety Administration (PHMSA) dated October 16, 2019, you requested an interpretation of the pipeline safety regulations in 49 Code of Federal Regulations (CFR) Part 192. Specifically, you requested applicability of the § 192.121 requirements to Class 1 and Class 2 locations, by posing the following question:

Do the limitations for pressure and diameter in 49 CFR parts 192.121(b), (c), (c)(2)(i) and (c)(2)(iii) (i.e., limits of 125 psig and 12-inch diameter) apply to Polyethylene pipe installed in Class 1 or 2 locations?

A detailed response to this question requires understanding the regulatory history of these requirements. When 49 CFR Part 192 was first promulgated in 1970, the design pressure limit for plastic pipe used in distribution systems and Class 3 and 4 locations was set at 100 psig (689 kPa), which was the design pressure limit in ANSI B31.8 Standard, Gas Transmission Distribution and Piping Systems (35 FR 13257; August 19, 1970). In 2004, the design pressure was raised for polyethylene (PE) 2406 and PE 3408 thermoplastic pipe because of new developments in PE materials and better technology for detecting the rate of crack growth (69 FR 32886; June 14, 2004). The 2004 final rule was based on a petition for rulemaking submitted by the American Gas Association (AGA) in 1998 and amended in 1999. AGA specifically stated in its petition that this increase in the pressure limitation for thermoplastic pipe used in gas distribution systems was clearly supported by the proven performance of modern PE pipe and the successful operation of pipe at greater than 100 psig (689 kPa) under the authority of waivers granted by state pipeline regulators (65 FR 15290; March 22, 2000). Therefore, PHMSA intended for the allowance of a maximum design pressure of 125 psig (862 kPa) for thermoplastic pipe to apply to plastic pipe used in distribution systems and Class 3 and 4 locations.

In the recent plastic pipe final rule, PHMSA amended § 192.121 to allow for certain new and replaced PE pipe to operate with a design factor of 0.40 (previously 0.32), though it is limited to a minimum wall thickness of 0.090 inches (83 FR 58694; November 20, 2018). PHMSA noted during the rulemaking process that at 0.32, operators may still use the design formula in § 192.121

The Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety provides written clarifications of the Regulations (49 CFR Parts 190-199) in the form of interpretation letters. These letters reflect the agency's current application of the regulations to the specific facts presented by the person requesting the clarification. Interpretations do not create legally-enforceable rights or obligations and are provided to help the public understand how to comply with the regulations.

in accordance with the applicable standard. Additionally, PHMSA stated that it was not lowering the minimum wall thickness for 0.40 design factor pipe, as the more conservative wall thickness is necessary to mitigate sidewall fusion and tapping risks, among others, that exist at the higher design factor (Id.). The application of the 0.40 design factor for plastic pipe used in a specific class location must take into consideration the requirements of \$\$ 192.121(b) and (c). Furthermore, in the final rule, PHMSA merged the design limitations which were previously located in § 192.123 into § 192.121 (Id.).

Therefore, based on the rulemaking history of § 192.121 and previous § 192.123, PHMSA provides the following response to your question.

Section 192.121(b)(1) limits the design pressure for plastic pipe to not exceed a gauge pressure of 100 psig (689 kPa) for pipe used in distribution systems or transmission lines in Class 3 and 4 locations. However, the requirements of § 192.121(b)(2) through (b)(4) apply to all plastic pipe, including PE pipe in Class 1 and 2 locations.

For PE pipe produced after July 14, 2004, but before January 22, 2019, the exception in § 192.121(c)(1) to exceed the 100 psig limit for up to and including 12 inches in diameter, but limited to up to 125 psig, is only applicable to PE pipe subject to the requirements of § 192.121(b)(1) (i.e., plastic pipe and components, including PE pipe, installed in distribution systems or transmission lines in Class 3 or 4 locations). On the other hand, PE pipe produced prior to January 22, 2019, in Class 1 and 2 locations and not used in a distribution system does not have size and pressure limitations when using a design factor of 0.32 as specified in § 192.121(a). However, the maximums used in practice are limited by the design formula and the limitations within § 192.121(a), as well as limitations inherent to hydrostatic design basis, standard dimension ratio, and the practical limitations of PE pipe.

Likewise, PE pipe in Class 1 and 2 locations and not used in a distribution system and produced after January 22, 2019, does not have explicit limitations for design pressure and outer diameter when using a design factor of 0.32 as specified in § 192.121(a). However, the exception in § 192.121(c)(2) allowing the use of a 0.40 design factor for PE pipe produced after January 22, 2019, is applicable to all PE pipe, including PE pipe in Class 1 and 2 locations. Therefore, limitations on maximum design pressure and maximum outer diameter for plastic pipes with a design factor of 0.40 apply to all PHMSA regulated PE pipe produced after January 22, 2019, regardless of the PE pipe function or location.

If we can be of further assistance, please contact Tewabe Asebe at 202-366-5523.

Sincerely,

Gale Director, Office of Standards

and Rulemaking

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TA:

New interp request. Need to respond to this ASAP>

John

From: Randy Knapp [mailto:rknapp@plasticpipe.org]
Sent: Wednesday, October 16, 2019 4:51 PM
To: Gale, John (PHMSA) <john.gale@dot.gov>
Subject: PPI Request for Interpretation

Mr. John A. Gale Director, Office of Standards and Rulemaking Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration

The Plastics Pipe Institute (PPI) is the leading trade association representing more than 150 members companies and associates involved in the use of plastic pipe in our nation's infrastructure. Many of the members produce plastic pipe, composite pipe, fittings, and components used in our nation's natural gas distribution network, and for a wide range of oil & gas gathering applications. Today polyethylene (PE) represents the majority of gas distribution pipelines and a large portion of oil & gas gathering market in North America.

The majority of PE pipe volume is installed in areas with lower population density (class 1 and 2). In class 1 and 2 locations more than 60% of the PE pipe being used is larger diameter (8" – 36"), and in many of the class 1 and 2 applications higher pressures (well beyond 125 psig) are commonplace. After more than 50 years of successful use of PE in oil and gas applications and 12 years of experience with high-performance PE 2708 and PE 4710, PE has proven to be the best material in these challenging environments. High performance PE pipes have operated safely at higher operating pressures in non-regulated applications for years and are equally as safe in class 1 and 2 regulated gas distribution, transmission, and gathering applications. The use of more PE pipe in class 1 and 2 locations will result in the increased long-term performance of the piping system and safer pipelines.

Based on the above discussion PPI is submitting the following request for interpretation:

Do the limitations for pressure and diameter in 49 CFR parts 192.121(b), (c), (c)(2)(i) and (c)(2)(iii)

(i.e., limits of 125 psig and 12 inch diameter) apply to Polyethylene pipe installed in Class 1 or 2 locations?

Thank you for your consideration of this request. Please let me know if you have any questions.

I look forward to your response.

Best Regards, **Randy Knapp, Ph.D.**

Director of Engineering – Energy Piping Systems Div. Plastics Pipe Institute

Cell: 763-691-3312

