

Plastic Pipe Final Rule Update

February 2019



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

"To protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives."



Applicability

- The amended regulations apply to new, repaired and replaced plastic pipe used in the transportation of natural gas.
- Effective Date:
 - January 22, 2019, except for some marking aspects (December 31, 2019)
- Some concerns raised on effective date via AGA Petition for Reconsideration (more later)



New or Updated Standards

- § 192.7 (Documents Incorporated by Reference)
- Item I, Appendix B (Listed Pipe Specifications and Other Listed Specifications for Components (new))



New or Updated Standards

- 16 new or updated standards
 - ASTM D2513-12a e1 for PE (includes some aspects of Tracking and Traceability – new 16 digit code)
 - New suite of standards for PA-11 and PA-12 pipe and fittings (replace ASTM D2513-99 and ASTM D2513 that previously applied to thermoplastic pipe other than PE)
 - Several new IBR standards for components (fittings)



Traceability and Tracking

- PHMSA delayed adopting the proposed definitions of “traceability information” and “tracking information” in §192.3.
- PHMSA delayed tracking and traceability recordkeeping requirements proposed for §192.63, §192.321 and §192.375
- Distribution operators are still expected to collect some form of tracking and traceability information under DIMP §192.1007(a)(5)... location where a new pipeline is installed and the material of which it is constructed



Traceability and Tracking

- The incorporated 2012 editions of material standards for polyethylene (PE) and polyamide (PA-11 and PA-12) pipe require operators to mark plastic pipe with the 16 character ASTM F2897-11a markings.
- This will promote standardization in how component attributes are marked.



Marking of Materials (§192.63)

- Plastic pipe and components manufactured after December 31, 2019 must be marked in accordance with listed specification
 - Intended to give manufacturers time to figure out application of 16 character code based on durability requirements



Image source: <https://napipelines.com/checking-ids/>



Marking of Materials (§192.63)

All physical markings on plastic pipelines must be legible until time of installation (originally proposed as permanent)



Image source: <https://napielines.com/checking-ids/>



Design and Limitations

- 49 CFR §§ 192.121 and 192.123 have been merged (192.123 removed)
- §192.121 reformatted slightly with general requirements first, then any additional requirements by material type
 - (a) design formula for plastic pipe
 - (b) general requirements for plastic pipe
 - (c) PE pipe requirements
 - (d) PA-11 pipe requirements
 - (e) PA-12 pipe requirements
 - (f) Reinforced thermosetting plastic pipe requirements



Increased Design Factor (PE)

- The allowable design factor for new and replaced PE pipe is increased from 0.32 to 0.40 in §192.121 under certain limitations
- Minimum wall thickness provided for various diameters
- The higher design factor also applies to pipe sizes less than one-inch Iron Pipe Size (IPS) and Copper Tubing Size (CTS).



Expanded Use of Polyamide-11 Pipe

- The design factor for PA-11 pipe remains at 0.40 in §192.121.
- Maximum operating pressure is increased from 200 psig to 250 psig if using PA32316.
- Maximum pipe diameter is increased to six inches (previously 4 inches).



Expanded Use of Polyamide-11 Pipe

- The increased design factor also applies to small diameter pipe.
- ASTM F2945-12a, an Industry Standard for PA-11 pipe, is incorporated by reference.



Image source: <https://www.arkema-america.com/en/products/local-markets/oil-and-gas/>



Permitted Use of Polyamide-12 Pipe

- PA-12 pipe is permitted for use with a design factor of 0.40 in §192.121.
- Maximum operating pressure is 250 psig for pipe up to six inches in diameter.
- ASTM F2785-12, an Industry Standard for PA-12 pipe, is incorporated by reference (IBR).



Permitted Use of Polyamide-12 Pipe

- ASTM F2767-12 is IBR and sets forth specifications for electrofusion fittings on PA-12 systems.



Image source: <https://www.xpneumatic.com/din-73378-polyamide-tubes-pa-12-tubes/>



Wall Thickness Table with Error

PE PIPE—MINIMUM WALL THICKNESS AND SDR VALUES

Pipe size (inches)	Minimum wall thickness (inches)	Corresponding SDR (values)
1/2" CTS	0.090	7
3/4" CTS	0.090	9.7
1/2" IPS	0.090	9.3
3/4" IPS	0.095	11
1" CTS	0.119	11
1" IPS	0.119	11
1 1/4" IPS	0.151	11
1 1/2" IPS	0.173	11
2"	0.216	11
3"	0.259	13.5
4"	0.265	17
6"	0.315	21
8"	0.411	21
10"	0.512	21
12"	0.607	21

- 1" CTS minimum wall should be 0.101
- (same error in tables for PA-11 and PA-12)



Design and Construction of Risers

- New § 192.204 added for risers installed after effective date
- Must be tested to ensure safe performance under anticipated loads
- Factory assembled anodeless must be designed and tested in accordance with ASTM F1973-13
- All risers used to connect regulator stations to mains must be rigid and designed to provide adequate support and resist lateral movement.
- Anodeless risers must have rigid casing



Design and Construction of Risers

Operators may install field-assembled anodeless risers.



Image source: <https://www.ameren.com/missouri/construction-services/gas-toolbox>



Qualification of Procedures and Individuals to Make Joints

- § 192.281 (Plastic Pipe)
 - Heat fusion joints on a PE pipe or component (except electrofusion joints) must comply with ASTM F2620-12
- § 192.285 (Plastic Pipe: Qualifying persons to make joints)
 - PE Heat fusion joints (except electrofusion joints) visually inspected and tested in accordance with ASTM F2620-12
- Some concerns raised on timing needed to update procedures and train/qualify individuals



Fittings

- Mechanical fittings must meet listed specification
- Must be Category I as defined by listed specification for application material
- Seal plus resistance to a force such that pipe fails outside joint area
- Some concerns identified related to
- Availability of fittings 4” or larger, particularly for transitions between plastic and other materials (like cast iron)
- Time needed to test and validate to new IBR standards



Image source: <https://www.elster-perfection.com/>



Error to be Corrected

- § 192.283 Plastic pipe: Qualifying joining procedures.
- (a)(3) For procedures intended for non-lateral pipe connections, perform testing in accordance with a listed specification. If the test specimen elongates no more than 25% or failure initiates outside the joint area, the procedure qualifies for use
- Should be “no less than...” similar to as written in § 192.367 and § 192.281 (e)(4)



Installation by Trenchless Excavation

- §192.329(a) and §192.379(a) have been revised to specify that operators take steps to provide sufficient clearance from other underground utilities and/or structures at the time of installation.
- The definition of “weak link” in §192.3 has been revised to include a “device or method”.



Joining Plastic Pipe

- PHMSA has removed the diameter restrictions for socket-fusion joints from §192.281(c)(2).
- Such fittings must still comply with the listed specification, which may have their own diameter restrictions.

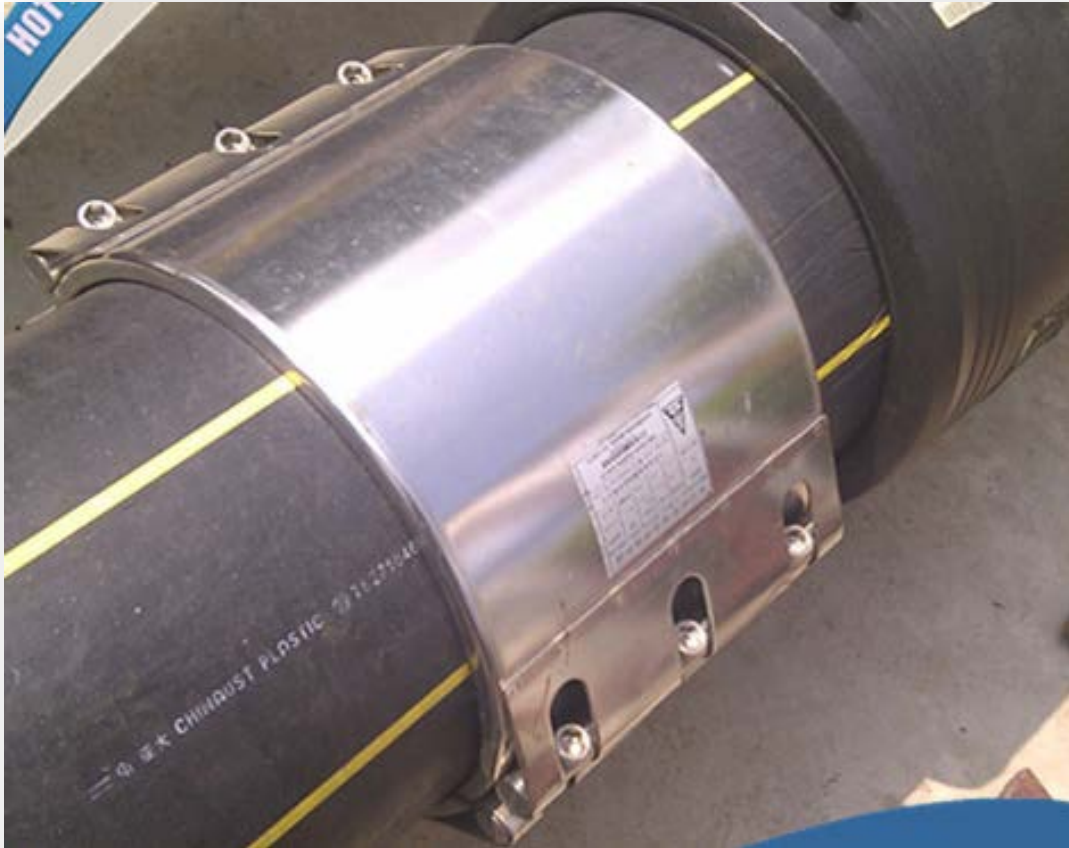


External Corrosion Control for Fittings – 192.455 (g)

- Newly installed electrically isolated metal fittings must be cathodically protected and maintained in accordance with operator's integrity management plan.
- This is not required for existing fittings.



Repair of Plastic Pipe



§192.720 has been added to specify mechanical leak repair clamps cannot be used as a permanent repair on plastic pipe.



Other Amendments

- PVC pipe is permitted for use (NPRM proposed to prohibit for new installations)
- ASTM F 2817-10 incorporated for maintenance or repair
- ASTM D2564-12 (Spec for solvent cements for PVC) IBR for
- Type B regulated onshore gathering lines constructed with plastic pipe must comply with the plastic pipe regulations.



Next Steps

- Issues to resolved
 - Address errors and typos that have been identified
 - Concerns raised on implementation timing and other aspects (AGA Petition)
 - Other questions for clarification
- Additional Implementation Plans
 - Requests for webinars/workshops to address questions raised to date
 - Slide decks for State Seminars
 - Updated Training for Fed and State inspectors
 - Updates to public guidance as needed



Questions?

General Questions: PHMSA Training and Qualifications
3700 S. MacArthur Blvd. Ste. B
Oklahoma City, OK 73179
405-686-2300

Technical Questions: Max Keiba
General Engineer – PHMSA HQ
Max.Keiba@dot.gov
202-493-0595

