2019 Plastic Pipe Rule

MPSC Pipeline Safety Conference

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Introduction

- On May 21, 2015, PHMSA issued a Notice of Proposed Rulemaking (NPRM) with regards to the design, installation, and maintenance of plastic pipe.

- In addition to the requirement types above, the NPRM introduced the Tracking & Traceability requirements, requiring operators to maintain manufacturing and design specifications, and the location of all newly constructed plastic pipe.

- On November 20, 2018, PHMSA issued the final rule for the design, installation, and maintenance of plastic pipe.

- While most topics were kept in their original form, Tracking & Traceability has been removed.

- The amended regulations apply to new, repaired, and replaced plastic pipe used in transportation of natural gas.

Agenda

- Tracking & Traceability
- Design of Plastic Pipe
  - .40 Design Factor
  - PA-11 & PA-12 Pipe
  - Risers
- Installation of Plastic Pipe
  - General Installation
  - Joining
- Maintenance of Plastic Pipe
  - Equipment Maintenance
  - Repair
  - Storage & Handling
- Miscellaneous
  - Corrosion Control
  - Gas Gathering

Tracking and Traceability

- PHMSA has delayed tracking and traceability recordkeeping requirements for a later date.
- Distribution operators are still expected to collect some form of tracking and traceability information under DIMP 192.1007 (a) (5) .. Location where new pipeline installed and material of which it is constructed.
- The incorporated 2012 editions of material standards for polyethylene (PE) and polyamide (PA-11 and PA-12) pipe requires operators to mark plastic pipe with the 16 character ASTM F2897 markings.
- Most, but not all, fitting manufacturers are marking their fittings with the 16 character marking.

Design and Limitations

.40 Design Factor is Allowed If….

- Pipe must have been manufactured after January 22, 2019
- The design pressure does not exceed 125 psig
- The material code is either PE2708 (Medium Density) or PE4710 (High Density)
- The pipe has a nominal size (IPS or CTS) of 12-inches or less; and
- The wall thickness for a given outside diameter is not less than the values in the table below:

Size	Wall Thickness (inches)
½” and ¾” CTS	.090
1” CTS	.101
1” IPS	.119*
1-1/4” IPS	.151
2” IPS	.216
3” IPS	.259
4” IPS	.265
6” IPS	.315
8” IPS	.411
10” IPS	.512
12” IPS	.607

DTE

* Error in original table, Table lists minimum wall thickness of 0.199.

Expanded Use of PA-11 Pipe

Pipeline Specification	Manufactured from January 23, 2009 – January 22, 2019	Manufactured from January 22, 2019 - Present Day
Design Factor	.40	.40
Max Design Pressure	200 psig	250 psig
Material	PA 32312	PA 32316
Nominal Pipe Size	4 inches	6 inches
Wall Thickness	Wall thickness must have a Standard Dimension Ratio (SDR) of 11 or less	Must meet the minimum requirements in Rule 192.121

Currently, DTE Gas does not install PA-11 pipe

Incorporation of PA-12

- PA-12 pipe is permitted for use with a design factor of 0.40.
- Maximum operating pressure is 250 psig for pipe up to and including six inched in diameter.
- Must follow the minimum wall thickness in Rule 192.121.
- ASTM F2785-12 is and Industry Standard for PA-12 pipe and is incorporated by reference.
- Currently, DTE Gas does not implement PA-12 pipe.

Risers

192.204 (new)

- All Factory Assembled risers must the designed and tested to ensure safe performance under anticipated external and internal loads.

- Factory Assembled risers must be designed and tested in accordance with ASTM F1973.

- Factory Assembled plastic risers are allowed to be used from plastic mains to regulator stations with certain exceptions and limitations.

- All risers used to connect regulator stations to mains must be ridged and designed to provide adequate support and resist lateral movement.

- Operators may still install field assembled anodeless risers. (ASTM F2509)

Fittings

- Mechanical fittings must meet any of the listed listed specifications in 192.
- Three new ASTM standards have been added for the design of mechanical fittings:
    + ASTM F1924-12
    + ASTM F1948-12
    + ASTM F1973-13
- ASTM D 2153 has been updated to 2012 edition.

- Mechanical fittings must be category 1 as defined by one of the listed specifications above, or other specifications listed in Part 192.
    + Category 1 is defined as Seal **plus** resistance to a force such that the pipe fails outside the joint area.

Fittings
cont'd

Concerns

- Availability of fittings 4-inch and larger particularly for transitions between plastic and cast iron.

- Time needed for the manufacturers to test and validate to the new IBR Standards.

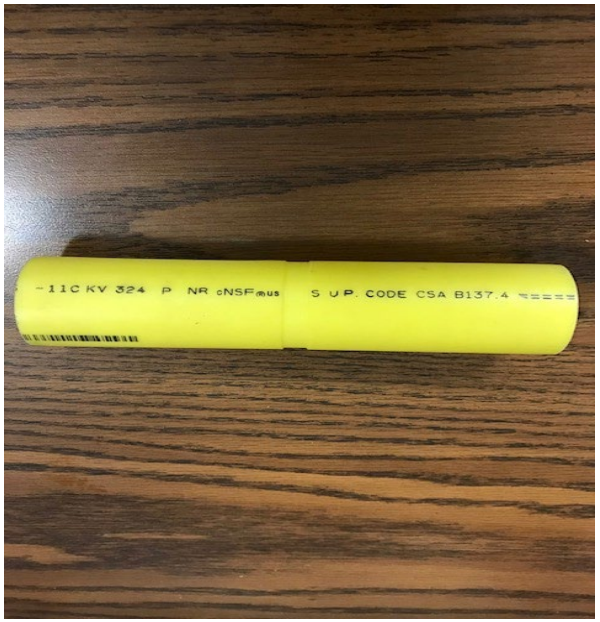
Plastic Pipe Installation

- 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.

- Plastic pipe and components that are pulled through the ground must use a weak link.

Plastic Pipe Installation

Weak Link - a device or method used when pulling polyethylene pipe, typically through methods such as horizontal directional drilling, to ensure that damage will not occur to the pipeline by exceeding the maximum tensile stresses allowed.



Joining

PHMSA has removed the diameter restrictions for socket fusion joints from 192-281 (c)(2).
These fittings must still comply with the listed specification, which may have their own diameter restrictions.

Heat fusion joints on a PE pipe or component must comply with ASTM F2620-12.
These joints must also be visually inspected in accordance with F2620-12.

Joining
Cont'd

- Some concerns raised on timing needed to update procedures and train/qualify individuals.

- What if the operator is using something other that F2620
  i.e. TR-33??

Equipment Maintenance, Plastic Pipe Joining

Operators must maintain joining equipment in accordance with manufacturers recommend practices or with written procedures which have been proven by test and experience to produce acceptable joints.

As of now, no documentation is required.

?? If you don’t document the inspection, how can you prove you inspected it ???

Maintenance Checklist
Fusion/Electrofusion Equipment

Item to Check	Satisfactory	Needs Repair	N/A	Comments
UNIT #				
FUSION MACHINES				
Machine is clean				
Cords and Plugs are in good condition				
All pins, snap rings and spring clips are in place				
All nuts and bolts are tight				
Spring clips work properly				
Correct lever handles are with unit				
Clamp Knob bearings lubricated and move freely				
Clamping jaw and insert grooves are in good condition and clean				
Jaws are properly aligned				
Moveable jaw or barrel lubricated and moves freely				
Guide rods are not damaged				
Locking cam works properly				
Torque spring is operating properly (Mini-Mc)				
Base is not damaged				
Oil reservoir is filled to correct level				
Machine is free of Hydraulic leaks				
Hydraulic gauges read correctly				
Primary pump pressure adjusted				
Carriage and selector Valves operate smoothly				
Pressure reducing valves operate in their range				
Brake functions properly				
Drive Screw rotates freely (Sidewinder)				
Sidewinder holds pressure				
Inserts, adapters, bolster bar with unit				
HEATER				
Cord and plug are in good condition				
Heater surface is clean, not scratched				
Heater adapters clean, not scratched				
Surface temp checked with a pyrometer				
Thermometer is in good working order, not cracked				
Handle is tight				

	Satisfactory	Needs Repair	N/A	Comments
FACER				
Cords and plugs are in good condition				
Blades are in good condition				
Facer does not wobble when trapped between jaws				
Latch handle locks onto guide for freely				
Check for play in blade holder				
Facer moves on guide rod without excessive force				
Facer is clean and free of grease on blade holder surface				
No excessive plastic in facer				
Ratchet works properly				
Inserts are correct				
PYROMETER				
Temperature gauge working and verified with pyrometer				
Pyrometer stored properly and clean				
ELECTROFUSION BOX				
Calibrated (date:)				
Leads in good condition				
Proper pin adapters				
Power cords in good condition				
Display reads ok				
Scanner works properly				
SCRAPER				
Clean and in good condition				
Blades and wheels in good condition				
Scrapes, peels the pipe evenly				
CLAMPS				
Clamps are clean				
Clamps have proper inserts				
Nuts, bolts, screws are tight				
MISCELLANIOUS				
Extension cords and plugs in good condition				
Plastic cutter blades/wheels in good condition				

Repair of Plastic Pipe

- Each imperfection or damage that would impair the serviceability of plastic pipe must be repaired or removed.

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

Plastic Pipe Storage and Handling

Operators must have written procedures for the storage and handling of Plastic pipe.

Corrosion Control

Newly installed electrically isolated metal fittings must be cathodically protected and maintained in accordance with the Operators integrity management plan.

- This is not required for existing fittings.

Gathering Lines

Type B regulated onshore gas gathering lines made of plastic must comply with all the requirements of Part 192 applicable to plastic pipe.

Thank You

Any Questions?