

# **Plastic Pipe Rule**

**(RIN 2137-AE93)**

**Docket: PHMSA-2014-0098**

**June 1, 2016**



# NPRM Publication

- Notice of Proposed Rulemaking published May 21, 2015 (80 FR 29263)
  - Comment Period Closed Friday, July 31, 2015
- PHMSA received comments from 39 entities including:
  - Operators
  - Trade Associations
  - Manufacturers
  - Private Citizens
  - Consultants
  - Gov't Entities
  - A Citizen Group
  - A Pipeline Service Company

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# Focus of Rulemaking/ Rationale

- Gas (Part 192)
  - Transmission, Distribution, Gathering lines
  - Plastic Pipe
- Rationale for Rule
  - Staff Recommendations
  - Petitions
    - AGA/GPTC (PE),
    - Evonik-Degussa/UBE (PA-12)
    - Arkema (PA-11)
    - NAPSAR Petition (50 year marking)



# Issues

- A. Tracking and Traceability
- B. Design Factor for PE
- C. Expanded use of PA11
- D. Incorporation of PA12
- E. Risers
- F. Fittings
- G. Plastic Pipe Installation
- H. Repairs
- I. General Provisions



# A. Tracking and Traceability

- **Issue:**

- Not all operators have consistent data to identify systemic issues related to plastic pipe and fittings
- Once a pattern of problems is identified, many operators cannot locate the items of concern within their systems
- Many of the 2012 versions of key material standards have the T&T standard incorporated within them

- **Proposal:**

- Operators must maintain tracking and traceability information as defined in the amended section 192.3 and consistent with definitions/requirements in applicable standards

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# A. Tracking and Traceability: Marking pipe

ASTM D2513-09a: The non-mandatory, preferred order for all the items required in the print line in the marking sections are:

- (1) Pipe size including sizing system (IPS, CTS or OD),
- (2) SDR (DR) or minimum wall thickness,
- (3) Manufacturer's name or trademark,
- (4) GAS,
- (5) Pipe material designation code,
- (6) Elevated temperature code from Table 5,
- (7) ASTM D2513,
- (8) Manufacturer's lot code (includes date of manufacture in some cases), and
- (9) Additional information, including date of manufacture, coil number sequential footage, third party certification mark etc.

## **Example:**

2 in. IPS SDR 11 [MANUFACTURER NAME] GAS PE2708  
CEC ASTM D2513 [LOT CODE INFO] 02JAN98 coil #506

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## **A. Tracking and Traceability: ASTM D2513-12ae1 Marking Requirements with ASTM F2897**

All PE pipe, tubing, and fusion fittings meeting the requirements of this specification for gas distribution systems shall be marked with the 16-character gas distribution component tracking and traceability identifier in accordance with Specification F2897

The 16-character code shall be expressed in alphanumeric format and Code 128 bar code format... or an alternative 1D or 2D bar code symbology as agreed upon between manufacturer and end user

- Component manufacturer – 2 characters
- Component manufacturer's lot code – 4 characters
- Component production date – 3 characters
- Component material – 1 character
- Component type – 2 characters
- Component size – 3 characters
- Base Index – 1 character

Example from standard : code of “XX5b1e2RAB123y50” corresponds to a 1-1/2 inch IPS 0.090” wall Coiled PE2708 pipe produced by “Pipe Dreams, Inc.” with a production lot - 7 - number of 1234000 on 110th day of 2010.





# ASTM D2513 Permanence – pipe

**7.1 Pipe**—All required marking shall be legible, visible, and **permanent**. **To ensure permanence**, marking shall be applied so it **can only be removed by physically removing part of the pipe wall**. The marking shall (1) not reduce the wall thickness to less than the minimum value for the pipe, (2) not have any effect on the long-term strength of the pipe, and (3) not provide leakage channels when elastomeric gasket compression fittings are used to make the joints.

**7.1.1** - “...The manufacturer shall maintain such records for fifty years or for the design service life of the pipe, whichever is longer.”





# ASTM D2513 marking - fittings

- **7.5 Fittings—**
  - “... All fittings shall be marked on the body or hub...
  - ...The manufacturer shall maintain such records for 50 years or for the design service life of the fittings, whichever is longer.
- “Note 23 - 7.5 is applicable to fusion type fittings only. The marking requirements in 7.5 are not applicable to mechanical fittings.”



# Marking considerations/issues

- <https://www.aga.org/events-at-aga/2015/tracking-traceability-workshop>

- Indented print:
  - Abrasion resistant
  - Satisfies ASTM D2513 permanency
  - Permanent but not well suited to barcode
  - Base 62 code difficult to manage



**Date Code Example:**

**May 14, 2013 = 3ul**

**May 15, 2013 = 3vX**

**May 16, 2013 = 3xz**



# A. Tracking and Traceability: Marking Technologies

- **Ink Jet:**
  - Most commercialized method
  - Adherence on PE/PA requires surface treatment
  - Surface treatment must adapt to varying conditions, sizes, and line speeds



# A. Tracking and Traceability: Marking Technologies

- **Laser**
  - Still being investigated for pipe applications
  - Small footprint
  - Won't rub off
  - Capital intensive (2-3x's ink jet)
- **UV Cured Inks**
  - Adds a process step
  - Adhesion can be an issue
  - Faster drying times

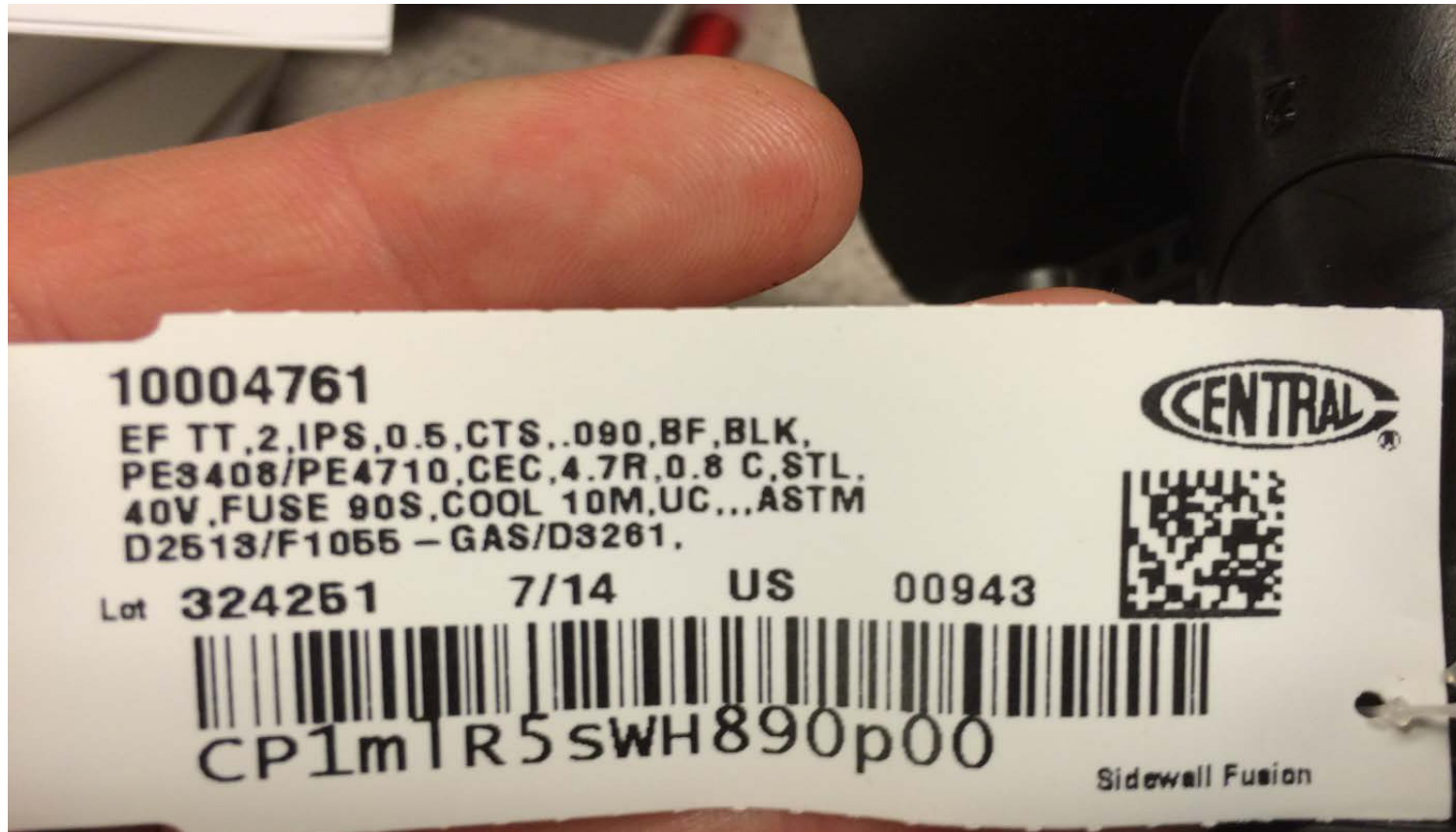








# A. Tracking and Traceability: Example fitting with numeric code and 2 barcode varieties



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# A. Tracking and Traceability: Comments

- **Support**
- **Drop**
  - Suggested PHMSA should drop this from the rule and pursue a separate tracking and traceability rulemaking for all materials
  - Claimed that the requirements would be economically significant.
- **Permanence**
  - Markings are primarily for capturing tracking and traceability information at installation
  - Suggested that permanent records of markings could be considered equivalent to permanent markings
    - Alternatives- Markings must be “legible”, “visible”, and/or “readable”;
      - For 20 years
      - Until the time of installation
    - Potentially burdensome to small public operators
- **ASTM F2897** - Redefine tracking and traceability to only what is required in ASTM F2897, and pursue any additions via the standard development process
- **Timeline** - Recommend phase in, ranging from 2-5 years

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# A. Tracking and Traceability: PHMSA Recommendation/Possible Changes

- **Definition of Tracking and Traceability**
  - Revise to more closely match with ASTM F2897
  - [LINK](#)
- **Permanence Expectations**
  - Defer to the listed specifications for pipe
  - Fitting labels or markings must be present and recorded at the time of installation
  - **OR**
  - Discuss fittings
- **Compliance timeline**
  - Marking requirements – 1 Year
  - Recordkeeping – 2 Years



## A. Tracking and Traceability – Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that related to **Tracking and Traceability**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”



## A. Tracking and Traceability – propose a change.

“The Technical Pipeline Safety Standards Committee finds that **related to tracking and traceability**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -

*(list of amendments agreed upon by the committee).”*



## A. Tracking and Traceability – not in agreement.

“The Technical Pipeline Safety Standards Committee finds that related to **Tracking and Traceability**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”



# Design Factor and other considerations: PE, PA-11, and PA-12

## Equation from Proposed 192.121(a)

$$P = 2s \frac{t}{(D - t)} (DF) \quad P = \frac{2s}{(SDR - 1)} (DF)$$

Where:

$P$  = Design pressure, gage, psi (kPa).

$S$  = For thermoplastic pipe, the HDB is determined in accordance with the listed specification at a temperature equal to 73°F (23°C), 100°F (38°C), 120°F (49°C), or 140°F (60°C). In the absence of an HDB established at the specified temperature, the HDB of a higher temperature may be used in determining a design pressure rating at the specified temperature by arithmetic interpolation using the procedure in Part D.2 of PPI TR-3, (incorporated by reference, see § 192.7). For reinforced thermosetting plastic pipe, 11,000 psig (75,842 kPa).

$t$  = Specified wall thickness, inches (mm).

$D$  = Specified outside diameter, inches (mm).

$SDR$  = Standard dimension ratio, the ratio of the average specified outside diameter to the minimum specified wall thickness, corresponding to a value from a common numbering system that was derived from the American National Standards Institute (ANSI) preferred number series 10.

- 21 -  $DF$  = Design Factor, a maximum of 0.32 unless otherwise specified for a particular material in this section



# B. Design Factor for PE

- **Issue:** AGA petitioned to raise the design factor of PE pipe with technical justification by GTI.
- **Proposal:**
  - Maximum design factor for new and replaced PE pipe increased from 0.32 to 0.40
  - Pressure limitation remains 125 psig; diameter limitation remains 12”
  - Maintain 0.32 for existing pipe or if operator chooses to continue to use 0.32 for new pipe





# C. Expanded use of PA11

- **Issue:** Arkema petition requested the expanded use of PA11
- **Proposal:**
  - Maximum permitted pressure raised to 250 from 200 psig
  - Maximum diameter increased to six inches from four inches



# D. Incorporate use of PA12

- **Issue:** Evonik and UBE petitioned to allow PA12
- **Proposal:** Allow PA12 with restrictions
  - Max design factor: 0.4
  - Max pressure: 250 psig
  - Max diameter: 6 inch



# PE, PA11, PA12: Comments

- **General**

- Broad support for all material revisions
- Add sizes including 1” CTS and IPS smaller than 1” to the table

- **PE**

- PE- Raise maximum diameter (12” to 24” (or commercially available per ASTM D2513-14))
- Request that the new design factor apply retroactively
- Opposed to the less conservative design factor in D2513
- Relax 125 psig limitation

- **PA11**

- Allow design based on HDB at temperature rating of 180F
- Permit the use of PA32312 for PA11 operating at 250 psi

- **PA12**

- Editorial revisions
- Specify material designation code PA42316 for PA12



# PE, PA11, PA12: PHMSA Recommendations/Possible Changes

- **General**
  - Revise the tables for clarity and to add 1” CTS and IPS sizes below 1”
- **Include material designation codes**



# B-D. PE, PA11, PA12 – Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that related to **PE, PA11 and PA12**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”



## B-D. PE, PA11, PA12 – propose a change.

“The Technical Pipeline Safety Standards Committee finds that **PE, PA11 and PA12**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -

*(list of amendments agreed upon by the committee).”*



## B-D. PE, PA11, PA12 – not in agreement.

“The Technical Pipeline Safety Standards Committee finds that related to **PE, PA11 and PA12**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”





# E. Risers

- **Issue:** The CFR do not contain specific requirements for risers on plastic pipe. GPTC petitioned to permit above-ground, encased plastic pipe for metering and regulator stations
- **Proposals:**
  - Requirements for design and construction of plastic risers
  - Incorporate ASTM F1973 for factory assembled anodeless risers (PE, PA11, PA12)



# E. Risers: Comments

- **Broad Support**
- **Specific Issues**
  - Request deletion of prescriptive 3' base leg language
  - Request definition of rigid and permit flex risers in certain applications
- **Riser standards**
  - PHMSA did not incorporate a standard for field assembled risers. Field assembled risers should therefore not have to meet a listed specification.
  - Request clarification that risers besides anodeless risers are allowed



# E. Risers: Possible Changes

- Eliminate length requirement for base legs
- Specify that the section applies only to anodeless risers
- Specify that only factory assembled risers must meet the listed specification
- [See possible alternative language](#)



## E. Risers— Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that related to **risers**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”



## E. Risers— propose a change.

“The Technical Pipeline Safety Standards Committee finds that **related to risers**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -  
*(list of amendments agreed upon by the committee).*”



## E. Risers— not in agreement.

“The Technical Pipeline Safety Standards Committee finds that related to **risers**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”



# F. Fittings

- **Issue:** Mechanical fittings or joints may become loose and pipe may be pulled out from fittings, causing leaks and incidents.
- **Proposal:**
  - Mechanical fittings must be category 1
  - Seal and resistance standards defined in code and applicable standards





# F. Fittings: Comments

- **Broad Support** (some concerns with Retroactivity/Cathodic Protection)
  - Retroactivity—PHMSA should not require a search and replacement program
  - Cathodic Protection
    - Monitoring should be required every 10 years rather than 10% of the system each year
    - Do not require monitoring of isolated metal fittings
    - Cost concerns with the proposed compliance requirements
- **Opposition**
  - Requested that these requirements only apply to distribution systems
  - Request revision to allow category 2 or 3 joints on larger diameter lines since category 1 joints are not always available



# F. Fittings: PHMSA Possible Changes

- Cathodic Protection monitoring
  - Remove proposed [§ 192.455\(g\)?](#)
  - Note: Current regulations already require cathodic protection and monitoring for isolated metal fittings that don't meet the conditions in § 192.455 (f)



## F. Fittings– Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that **related to fittings**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”



## F. Fittings— propose a change.

“The Technical Pipeline Safety Standards Committee finds that **related to fittings**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -

*(list of amendments agreed upon by the committee).”*



## F. Fittings– not in agreement.

“The Technical Pipeline Safety Standards Committee finds that **related to fittings**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”



# G. Plastic Pipe Installation

**Issue:** Address a number of concerns regarding the design, construction, and installation of plastic pipe

**Proposals:** Addressing issues related to

1. Trenchless Excavation
2. Joining plastic pipe
3. Qualifying joining procedures
4. Qualifying persons to make joints
5. Bends
6. General installation of plastic pipe
7. Service line connections to main piping
8. Maintenance of plastic pipe joining equipment



# G. Plastic Pipe Installation 1 & 2: Proposals

## 1. Installation by Trenchless Excavation

- Requirement that the path of installation is clear of other underground structures
- Requirement to use a weak link during pull through

## 2. Joining Plastic Pipe:

- Mechanical fittings must meet a listed specification
- Language clarification
  - The use of solvent cements is restricted to PVC pipe
  - Heat fusion requirements apply to both pipe and components that are joined to pipe





# G.1. Trenchless Excavation: Comments

- **General Support**
  - Exempt services below 1.25” IPS if supported by the incident history
- **Weak link “device”**
  - Supportive of the intent but request flexibility in definition of a device.
  - Opposed and recommend holding a working group
- **Safety enhancements**
  - Require operators verify that pipe is undamaged after pull through
  - Require use of a tracer wire.
  - Require positive identification of underground structures
- **Underground structures: concerns**
  - Operators should only be responsible for providing clearance from structures known at the time of installation
  - List of compliance actions should be provided or drop this provision
  - Written cross-bore avoidance procedures should be sufficient





# G.2. Joining Plastic Pipe: Comments

- **Support**
- **Socket fusion-** Allow socket fusion up to 4” diameter as permitted in the listed specifications.
- **Clarification**
  - Specify that ASTM F2620 applies only to PE
  - Question on whether joining requirements apply to joints in factory assembled risers



# G. Plastic Pipe Installation 3-5:

## Proposals

### 3. Qualifying Joining Procedures

- Incorporation by reference of modern standards for joining procedures for PE, PA11, and PA12

### 4. Qualifying Persons to Make Joints

- Incorporation of ASTM F2620-12 as an option for PE operators

### 5. Bends:

- Minimum bend radius as specified by manufacturer





# G. Plastic Pipe Installation 3-8: Comments

- **Qualifying Persons to Make Joints and Joining Procedures**
  - Requiring sole use of ASTM F2620 would require re-qualifying proven procedures
  - Specify that F2620 applies only to PE
- **Backfill Requirements**
  - Opposed by several commenters
- **Equipment Maintenance: Plastic Pipe Joining**
  - Support
  - Requirements are too prescriptive and burdensome



# G. Plastic Pipe Installation: PHMSA Recommendation

- **Trenchless Excavation** – [Clarify expectations](#)
- **Weak Link-** [“device or method”](#)
- **Remove socket fusion diameter [restrictions](#)**
- **Drop enhanced [backfill requirements](#)** – operators would still have to comply with the existing requirements in §§ 192.319(b) and 192.361(b)
- **Equipment Maintenance - Discuss [record retention requirements](#)**



## G. Plastic Pipe Installation– Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that **related to plastic pipe installation**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”



## G. Plastic Pipe Installation— propose a change.

“The Technical Pipeline Safety Standards Committee finds that **related to Plastic Pipe Installation**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -

*(list of amendments agreed upon by the committee).”*





## G. Plastic Pipe Installation– not in agreement.

“The Technical Pipeline Safety Standards Committee finds that **related to plastic Pipe installation**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”



# H. Repairs

- **Relatively non-controversial proposals**
  - New repair criteria for plastic pipe
  - Prohibition of permanent use of temporary leak repair clamps
- **More discussion in alternative slides, otherwise move on**



# I. General Provisions

## Proposals:

1. Incorporation by reference
2. **Plastic pipe material**
3. Plastic pipe storage and handling
4. Gathering lines
5. Merger of Sections 192.121 and 192.123
6. Design requirements for components
7. General design requirements for valves
8. General design requirements for standard fittings
9. Test requirements for plastic pipelines



# I.2 General Provisions: Plastic Pipe Materials

## Restriction of PVC Pipes and Fittings

- Prohibit PVC pipe and components for new pipelines
- Incorporation of ASTM F2817-10 for replacement of components on existing PVC pipelines only



# I. Plastic Pipe Materials: Comments

- **General support**
  - Minor clarifications for component design standards
  - Adopt more recent editions of standards
  - Clarify that simple, generic storage and handling procedures developed by a third party are acceptable
- **Restrictions on PVC Pipe**
  - Majority support
  - Trade association strongly opposed PVC restrictions
  - Commenter noted this would prohibit installation of PVC in low-risk applications such as vent piping
- **Exempt EFVs** – Noted that no EFV standard was incorporated



# I. General Provisions: Possible Changes

- **PVC Pipe**
  - Discuss necessity of prohibition
  - Discuss use in certain low-risk applications such as non-pressure vent piping
- **Exempt EFVs**



# I. General Provisions– Agree as Proposed.

“The Technical Pipeline Safety Standards Committee finds that **related to the section titled “General Provisions”**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are technically, feasible, reasonable, cost-effective, and practicable.**”





# I. General Provisions— propose a change.

“The Technical Pipeline Safety Standards Committee finds that **related to the section titled “General Provisions”**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable if the following changes are made -

*(list of amendments agreed upon by the committee).”*



# I. General Provisions– not in agreement.

“The Technical Pipeline Safety Standards Committee finds that **related to the section titled “General Provisions”**, the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation **are not (or cannot be made)** made technically, feasible, reasonable, cost-effective, and practicable.”



# Final Vote

“The Technical Pipeline Safety Standards Committee finds that the proposed rule as published in the *Federal Register* and the Draft Regulatory Evaluation are technically, feasible, reasonable, cost-effective, and practicable **if the amendments agreed upon during this meeting are made**

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# Next Steps

- Complete Final Rule
- Publish Final Rule



# End of Presentation

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

To Protect People and the Environment From the Risks of  
Hazardous Materials Transportation



# A. Traceability § 192.3

## **NPRM Version**

### **§ 192.3 Definitions**

\* \* \* \* \*

Traceability information means data that is provided within ASTM F2897-11a (incorporated by reference, *see* § 192.7) that indicates within the unique identifier, **at a minimum, the location of manufacture, production, lot information, size, material, pressure rating, temperature rating, and, as appropriate, type, grade and model of pipe and components**

## **Possible Clarification**

### **§ 192.3 Definitions**

\* \* \* \* \*

Traceability information means data that is provided within ASTM F2897-11a (incorporated by reference, *see* § 192.7) that indicates within the unique identifier, **the origin of materials used to manufacture a given component and/or the product processing or manufacturing history including component manufacturer, manufacturer's lot code, production date, material, component type, and size.**



# A. Tracking and Traceability

## § 192.63 Marking of materials.

(a) Except as provided in paragraph (d) of this section, each valve, fitting, length of pipe, and other component must be marked as prescribed in the specification or standard to which it was manufactured.

\* \* \* \* \*

(e) Additional requirements for plastic pipe and components.

(1) All markings on plastic pipe prescribed in the listed specification and the requirements of paragraph (e)(2) shall be repeated at intervals not exceeding 2 feet.

(2) Plastic pipe and components manufactured after **[INSERT [ONE YEAR AFTER?] EFFECTIVE DATE OF FINAL RULE]**, must be marked in accordance with ASTM F2897 (incorporated by reference, see § 192.7) in addition to the listed specification.

(3) All markings on plastic pipelines prescribed in the specification and paragraph (e)(2) shall be legible, visible, and permanent in accordance with the listed specification. After **[INSERT [TWO YEARS AFTER?] EFFECTIVE DATE OF FINAL RULE]** records of markings prescribed in the specification and paragraph (e)(2) shall be maintained for the life the pipeline per the requirements of §§ 192.321(k) and 192.375(d).





# E. Risers

## § 192.204 Risers

(a) The design shall be tested to ensure safe performance under anticipated external and internal loads acting on the assembly.

(b) **Factory assembled anodeless** risers shall be designed and tested in accordance with ASTM F1973 (incorporated by reference, see § 192.7).

(c) All risers used to connect regulator stations to plastic mains must be rigid and ~~have a minimum 3 ft. horizontal base leg and~~ designed to provide adequate support and resist lateral movement. Anodeless risers used in accordance with this paragraph must have a rigid riser casing.



# F. Fittings- Cathodic Protection Monitoring

## **§ 192.455 External corrosion control: Buried or submerged pipelines installed after July 31, 1971.**

\* \* \* \* \*

(a) Except as provided in paragraphs (b), (c), (f), and (g) of this section, each buried or submerged pipeline installed after July 31, 1971, must be protected against external corrosion, including the following:

\* \* \* \* \*

(g) Electrically isolated metal alloy fittings in plastic pipelines under this section not meeting the criteria contained in paragraph (f) must be cathodically protected and monitored in accordance with this section and § 192.465(a).



# G.1: Trenchless Excavation

## 192.3 Definitions

\* \* \* \* \*

Weak Link means 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.

\* \* \* \* \*



# G.1 Installation of plastic pipelines by trenchless excavation.

## § 192.329 and 192.376

Plastic pipelines installed by trenchless excavation must comply with the following:

(a) Each operator shall **take practicable steps to ensure that the path of the excavation will** provide sufficient clearance for installation and maintenance activities from other **[known]** underground utilities and/or structures **at the time of installation.**



# G.2. Joining Plastic Pipe

## § 192.281 Plastic Pipe

● \* \* \* \*

(b) \* \* \*

(2) A socket heat-fusion joint **equal to or less than 1¼ inches** must be joined by a device that heats the mating surfaces of the pipe and/or component, uniformly and simultaneously, to establish the same temperature. The device used must be the same device specified in the operator's joining procedure for socket fusion. **A socket heat fusion joint may not be joined on a pipe and/or component greater than 1¼ inches**



## **G.6. Installation of Plastic Pipe- Backfill**

### **§§ 192.321(i) & 192.375 (e)**

Backfill material must:

- (1) Not contain material that could be detrimental to the pipe, such as rocks of a size exceeding those established through sound engineering practices; and
- (2) Be properly compacted underneath, along the sides, and for predetermined distance above the pipe



## **G.8 Equipment Maintenance and Calibration**

### **§ 192.756 Joining plastic pipe by heat fusion; equipment maintenance and calibration.**

(a) Each operator must maintain equipment used in joining plastic pipe in accordance with the manufacturer's recommended practices or with written procedures that have been proven by test and experience to produce acceptable joints.

(b) Each operator must calibrate and test all equipment used to join plastic pipe in accordance with paragraph (a) of this section. The calibration must be appropriate for the use of the equipment and/or is within the acceptable tolerance limit of that equipment as stated by the manufacturer.

(c) The term "equipment," as specified in this section, includes, but is not limited to, fusion equipment, alignment equipment, facing and adaptor equipment, heater plates, and gauging devices.

(d) The operator must maintain records of these tests and calibrations (other than daily verifications and adjustments). for the life of the pipeline.





# H. Repairs

## § 192.720 Distribution systems: Leak repair.

(a). A **mechanical** leak repair clamp may not be used as a permanent repair method for plastic pipe.

(b). Upon discovery, an operator must remove mechanical leak repair clamps not designed for permanent use



## I.2 Plastic Pipe Material

### § 192.59 Plastic pipe.

\* \* \* \* \*

(e) Except for PVC fittings used for repairs on existing PVC pipelines with materials manufactured in accordance with the listed specification, PVC pipe cannot be used.

