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# Update on Nuclear Standards

8 September 2016  
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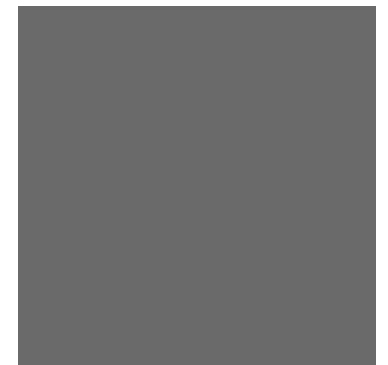
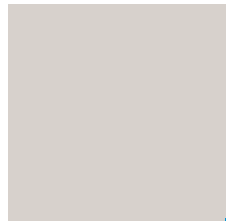
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# Nuclear Fuel Cycle Update





## Major Revisions to Reflect International Use

C1174 Standard Practice for Prediction of the Long-Term Behavior of Materials, Including Waste Forms, Used in Engineered Barrier Systems (EBS) for Geological Disposal of High-Level Radioactive Waste

C1553 Standard Guide for Drying Behavior of Spent Nuclear Fuel

C1562 Standard Guide for Evaluation of Materials Used in Extended Service of Interim Spent Nuclear Fuel Dry Storage Systems

June 2016 – Approximately 25 industry reps from 10 different countries met for 2 days in Vienna to make these standards applicable to worldwide. The 3 standards received top-to-bottom proposed revisions.

All are targeted for balloting in early 2017.

Next Committee Meeting is January 30-31, 2017 in Norfolk, VA

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## Proposed New Standards Under Development

WK49747 – Test Method for Determining Moisture Content in Uranium-Ore Concentrate  
Status: Underwent initial round of balloting.

WK50622 – Test Method for Determination of Uranium in Urine by Inductively Coupled Plasma Mass Spectrometer following Nitric Acid Dilution  
Status: Underwent initial round of balloting.

C1845 Practice for the Separation of Lanthanide Elements from Uranium Matrices Using High Pressure Ion Chromatography (HPIC) for Isotopic Analyses by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)  
Status: APPROVED – June 1, 2016

WK51247 – Test Method for the Determination of Nitrogen (Total) Content in Mixed Oxide ((U, Pu)O<sub>2</sub>) Sintered Pellets, or Pu Oxide Powder by the Inert Gas Fusion Technique followed by Thermal Conductivity Measurement  
Status: Underwent initial round of balloting.

WK52739 – Test Method for the Determination of Carbon (Total) Content in Mixed Oxide ((U, Pu)O<sub>2</sub>) Sintered Pellets by Direct Combustion-Infrared Detection Method  
Status: Underwent initial round of balloting.

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## Proposed New Standards Under Development (cont'd)

WK53104 – BET Surface Area Determination of UO<sub>2</sub> Powder and Pellets

Status: Currently Under Development

WK54404 – Test Method for the Determination of Carbon and Sulfur Content in Plutonium Oxide Powder by the Direct Combustion-Infrared Spectrophotometer

Status: Underwent initial round of balloting.

WK54994 – Test Method for the Determination of Hydrogen (total from all sources) in Mixed Oxide ((U, Pu)O<sub>2</sub>) Sintered Pellets by the Inert Gas Fusion Technique Followed by Thermal Conductivity Measurement

Status: Underwent initial round of balloting.

WK55137 – Practice for the Radial Hydride Treatment and Ring Compression Testing of Zircaloy-Based Spent Fuel Cladding

Status: Currently Under Development



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# HDPP Standards Update



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The following ASTM standards were referenced in the 2013 NESCC Report on Polymer Piping Codes and Standards. The following slides will provide an update on revisions since the report was published.



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## **D2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products (Current version 2013)**

The changes to D2837 is to revise Table 1 on Hydrostatic Design Basis Categories and corresponding ranges. The table steps are based on the Renard preferred number series.





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## **D3350 Specification for Polyethylene Plastics Pipe and Fittings Materials (current version 2014)**

This revision adds to D3350 a classification method for the oxidative resistance of a PE pressure piping compound to chlorinated water. This physical property and the classification method are of interest for PE pressure piping compounds that are used for transporting disinfected potable water. There is significant interest by users of D3350 for this classification to support the proper selection of PE compounds for pressure piping applications.

# HDPP



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## **F2620 Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings (current version 2013)**

No revisions since 2013.

## **F714 Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter (current version 2013)**

Minor changes.



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## **D3035 Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter (current version 2015)**

Revised Table 4 to add Burst Test Requirements for two Ductile Iron Pipe Size (DIPS) dimension ratios. A previous approved revision added DIPS sizes to D3035, but inadvertently omitted adding burst pressure requirements for two DIPS dimension ratios (DR 7.7 and DR 14.3) to Table 4

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## **F1055 Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing (current version 2015)**

Specification F1055 already allows the use of PEX pipe and tubing with polyethylene electrofusion fittings. The latest revision is to add reference to SDR9 CTS PEX tubing produced as per Specification F876. The fusion technology is the same.

Specifically, this revision addresses concerns regarding high-temperature applications (which are currently prohibited in the Performance Requirements), use of gas (also prohibited in the Performance Requirements) and use of PEX tubing with exterior layers or mid-wall layers.

# HDPP



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## **D1693 Test Method for Environmental Stress-Cracking of Ethylene Plastics (current version 2015)**

Section 6.3 on Specimen Holders was revised to allow stainless steel holders.



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## **F1473 Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins (current version 2013)**

New section added to require the use of Annex A (Measurement of Specimen Thickness Dimension) when standards require a specified thickness or dimensional tolerance on thickness.

New Annex A provided including sections on Scope, Referenced Documents, Conditioning, Apparatus and Dimensioning.

# HDPP



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## **D1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure (current version 2015A)**

Currently only pressure gauge is mentioned in section 6.3 as mean of measuring pressure. A new addition will allow for the use of transducers that are widely used in pressure testing equipment.

# HDPP



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## **F2263 Test Method for Evaluating the Oxidative Resistance of Polyethylene (PE) Pipe to Chlorinated Water (current version 2014)**

Various revisions throughout the standard.