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# ENGINEERING AND CONSTRUCTION BULLETIN

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**Subject:** Appropriate Drainage Piping Associated with R-410A Refrigerant

**Applicability:** Directive and Guidance

**References:** Charlotte Pipe and Foundry Company, Plastics Technical and Installation Manual, December 14, 2010

1. Some condensate lines used with HVAC systems utilizing R-410A refrigerant have been found to deteriorate, ultimately fail and leak.
2. The real culprit is actually the synthetic oil used with the R-410A refrigerant namely Polyol Ester (POE). POE creates “Environmental Stress Cracking” and subsequent leaking in PVC, CPVC and ABS piping.
3. Although the R-410A refrigerant is not directly used in PVC, CPVC or ABS piping, POE will very often enter into the condensate drainage piping when an HVAC unit, utilizing this refrigerant, experiences a refrigerant leak. POE can also enter the condensate system if the refrigerant circuit is opened during repair work.
4. Copper, galvanized steel and polypropylene piping is not affected by POE.
5. In order to avoid condensate pipe leakage in HVAC systems utilizing R-410A refrigerant or any refrigerant that contains Polyol-Ester lubricating oil PVC, CPVC or ABS piping cannot be used for condensate drainage piping.
6. The point of contact for this ECB is Timothy Gordon, CECW-CE, 202-761-4125.

A handwritten signature in black ink, appearing to read 'J. Dalton'.

JAMES C. DALTON, P.E., SES  
Chief, Engineering and Construction  
Directorate of Civil Works