



SAFETY ALERT

PVC/CPVC Piping Through Seals and Anti-freeze in Water Traps

An explosion occurred within a sealed area of an underground coal mine on June 30, 2012. The 120-psi seals exhibited no apparent signs of structural damage. However, the forces from the explosion severely damaged 3 of the 4 PVC water drainage pipes installed through the lowest seal in the set. Testing and independent evaluations led to the conclusion that the Schedule 80 PVC pipes failed due to a rapid internal over-pressurization. The only pipe remaining intact did so because the water trap assembly was not secured to the pipe. Pressure relief was provided when the forces dislodged the trap from the end of the pipe.

Best Practices

- Future water drainage systems utilizing PVC in 120-psi seals should incorporate a pressure relief system. Alternatively, other types of suitable non-conductive pipes may be used as long as their strength is consistent with that of the seal.
- Because of its evaporative properties, anti-freeze is commonly used in water traps to maintain separation between a sealed atmosphere and the atmosphere in the active workings. Anti-freeze will degrade PVC over time. If anti-freeze is used in PVC water traps, examiners should regularly examine them for signs of degradation. Water traps showing signs of degradation should be replaced.