

## Plenum (CMP) Vs. Riser (CMR) Cable Types for Cat 5 and Cat 6

**Plenum Cable (CMP)** is cable that is laid in the plenum spaces of buildings. The plenum is the space that can facilitate air circulation for heating and air conditioning systems, by providing pathways for either heated/conditioned or return airflows. Space between the structural ceiling and the dropped ceiling or under a raised floor is typically considered plenum; however, some drop ceiling designs create a tight seal that does not allow for airflow and therefore may not be considered a plenum air-handling space. The plenum space is typically used to house the communication cables for the building's computer and telephone network; however, it has been proposed that the growing abandonment of cable in plenum spaces may pose a serious hazard in the event of a fire as once the fire reaches the plenum space the airflow present in the space supplies fresh oxygen to the flame and makes it grow much stronger than it would have otherwise been. Recent testing by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has shown that while flame spread is limited by accumulated cable bundles, other structural concerns may still exist due to increased load on suspended components. As plenum spaces are restricted from use as areas for storage, the principle behind removal of abandoned cable is that regulated removal prevents the use of plenum spaces as a storage area for abandoned cable. Additionally, no high-voltage powered equipment is allowed in the plenum space because presence of fresh air can greatly increase danger of rapid flame spreading should the equipment catch on fire.

In the United States, plastics used in the construction of plenum cable are regulated under the National Fire Protection Association standard NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems. Plenum cable is jacketed with a fire retardant plastic jacket of either a low-smoke polyvinyl chloride (PVC) {patented 1987} or a fluorinated ethylene polymer (FEP). Polyolefin formulations, specifically based on polyethylene compounding had been developed by at least two companies in the early to mid-1990s; however, these were never commercialized and development efforts continue in these as yet untapped product potentials. Development efforts on a non-halogen plenum compound were announced in 2007 citing new flame retardant synergist packages that may provide an answer for an as yet under-developed plenum cable market outside the United States. All materials intended for use on wire and cables to be placed in plenum spaces are designed to meet rigorous fire safety test standards in accordance with NFPA 262 and outlined in NFPA 90A.

Note that diligence is required to make sure that a non-plenum airspace stays that way. A non-plenum airspace can become a plenum airspace by accident if the ductwork is

disconnected and not properly repaired and resealed. Ductwork disconnection can occur due to building damage such as earthquakes, aging or adverse environment causing the metal to corrode and fall apart, or simply negligence on the part of building contractors that leave work unfinished. In all such cases, discovery and repair of such problems to eliminate unintended plenums is difficult due to the hidden nature, limited space, and difficult access of most installed drop ceilings. For highest fire safety it is best to assume all drop-ceiling airspaces are plenums, whether or not they are officially designated as one.

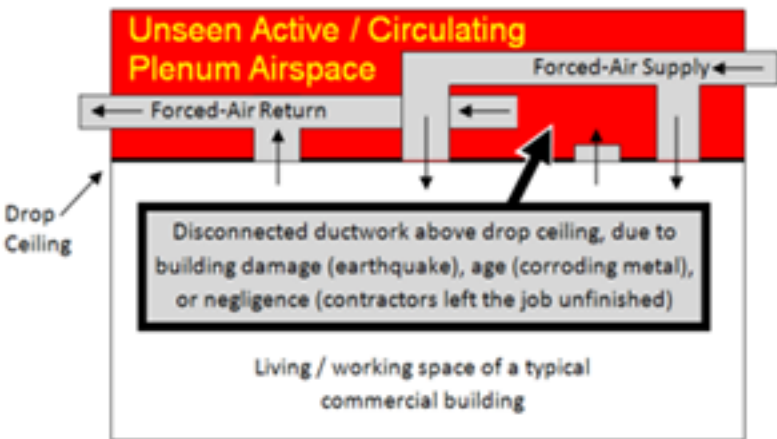
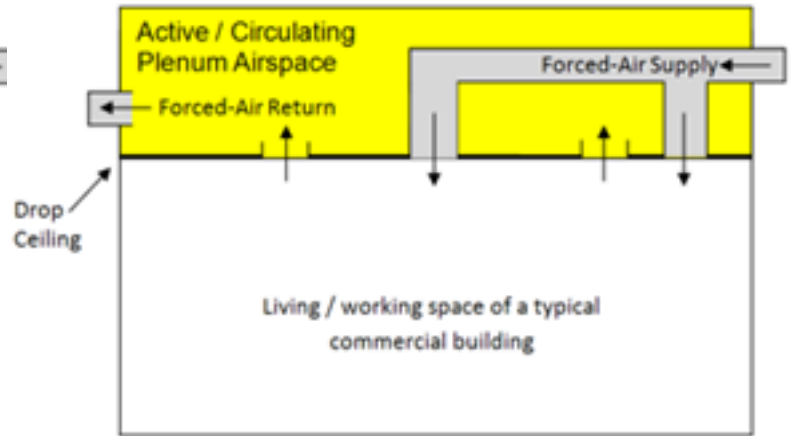
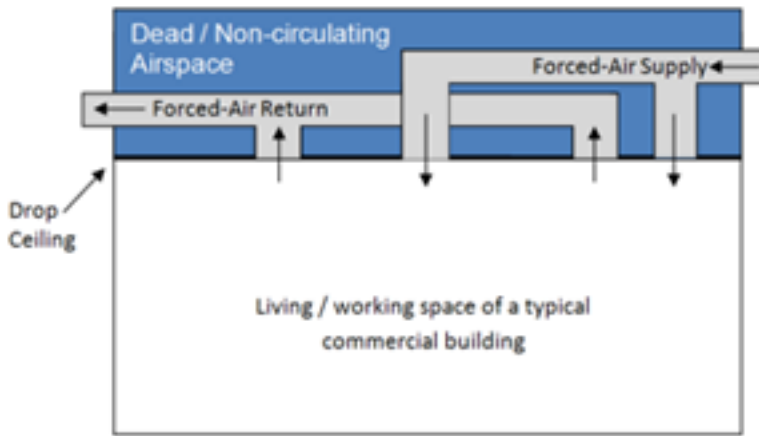
**Riser Cable (CMR)** or sometimes referred to as PVC

NOTE: Not all PVC Cable is necessarily Riser rated

Cable which is to be run between floors in non-plenum areas is rated as RISER cable. The fire requirements on riser cable are not as strict. Thus, plenum cable can always replace riser cable, but riser cable cannot replace plenum cable in plenum spaces. Twisted-pair, coaxial, HDMI and DVI versions of cable are made in plenum and riser versions.

In 2006, significant concern developed over the potential toxicity of FEP and related fluorochemicals including the process aid perfluorooctanoic acid (PFOA) or C8 such that California has proposed some of these materials as potential human carcinogens. The NFPA Technical Committee on Air Conditioning, in response to public comment, has referred the issue of toxicity of cabling materials to the NFPA Committee on Toxicity for review before 2008.

In 2007, a development program specifically targeting the production of a non-halogen plenum cable compound was announced to specifically address lingering toxicity concerns presented by halogenated compounds for use in European and other global markets.



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