weight polyethylene, with a specific carbon black particle size, % by weight and particle distribution, is recommended for maximum life expectancy. Polyvinylchloride jackets exhibit a life expectancy of less than 1/2 that of properly compounded polyethylene.

b. Humidity or water vapor can enter flexible cables through pin-holes in the jacket, at the connector, or by vapor transmission through the jacket. All materials exhibit a finite vapor transmission rate. For example, a ten foot length of cable with a polymer outer jacket exhibits a helium leak rate of approximately 10^{-4} cc/sec/ft. Even the least porous thermoplastics, such as FEP, do not offer a significant improvement. In airborne applications, the combination of finite vapor transmission rates and large temperature extremes cause condensation in cables. The moisture can collect in low areas causing corrosion or shorting of a connector. One method of preventing moisture accumulation in cables is to fill all voids with a moisture-proofing compound which will not harden with age. See LMR-DB and Imperveon Cables for additional data. Times also supplies hermetically sealed cable assemblies with leak rates of less than 10^{-5} cc/sec/ft.

c. Salt-water Immersion-The electrical characteristics of cable will be rapidly affected if the conductors are exposed to salt-water. Unless an immersion test is performed on the jacket, there is a good possibility of one pinhole per 1000 feet. Even if sufficient tests could be performed, damage during installation or damage from rodents normally will cause leakage. Pressure-tight, non-hosing cables capable of withstanding the pressure at the required cable depth can be recommended.

d. Corrosive Vapors: The use of tin and silver coatings does afford some protection against corrosive vapors. However, such protection is short-lived. For installation near salt-water or chemical plants, a filled cable such as LMR-DB or Imperveon is recommended.

e. Underground Burial & Galvanic Action: Underground moisture which comes in contact with any cable metals, will cause rapid corrosion. Tubular aluminum outer conductors have been almost destroyed in 90 days. Therefore, any cables installed underground should have pinhole-free jackets. Since jacket damage due to installation techniques and rodents can occur, cables filled with a flooding compound should be used. For maximum reliability against rodents, a steel tape armor with over-jacketing is recommended.

f. Flame Resistance: Cables have different degrees of flame resistance depending on the jacket and dielectric material. “Flame retardant” cables are cables having limited flame spread (propagation). PVC jackets offer some flame retardance, depending on the compound selected.

Flame retardant jackets, which are actually within the flame, will burn. If the flame is removed, they will self-extinguish. PVC jackets will not drip burning material. However, if the dielectric is polyethylene, the dielectric may drip ignited materials. PTFE and FEP will not support combustion, drip or burn. TMS has a series of Low Smoke / Low Toxicity cables to provide the utmost in protection. These cables utilize a proprietary TMS compound which is non-halogenated and produces combustion products that are low smoke and low toxicity. See the LSSB/LLSB, LMR-FR and M17 qualified cable lines.

P. CABLE STRENGTH

The break strength of the cable depends primarily on the strength of the outer conductor. The cables will normally achieve at least 70% of the break strength of the outer conductor, if the center conductor will stretch up to 10% before breakage. Caution must be taken with cables with copper-covered steel or alloy center conductors where breakage would occur with only 1 to 10% elongation. Conductor sizes less than 26 AWG can easily be broken during assembly operations. Special alloy conductors are available which can achieve a tensile strength of 110,000 psi and 10% elongation.