DESIGN CONSIDERATIONS WITH LOW DENSITY DIELECTRICS

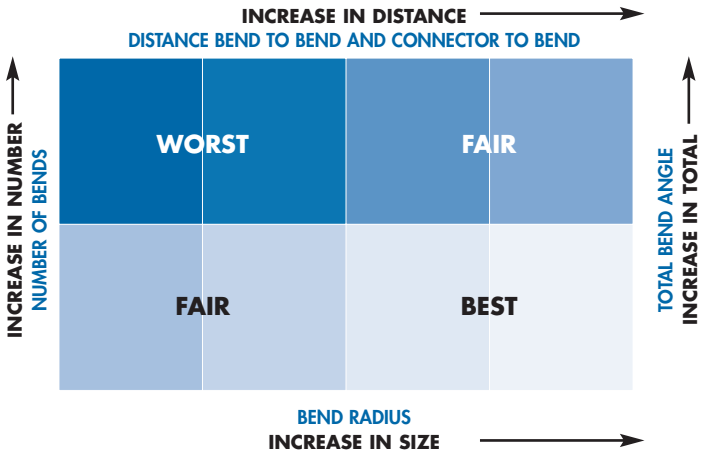
When designing semi-rigid cable assemblies constructed from low density or microporous PTFE products, a number of factors should be taken into consideration to ensure optimum performance:

BENDING AND VSWR EFFECTS

The low density dielectric provides considerably less support for the cable's outer conductor than solid PTFE configurations. This results in greater amounts of deformation around the bend during forming. Such deformation causes proportional changes in impedance, resulting in larger signal reflections and higher VSWR. Additionally, since the reflections are vector quantities, they will combine constructively at a frequency relating to their spacing along the cable.

Semi-rigid cables constructed with low density PTFE dielectrics should be designed with the largest bend radius possible to ensure optimum VSWR performance. This is particularly critical in high power and ultra-low loss applications. Whenever possible, a single bend radius should be used throughout a cable assembly. This allows use of automated bending equipment, which reduces production costs.

Good design practices can be illustrated as follows:



NOTE: Minimum bend radii listed in this catalog are the absolute minimums recommended, based solely on mechanical considerations.

ELECTRICAL LENGTH OR PHASE MATCHING

When using microporous or low density semi-rigid products in applications where matched electrical length or insertion phase is important, consideration must be given to both the mechanical length of the cable assembly and the variation in dielectric constant along the developed length of cable. Microporous or low density dielectrics typically are not as homogeneous as solid PTFE dielectrics.

To avoid changes in electrical length due to normal variation in cable properties, electrical length requirements should be explicitly stated during discussion with an applications engineer and on any engineering drawings.