

APPLICATION NOTES

A guide to the selection of RF coaxial cable *(continued)*

in testing has exhibited more than 500 millivolts in RG cable. This noise voltage can be minimized by preventing motion between dielectrics and conductors or dissipating electrostatic charges between conductors and dielectrics with semiconducting layers. Low noise constructions must take into account the life expectancy and environmental conditions to which they are subjected. Times manufactures low noise cables for special applications.

M. OPERATING TEMPERATURE RANGE

1. The operating temperature range of flexible coaxial cable is determined primarily by the operating temperature range of the dielectric and jacketing materials. Note that only silver plated conductors are suitable for long term use at temperatures over 80 degrees C.

2. Operating temperature limits of the most commonly used dielectrics and jacket types are given in the following table:

MATERIAL	Temperature Range
Polytetrafluoroethylene (PTFE)	-75°C to + 250°C
Polyethylene	-40°C to + 85°C
Foamed Polyethylene	- 40°C to + 100°C
Foamed or Solid Ethylene Propylene Jackets	- 40°C to + 105°C
Fluorinated Ethylene Propylene (FEP)	-70°C to +200°C
Polyvinylchloride (PVC)	- 50°C to + 85°C
Ethylene Chloro Trifluoroethylene (ECTFE)	- 65°C to + 150°C
Polyurethane	-100°C to + 125°C
Perfluoroalkoxy (PFA)	-65°C to + 260°C
Nylon	-60°C to + 120°C
Ethylene Propylene High Molecular Weight Polyethylene	- 55°C to + 85°C
Crosslinked Polyolefin	- 40°C to + 85°C
Silicone Rubber	-70° to + 200°C
Silicone Impregnated Fiberglass	- 70°C to + 250°C
High Temperature Nylon Fiber	- 100°C to + 250°C

N. FLEXIBILITY

Coaxial cables with stranded center conductor and braided outer conductors are intended for use in those applications where the cable must flex repeatedly while in service. Cables with stranded center conductors will exhibit higher attenuation compared to cables with solid center conductors. In general, the higher the number of strands, the better the flexibility and the higher the attenuation.

Standard braided outer conductor constructions will withstand over 1000 flexes through 180° if bent over a radius 20 times the diameter of the cable. Flexible cables may be stored, and are normally shipped, on reels with a hub radius greater than 10 times the diameter of the cable. If a flexible cable is to be installed in a fixed, bent configuration, the minimum bend radius recommended is 5 times the cable diameter. Tighter bends can be made. Special braid designs are available for improved flex-life.

Coaxial cables with a tubular aluminum or copper outer conductors, commonly referred to as semi-flexible or semi-rigid cables, will not withstand more than ten 180° bends over a bend radius equal to 20 times the diameter of the cable. Semi-flex cables are normally shipped on reels having a hub radius of 20 times the O.D. of the cable. Semi-flex cables may be field bent for installation. The minimum recommended bend radius is equal to 10 times the O.D. of the cable. Cables bent on a bend radius of 5 times the O.D. of the cable may exhibit mechanical and electrical degradation.

O. ENVIRONMENTAL RESISTANCE

The life of a coaxial cable depends on many factors. The effects of ultra-violet exposure, high humidity, galvanic action, salt-water and corrosive vapors on the materials used are prime causes of cable failure. Resistance to flame must also be considered. The following guidelines apply:

a. Sunlight:For low temperature cables exposed to sunlight (ultra-violet), the use of high molecular