

Flat Molded Cable Assemblies

Flat Molded Cable Assemblies Design Considerations:

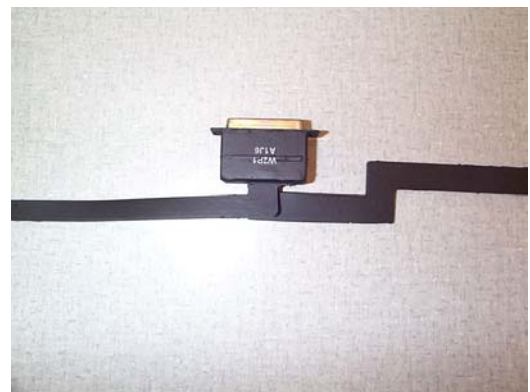
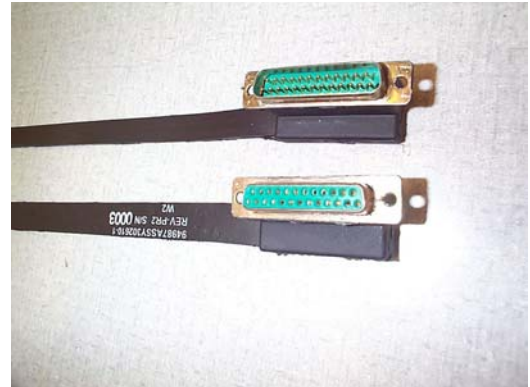
The following is a short description of design suggestions for use in your flat molded cable designs.

The objective is to provide for the maximum flexibility, a very thin package and produce a product that meets or exceeds the electrical and environmental performance requirements, all while keeping cost to a minimum.

Cast polyurethane flat cable assemblies are a least cost alternative and more rugged than flexible and semi rigid printed wiring boards, especially when the physical size is large and/or the production quantity is small to medium.

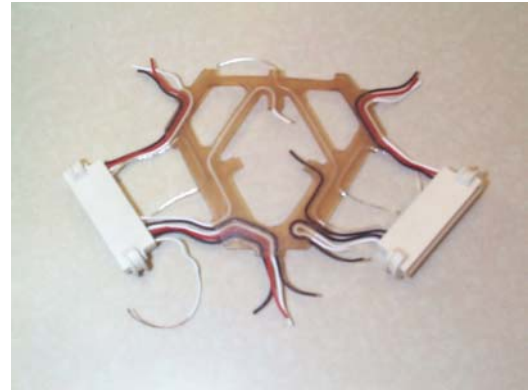
WIRE SELECTION:

1. MIS-35755 Wire and cable, Ultra- flexible, FEP insulated.
 - Available in Type U and S, unshielded and shielded, respectively.
 - Range 20 to 28 AWG, 24 AWG suggested with insulated OD 0.024 inch.
 - Very high stranding supports high flex and excellent electrical properties.
 - White single conductor, red and white two conductor cables, and white, red and black three conductor cables.
 - This wire and cable is recommended as component wires in cast polyurethane flat cable assemblies by US Army Missile Command. Not for use as hook-up and in open wiring harnesses.
2. MIL-W-22759/32 Wire.
 - Suggest AWG 24 to 30 to maintain flexibility.
 - All colors available, but various colors not needed, as reparability is limited.
 - Less expensive, but not as flexible as MIS wire.



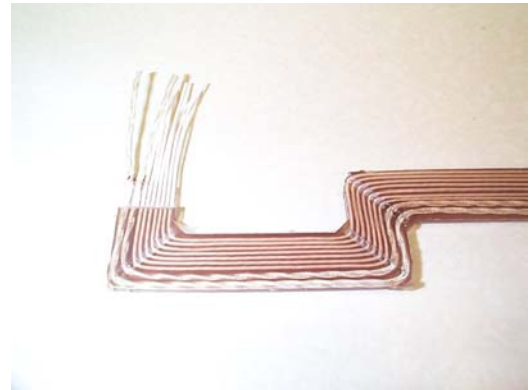
CABLE MOLDING COMPOUND SELECTION:

- MIS-35759B Polyurethane cable molding compound. Aerospace Systems standard material for the cable mold is Hysol US-4028 amber. (CAGE CODE 12405)
- Considered as a missile standard for flat cable molding compound.



CONNECTOR MOLDING COMPOUND SELECTION:

- MIS-35273F Application of polyurethane and epoxy molding compounds.
- Two types I and II and three classes A, B and C. Selection is based on service application and flexibility. Temperature range from -54 degrees to + 200 degrees F. Hardness from 45 Shore A to 80 Shore A, softer is more flexible. Suggest type I, class B.
- For class A, Shore A hardness 70 minimum, consider Mil-M-24041 Cat B, Type 1, Molding and potting compound, color black. Aerospace Systems standard material for connectors and junction molds is Cytec EN-1556 (CAGE CODE 16245) with a standard Shore A hardness of 80.



OVERALL SHIELDING:

- CHO-FLEX 501, CAGE CODE 18565 coating or alternate 73-00008, CAGE CODE 07700.
- Overall shielding protective coating CHO-SHIELD 4937 or alternate 73-00009, CAGE CODE 07700.



MOLDING APPLICATION NOTES:

- Aerospace Systems suggests that the minimum spacing between the OD of insulated component wires or between the OD of two and three conductor shielded cables be 0.015 inch. This 0.015 inch minimum applies also to the edge conductors and the edge of the molded cable, and the conductor OD and the surface of the cable.
- Overall molded cable thickness using MIS 24 AWG wire thus calculates to be 0.054 inch, we suggest a note stating that the molded cable should be 0.065 inch maximum to allow of manufacturing tolerances.
- Surface voids should not exceed 0.030 inch diameter. Voids extending below the surface should not exceed 0.060 inch diameter. Mold separation lines are acceptable.

