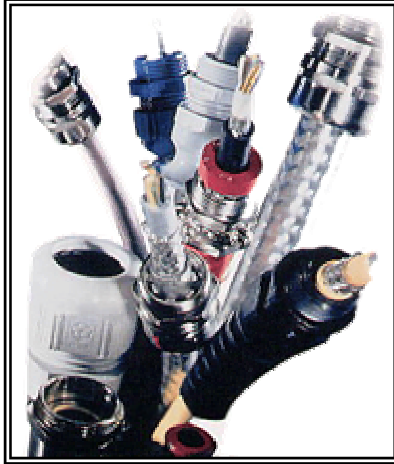




## Specifying Cables - important facts they never told you about in school

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Most cable failures occur as a result of not choosing the best product for a specific application. By following the simple steps outlined below, you can make sure the cable you choose for your application does not bring about cable failure and downtime.

**1. Define the environment:** Make sure you know the particular characteristics of your environment. There are many kinds of environments from clean rooms to harsh locations, with each placing unique demands on cables. Clean rooms require shed-free, low-halogen cables while harsh environments need products that are resistant to high temperatures, oils, and chemicals.

**2. Identify application demands:** Each application places specific demands on a cable. For example, continuous flexing robots need a cable that has been proven to withstand rigorous movement.

Robotic applications are frequently the cause of premature failure because cables have not been chosen correctly. Therefore, an important question to ask in the design stage is if your cable will be handling millions of cycles. If you're dealing with a continuous flexing application, use a cable with enhanced features for flexing in order to maximize performance and machinery productivity. Having your cable flex-cycle-tested by the manufacturer will ease concerns about cable life, allowing you to move onto the next hurdle of the design cycle.

**3. Pinpoint oils and chemicals:** By identifying the chemicals used in your application, you will be able to choose cables that offer maximum protection and long life. Many of the oils used in manufacturing are similar to the oils in PVC compounds. Similar oils can attack each other, causing PVC to swell, dry out, and crack. The result is cable failure. Therefore, if you know such oils are present in your application, select a different jacket compound. Moreover, cable manufacturers should have chemical resistance test data showing how their cables respond after being tested in the leading oils and solvents. If cables have not been tested in the fluids present in your application, ask your cable manufacturer to perform specific tests to pinpoint resistance.

**4. Think about temperature:** Don't forget that temperature is a part of the equation. Products perform differently at 90°C and -5°C. Certain cables can withstand temperature extremes better than others. For instance, if the application requires a cable to be flexible at -5°C or lower, a compound good for lower temperatures must be used. Since there are many different material compounds on the market, your cable supplier should be able to advise you on the best solution.

**5. Consider EMI/RFI:** Many OEM's run power, signal and data cables side by side, creating the possibilities of crosstalk and interference between cables. This affects the performance of machinery, especially in exacting hi-tech application. In such cases, shielded cables can provide protection from interference. For flexing applications, shielded cables that maintain their ability to flex are preferred.

**6. Determine expected life span:** If your product is only expected to survive one month on a plant floor before replacement parts are needed, then you may not need to specify cables that last longer. However, most end-users expect a long life and little downtime from machines, which means it is imperative to evaluate the reliability and longevity of cables and other components.

**7. Check quality with test data:** Any company with experience in cable manufacturing should have a library of test data to back up all claims on cable flexibility, longevity, and chemical resistance. Flex testing results should be based on actual testing-not just theoretical projections. If your supplier can not guarantee this information, find a company that can.