



MSI BARREL SELECTION GUIDE

2019

The best barrel for your application and organization is often determined by two critical factors — the barrel liner and the backer material. It's pretty simple how these two components play into designing a barrel. The backer steel determines how much injection pressure the barrel will hold, so we determine that based on your machine. Far more important for the molder to understand is how the choice of barrel liner affects your barrel's performance — it essentially determines how well the barrel will perform in abrasive or corrosive environments.

While a Carbide barrel is generally the ideal, it's not always right for everyone. Carbide barrels are sometimes more expensive than the alternatives and generally have longer lead times associated with manufacturing. There are, however, good alternatives available that can still be efficient and cost-effective depending on your requirements. The options described below cover 99% of the requirements in the injection molding industry. If you have a specialized application that you feel is not addressed by any of these, contact Molders Services for a detailed review of your operation to determine what is indeed best for you.

Centrifugally Cast Bimetallic Barrels

Bimetallic barrels have been around for years and represent nearly the entire OEM barrel market. The advantage of a bimetallic liner is that its elemental composition can be easily manipulated to achieve an optimum balance of durability, corrosion resistance, and cost effectiveness. These barrels are produced by heating the backer steel and spinning it rapidly, while molten liner material is poured in, causing the liner to form a metallurgical bond with the backer steel. These barrels are not just durable, but extremely reliable and exhibit little to no variation in heat conductivity which helps ensure your resin is processed uniformly.

Carbide

Our preference at MSI is to always sell a carbide-lined barrel. Why? Without any doubt, this is the most durable barrel available. Period.

The Tungsten Carbide particles in this barrel liner are not only extremely hard, but also chemically inert. When combined with a highly corrosion-resistant nickel matrix and virtually zero iron content, this unbeatable combination not only resists abrasion but is highly resistant to corrosion. Contrary to popular belief, corrosion *and* abrasion resistance are equally responsible for barrel durability, longevity and cost-effectiveness, even when processing resins that aren't traditionally viewed as corrosive.

Iron-Boron

Often referred to as standard bimetallic, iron boron barrels are a good and less costly alternative to carbide-lined options when processing non-abrasive or non-corrosive materials. This is also a good choice when production or usage is low. Many of our interior component suppliers, low volume producers, and mold shop customers choose to buy standard bimetallic barrels from us. The major difference is the large presence of iron in the matrix instead of tungsten carbide for abrasion resistance. This option usually represents a 10-20% cost savings. Note, however, that these barrels are not as durable as the others mentioned above.

Tool Steel Barrels

Barrels with tool steel liners represent some of the oldest technologies in the injection molding industry. These types of barrels are produced by machining the backer steel to the desired envelope, and then pressing an abrasion resistant steel liner into the bore.

CPM 10V is a tool steel that gets its hardness from Vanadium Carbides. While this barrel liner is highly abrasion resistant, vanadium produces a liner that is far less corrosion resistant than tungsten, which reduces overall durability. Many suppliers tout 10V barrels as your best option, but making this claim is scientifically inaccurate and does not take into consideration barrel liner wear. It should come as no surprise that such suppliers are often heavily biased towards tool steel products due to their supply chains. So – in a nutshell, barrels with tool steel liners, while not as durable as their tungsten counterparts, can be manufactured much more quickly than those with centrifugally cast liners, and are sometimes your best option when lead time is critical. *A new CPM 10V barrel can be expedited in as little as one week.*

D-2 is a grade of tool steel that gets its hardness from a high ratio of carbides to iron. This, combined with a high concentration of chromium, makes for a high durability barrel liner that also has a high degree of corrosion resistance. While not quite as abrasion resistant as CPM 10V, a D-2 liner is a very good solution where corrosive resins will be processed. and can be a cost-effective option when timing is critical. Barrels with D-2 liners can be expedited in as little as one week.

RECOMMENDATIONS:

While there are numerous types of barrel liners available, the four discussed in this Guide represent 99% of today's market, and each is worthy of your consideration. Be careful, though. There is a lot of junk being sold and unsuspecting buyers are suffering the consequences of uninformed decisions. Please use the above information to help guide your selection of alternatives. Then talk to the experts at MSI. And if you have an operation with special needs, such as Fluoropolymer processing, contact MSI for a detailed analysis of your options. We stand ready to ensure you get the very best barrels, ideally suited to your applications, and at the fairest price.