



MAKE UP OF A COMMON MECHANICAL SEAL

Four different materials are used in the make up of the most commonly used component seal.

- 1- Retainer and spring
- 2- Rotating component seat
- 3- Stationary component seat
- 4- O-rings, back up rings or wedges

The selection of the type of seal and materials is determined by the original equipment manufacturer based on the chemical composition, the pressure and the temperature of the fluid or gas that a seal is exposed to. In natural gas compression, the retainer and spring materials selected by the original equipment manufacturer are usually appropriate for a wide range of applications and do not normally need to be changed. Therefore they are not listed here. However, altering of material choices for the other 3 components, according to specific operating parameters, can increase the life cycle of a seal. Listed here are the most commonly used materials and their characteristics.

SEAT MATERIALS - MOST COMMON IN GAS & REFRIGERATION COMPRESSORS

Carbon: Available in standard and hi-temp version, is a cost effective and durable choice in clean environments such as refrigeration and dry, clean natural gas. Has good heat dissipation, is self lubricating and has great chemical resistance properties. It is used in combination with all of the other mating seat materials listed here.

Ni-Resist: Is a cast iron material with a high nickel content. It is well suited for clean applications in combination with Carbon as a mating seat material.

Stainless Steel: Resistant to a wide range of chemicals, relatively low cost and used with Carbon as opposing seat material.

Silicon Carbide: Extremely hard, but very brittle material with very good heat dissipation properties. Excellent chemical resistance. Is used with either Carbon, Tungsten Carbide or Silicon Carbide as mating seat material.

Tungsten Carbide: Hard and very tough material. Limited heat dissipation and sensitive to certain chemicals. Usually used in conjunction with Silicon Carbide mating seat material.

ELASTOMERS & TEFLON

Buna N Rubber (NBR): -60⁰ to +225⁰ F. Good for Propane. Will not tolerate H₂S or ester based fluids.

Viton (FKM): -15⁰ to +435⁰ F. Good for H₂S but will not tolerate anhydrous ammonia.

Neoprene (CR): -40⁰ to +250⁰ F. Good for most Freons, Ammonia and natural gasses including H₂S.

HNBR (Hydrogenated Nitrile Butadiene Rubber): -65⁰ to + 275⁰ F. Good for natural gas, including H₂S and Anhydrous Ammonia applications. Not good with esters or chlorinated hydrocarbons.

Teflon: -100⁰ to +450⁰ F Inert, compatible with most known chemicals, but it has no memory.

Please note: Temperature ratings are an average and vary slightly between different manufacturers.