

# Soft Seated or Metal Seated Ball Valves?

by

**Andrew**

Published on 01-06-2013 11:33 AM

There are two types of seat in a ball valves, soft seated and metal seated. Soft seated ball valves use a thermoplastic material such as PTFE, NBR etc. Metal seated ball valves use metal as seat material such as 316 SS, monel, etc. Each ball valve seat type has its own characteristic and thus having its own advantages and disadvantages. So how to select the best ball valves seat type?

In general application the soft seated ball valves is suitable for a clean fluid and not recommended for a dirty fluid. This is reasonable since some particulate may damage the soft seat material and causing a leakage. In dirty fluid application, the metal seated ball valve is the best choice.

The metal seated ball valve is also suitable for application that has a high erosion or corrosion rate. The metal ball valve will stay much longer than soft seated ball valve in such application. In term of the shut-off capability, the soft seated ball valve is the best. It can achieve the highest level of the seat leakage class while a metal seated ball valve can achieve only up to ANSI/FCI Class V or ISO 5208 Rate D. Thus if the tight shut-off or bubble tight shut-off is required, then there is no choice except using the soft seated ball valves.

In term of the required torque to operate the ball valves, the soft seated ball valve will have a lower torque rather than metal seated ball valves. The high torque of the metal seated ball valve may lead the selected actuator model is bigger than the soft seated ball valve thus it increase space consumption and add additional weight.

In general practice, a metal seated ball valve is only used in the severe service condition such as high temperature, high erosion or abbrasion, slurry, etc. In general application of oil and gas, the soft seated ball valve is used. This type of seat will provide an excellent sealing capability with a fair life time in clean service application. While the metal seated ball valve is used when the soft seated ball valve can't handle anymore the process condition.

Some valve manufacturers use a pure soft material as their soft seat material and there are also manufactures that use a metal o-ring (metal seat ring) and soft material as its seat insert for size 2 inch and above. This type of seat even though it use a metal seat ring but it is categorized as soft seated ball valve due to it use a soft material as final part that in contact with the ball.

source: <http://www.instreng.com/content/137-soft-seated-metal-seated-ball-valves.html>