

## Introduction

CS&C are here to solve new or existing sealing requirements. We help in general sealing areas with designing seals and supplying new products to replace problematic seals.

## Seal Manufacture

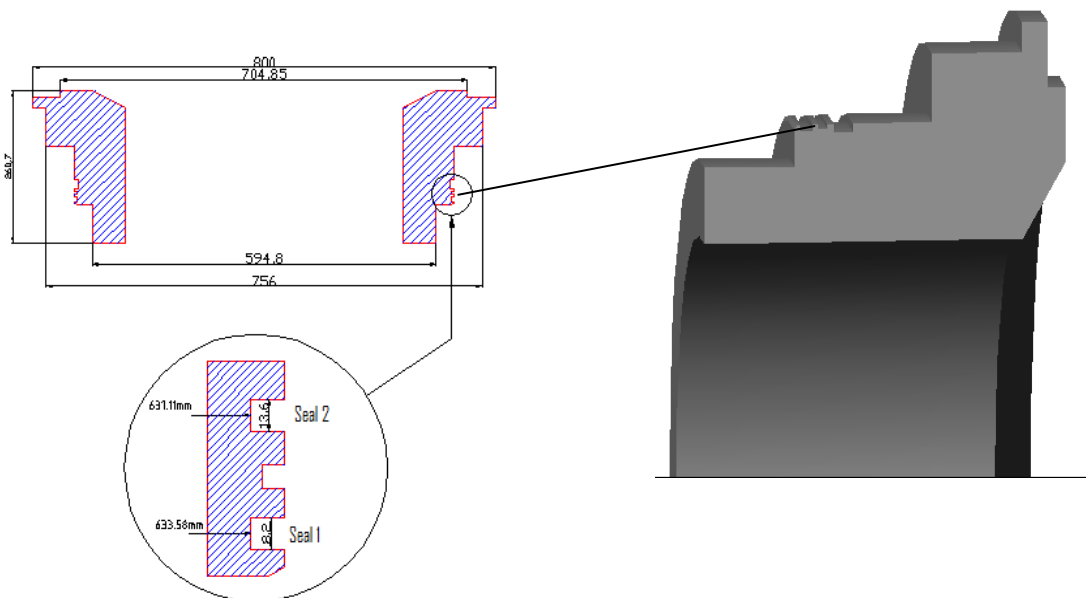
Here at CS&C we are dedicated to the continuing improvement of sealing technology. We only use the best CNC Technology and the highest quality materials.

## The Problem

This is a seal design that was created over 30 years ago, in a material that has not changed (Apart from fillers) since its discovery by DuPont in their labs in the late 1930's.

The material being used is 25% carbon filled PTFE. The carbon filler is only used in this particular situation to try and help with the extrusion of the seal at the pressures seen in the valve in its normal working environment.

25% Carbon Filled PTFE does have good points such as it has a very good temperature range, has very low friction and is resilient to most other compounds and chemicals. It also has some very bad points such as no memory, it cannot be used as a pre-energised seal (it must be used in conjunction with another material to help energise the seal). Also it is classed as a 'once use only' seal, (If the valve has to be dismantled for checking etc) the seal must be replaced to guarantee seal in the valve again. However in this application the seals are very difficult to fit and slightest misalignment is destroying the seal.



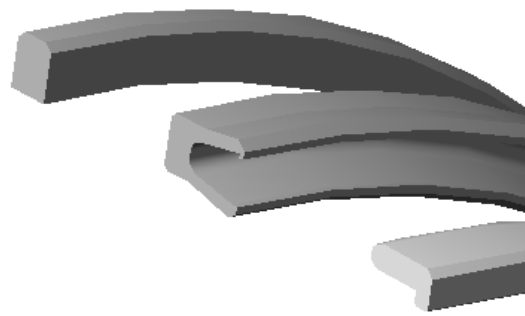
## Existing Seals

Seal 1



K19 – Carbon Filled PTFE  
Carbon Filled PTFE with steel ring

Seal 2



K19/22 with back-up-ring  
Carbon Filled PTFE with steel ring  
633.58 x 652 x 7.5mm (seal Height)

## The Solution

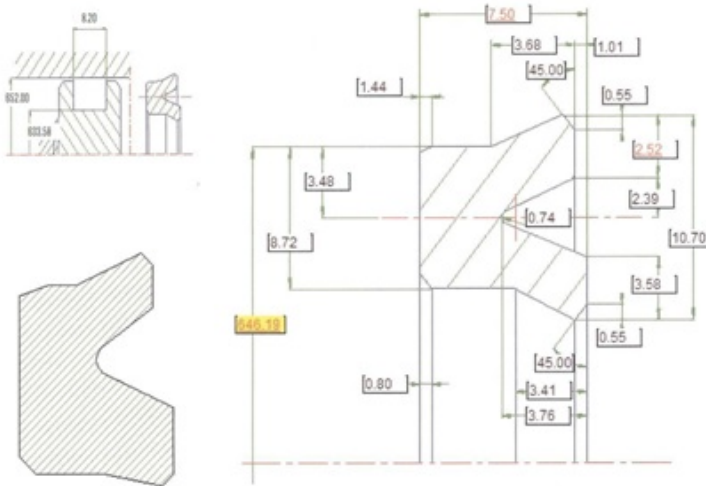
There are many materials that can replace PTFE, in this case a material called PU-A95+MoS2 is the perfect material replacement.

## HPU-Lubric

HPU-Lubric (Black) is a hydrolysis resistant PU (HPU) composed of prepolymers based on polyoxytetramethylene glycol (PTMEG) and diphenylmethane diisocyanate (MDI) processed liquid with catalysts and a MoS2 polyol. This special MoS2 composition performs excellently in critical lubrication situations and reduces stick-slip behaviour.

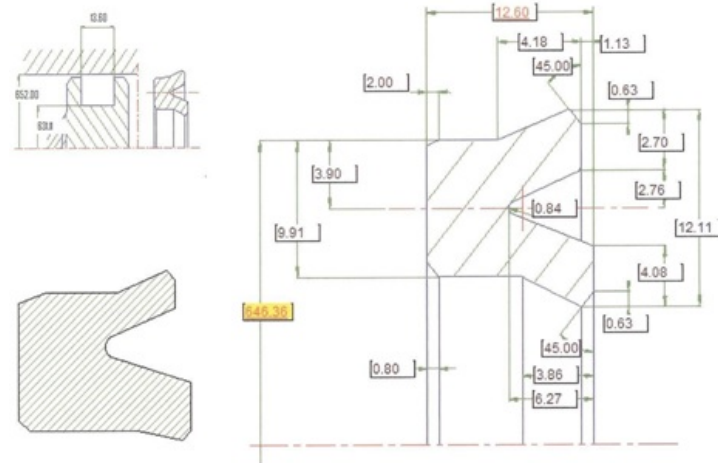
## Seal 1 Design

633.58 x 652 x 8.2



## Seal 2 Design

631.11 x 652 x 12.6



## Conclusion

The K01 Piston Seal will be far better for the applications in the HPU-Lubric material because it is a single seal (in both sealing applications).

The seal will be easier to fit as PU has excellent memory, which means it can be stretched over the metal work and will regain its original shape. This particular PU has very low slip grip. This means it has a very low coefficient of friction. It is also self lubricating; therefore it is an excellent material for poor lubricating medias (water and gas etc). It is also classed as a reusable seal.

Not only has the K01 in HPU-Lubric got excellent mechanical properties; it also is extremely cost effective.