Introduction to Traceable Diaphragms

HC4 Diaphragm Valves

HC4/015/01/10.03

The Rubber Compound

Rubber compounds used in the construction of diaphragms comprise of the polymer plus ingredients such as carbon black, fillers, process aids, activators, sulfur and accelerators.

The ingredients selected for use in the rubber formulation have a major influence on the temperature performance, the ability to operate at high temperatures, and the abrasion and chemical resistance.

The formulation, along with the selection of base polymer and diaphragm construction, will significantly affect the service life of the elastomer.

Specific effects of ingredients:

- Carbon black and clays increase hardness and durability.
- Process oils help with calendering the rubber into sheet form.
- Zinc oxide and stearic acid activate the curing process.
- Peroxide reacts with the polymer, converting the soft plastic into an elastomer.
- Accelerator speeds up the reaction and determines the cure temperature.

The Art of Compounding

The polymer and ingredients are mixed in an internal mixer which consists of a chamber with two horizontal rotors.

The polymer and ingredients are added in a precise sequence ensuring good dispersion and consistency.

After mixing, the uncured rubber is processed on a calender and formed into a continuous sheet.

Traceability

The rubber is sampled at this stage and full physical properties are determined and identified against each specific blend.

The continuous sheet or liner is cut to length and is used with a high performance nylon reinforcement fabric as the basis of the Saunders wholly manufactured diaphragm.

Commitment to NO Changes without Notice or Consultation

Our commitment to customers is to maintain the highest standards in diaphragm manufacture. All raw ingredients used in diaphragms are supplied with certificates of conformity.

Furthermore, materials such as carbon black and zinc oxide used in some compounds are chemically pure and the pyrene content in the FDA carbon blacks is monitored to specification as well as heavy metal content in the fillers.

In-house manufacturing ensures ingredients are carefully selected and formulations of the FDA/USP conforming range are such that we are able to verify leachable or extractable materials in the rubber compounds by independent analysis.

This information is then available to customers under a confidentiality agreement.

We realize how important the diaphragm is as part of a valve used in a biopharmaceutical environment. To this end and to help with a company's Critical Systems Change Process we guarantee that no change to rubber formulations would be made without consultation and prior notice.

Crane Process Flow Technologies
Saunders HC4 Products
9860 Johnson Road
Montgomery, Texas 77316
www.cranesaunders.com
PH 936-588-4447
Fax 936-588-8302