

SEALING SOLUTIONS FOR THE SUGAR INDUSTRY

HIGH PERFORMANCE CUSTOMISED ENGINEERED SEALING SOLUTIONS



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Important Note: This Catalog provides general guidelines and general information about product operating conditions and product options for experienced users to consider. Operating conditions not referred to in this catalogue may affect product selection and/or product performance. This Catalog should not be considered advice, a guarantee of product performance, or a replacement for addressing product application questions with a qualified professional. Chesterton Customseal and its affiliates assume no responsibility for any action or inaction you take based on or made in reliance on the information contained in this document.

We are Chesterton Customseal part of Chesterton® Group of Companies

Visit us at chestertoncustomseal.com.au

At Chesterton Customseal we produce high-performance elastomeric polymer seals designed for use in a wide range of hydraulic, pneumatic and rotary equipment.

The solutions we offer range from a vast collection of standardised polymeric seals to customised solutions designed for specific applications, to always provide an optimal product to our customers.

Our fully integrated state-of-the-art production facility relies on advanced computer-controlled equipment combined with flexible tools and semifinished material to offer a wide selection of proven designs and a wide range of high-performance materials with the capabilities of providing same-day shipping.

The real strength of Chesterton Customseal stems from the depth of industry knowledge, quality of the skills and experience that our technical-leading team has.

This experience triggers our ability to implement economic and innovative solutions, always in support of a professional and transparent service for our client.



Chesterton Polymer Seals Program

Chesterton Customseal provides Chesterton® polymer seals



Speed of Service

Dedicated Service Centers

Chesterton® is a technology leader in the polymer seal industry. Our SpeedSeal™ capability brings same-day service of this advanced technology to customers worldwide. Strategically located and integrated service centers use innovative manufacturing methods to provide you with the broad selection of proven designs and wide range of high-performance materials.

Superior Materials

Chesterton's world-renowned materials are widely considered to be the highest performing polyurethane materials for heavy-duty fluid power applications on the market today. In addition, we utilize the full range of advanced materials for the most demanding applications.

- Polyurethanes
- Fluoroplastics
- Metal Detectable (MDx)
- Elastomers (rubbers)
- Fluoroplastics
- Engineered plastics



Engineered Solutions

High Performance Custom Seals

We leverage our engineering experience in design and materials to develop custom seals that solve today's most difficult sealing challenges. Our custom designs provide leading-edge technology that has been used around the world with documented success and recognition.

Equipment Upgrade

Systematic Approach to Improve MTBR and Reduce MTTR

Chesterton's equipment upgrade program applies a systematic approach for improving seal performance during repair and overhaul of equipment. This approach, in combination with high-performance sealing products and systems, will assist in improving equipment reliability, availability, and performance productivity.

One-stop Solutions

Wide Range of Product Portfolio

We specialize in the development, design, and manufacture of system solutions tailor-made to customer's requirements. Polymer sealing products is the term to describe the broad range of sealing devices to provide sealing function in all types of fluid power and associated equipment in dynamic linear, rotational, and oscillating motion.

Standards and Regulations

ISO 9001 : 2015

Our production and quality processes are independently controlled by the International Organization for Standardization (ISO). We are ISO 9001: 2015 certified which covers the quality management system for the production of seals and seal kits for hydraulic, pneumatic, rotary and static applications. We constantly focus on improving customer experience, with a goal of providing the best service & product on the market, with an eye always open to continuous improvement and sustainability.

(Material certification provided upon request.)



Customer Support

Global Solutions, Local Service

Chesterton's skilled field specialists work in collaboration with customers to understand their needs and provide the best solution for their applications.

Our local service is supported by a global distribution and logistics network that enables us to reach and react to the shifting needs of industrial customers around the world.

Training Programs

The Know-How Advantage

Build a skilled workforce of fluid power equipment specialists by providing Chesterton's maintenance and operational best practices training to impact reliability, efficiency, and life cycle costs.

Chesterton has been in the business of providing knowledge of this type for decades and can assist you with your training and development needs.



The Sugar Industry

THE SUGAR INDUSTRY

Chesterton Customseal provides high performance, precisely engineered sealing solutions focused on traceability, cleanliness and compliance with international and national regulatory standards, which are critical to the sugar industry.

As an industry leader in sealing solutions, Chesterton Customseal offers products based on distinct customers needs and specifications. Our application engineers and technical experts work closely with our customers in the sugar industry to understand the intricacies of each sealing challenge.

By balancing regulatory requirements for food safety and the unique challenges of the sugar process, Chesterton Customseal provides a comprehensive portfolio of sealing solutions for the most challenging sealing problems. From sugar mills, refineries, chocolate factories and all other manufacturing facilities using the sugar process, we ensure that leaks, dust are kept controlled and isolated.

Chesterton Customseal, part of the Chesterton group of companies, offers a complete solution supporting the customer through all the steps that the sugar industry requires. One-stop-shop for sealing solutions, packing, gaskets, lubricants, protective coatings and mechanical sealing.

Discover more on chestertoncustomseal.com.au

STANDARDS AND REGULATIONS

Standards are imperative for consistency across all sectors. Especially with products designed for human consumption, all the required guidelines and certifications must be meticulously followed. Many types of industrial materials are suitable for sealing oil, gas, mines and other particularly aggressive media, but they would not be suitable for the food or beverage processing industries.

Our production and quality processes are independently controlled by the International Organization for Standardization (ISO). We are ISO 9001: 2015 certified, which covers the quality management system for the production of seals and seal kits for hydraulic, pneumatic, rotary and static applications. We constantly focus on improving customer experience to provide the best service & product on the market, with an eye always open to continuous improvement and sustainability.

Chesterton Customseal complies with the highest national and international regulatory standards, including:

- FDA
- NSF
- By drinking water
- Pharmaceutical regulations

Material certification can be provided upon request.

REDUCE MAINTENANCE, DOWNTIME AND REPAIR COSTS AND IMPROVE EFFICIENCY UNDER HARSH CONDITIONS.

Unplanned maintenance, equipment downtime and energy waste can put as much stress on your business as the sugar cane does on your machinery.

Our sealing solutions are designed to ease the operation in dusty and abrasive environments. The advantages are:

- Easing excessive wear on the equipment to help bearings and shafts continue to run for longer, which increases uptime and production.
- Avoid unscheduled downtime and unwanted shutdowns.
- Protects the air from dangerous fumes, which can make the air safer to breath and reduce the risk of fire an explosion.

Thanks to these benefits, the sugar producer can save thousands of dollars by minimizing downtime, increasing equipment longevity and possibly even insurance payments by reducing workplace risks.

All of our sealing solutions for food and beverage industry can be used in the following process:

- Food resources
- Food processing (treatment and preparation)
- Packaging

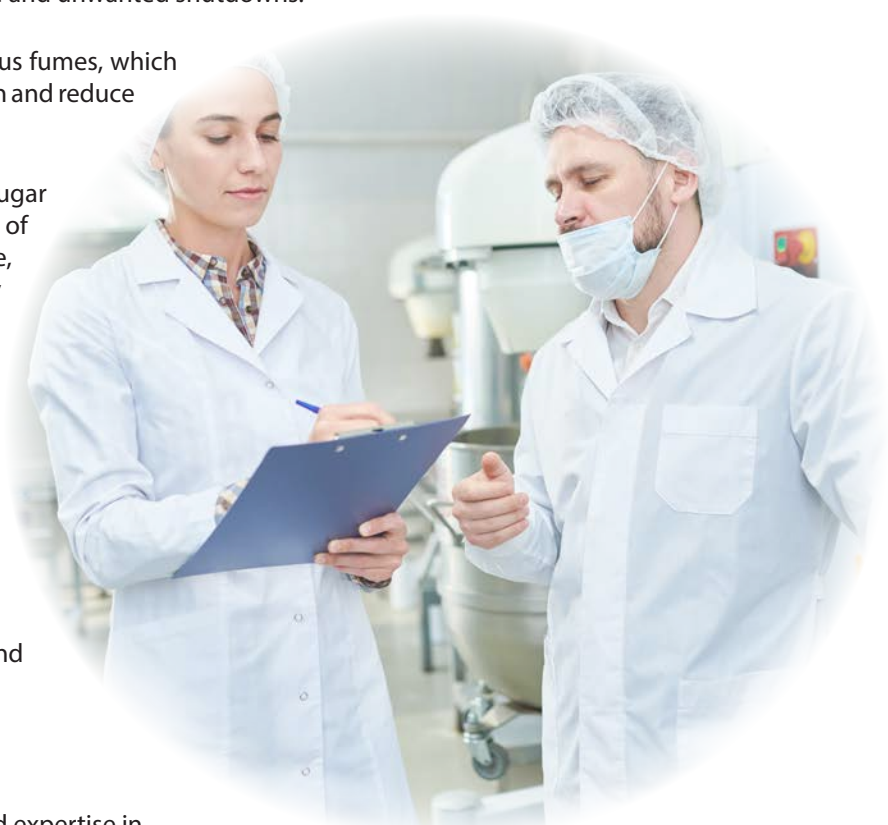
With many years of experience and expertise in food and beverage machinery, we have the solutions you need.

CUSTOM ENGINEERED SEALS

Chesterton Customseal offers custom-made high-performance seals, specialised in the complete sealing service for the food and beverage industries.

We provide our customers with customised sealing solutions to meet specific requirements, offering a wide range of materials and speed of service. Chesterton Customseal has a dedicated application engineering service that works close to customers like you to find your specific application's optimal solution.

Ask our experts for advice on how to best support your requirements. We will provide you with an effective and efficient solution based on our extensive technical and service experience.



Premium Materials

MATERIAL CHOICE

Chesterton Customseal seals are made only with world-class materials, especially our selection of Elastomeric polymer materials. Chesterton Customseal materials are developed in compliance with various application fields in the food and beverage sector to ensure that the product always meets industry requirements, thermal performance, pressure and other key parameters in an optimal way.

Implementing an effective seal in the food and beverage industry begins with the right choice of material.

An effective sealing material for the food industry must demonstrate a broad profile of chemical compatibility, be agreeable with all process media, and withstand cleaning regimes and sterilization practices, including solvents, vapours, and amines. Mechanical and thermal resistance is required, with an operating temperature range between -200 °C to +260 °C.

POLYURETHANES

Polyurethane material is designed to provide optimum sealing durability for light- and medium-duty fluid power equipment and industry-standard hydraulic pneumatic cylinders.

Some of the material features are:

- Superior wear and abrasion resistance to increase seal performance.
- Long-term elastic memory maintains pre-load under low pressure and has a low compression set.
- Excellent chemical compatibility.
- Sizes available up to 2 m (78.74 ") in diameter.



RUBBERS

One of the major applications for elastomers and special plastics is food and beverage processing equipment. A great characteristic of elastomeric materials is elevated chemical resistance. Chesterton Customseal can produce custom moulded rubber shapes and profiles to meet any requirements.

PTFE AND HARD PLASTIC

PTFE has demonstrable benefits in the food and beverage process lines, including:

- Reduction of process contamination
- Reduced downtime
- Reduced friction
- Longer seal life
- Lower Maintenance Repair Time (MTR)

The properties of PTFE do not interfere with foods that come in contact with, at extreme temperatures, during food processing. PTFE is chemically inert to most food contact media.

Additionally, Chesterton Customseal advanced engineered hard plastic solutions offer a tailor-made portfolio of materials for the food and beverage sector. To ensure extended sealing performance, we continuously investigate and work with our customers to identify the optimum compound for each application, to cope with a wide variety of process media along with CIP (Cleaning In Place) and SIP (Sterilization In Place).

In addition to the choice of the basic sealing material, Chesterton Customseal has a good range of innovative products to offer high-quality and high-performance seals. An example is the development of metal detectable elastomers.

The sealing components produced from metal detectable elastomers provide additional contamination detection screening for the food and beverage industry. Some metals can be detected by metal detection and X-ray equipment in fragments of only 2 millimeters (mm). Considering this, it is more desirable to prevent contamination in the first place - contamination events are often very expensive, with investigations, scrapping of the product, cleaning and replacement of seals and gaskets as required. Chesterton Customseal offers a solution for every challenge.

Material	Colour	Min Temp	Max Temp	Hardness	Standards	Main applications	Description
AWC520 PTFE	White	-200 °C	260 °C	55 Shore D +/-3	FDA EU 1935/2004 EU 10/2011 USP Class VI(**)	Flat seal, guide belt, O-rings, roof shaped sleeves, WDR.	Fluorine-containing thermoplastic. Resistant to almost all corrosive material.
AWC703 FPM	Brown	-20 °C	220 °C	80 Shore A +/-5	FDA EU 1935 / 2004	O-rings, wipers, grooved rings, shaft seals, piston seals.	Maximum resistance to temperature. High resistance to oil and fuels.
AWC707 FKM MDx (***)	Blue	-30 °C	200 °C	80 Shore A +/-5	FDA EU 1935 / 2004	O-ring, wipers, grooved rings, shaft seals, piston seals, static seals	Excellent resistance to high temperature. Food and Metal Detectable approved.
AWC753 AWC754 EPDM	Black White	-45 °C	130 °C	AWC753 Black 85 Shore A +/-5 AWC754 White 82 Shore A +/-5	AWC753 - Drinking Water Approved (*) AWC754 - FDA	O-rings, flat seals, funnels, grooved rings, wipers, special profiles, translational and rotational wipers.	Exceptional resistance to ageing and the impact of weathering and against ozone, light and UV. Particularly suitable for use in steam and suds.
AWC755 EPDM MDx (***)	Blue	-40 °C	135 °C	81 Shore A +/-5	FDA	O-rings, flat seals, funnels, grooved rings, wipers, special profiles, translational and rotational wipers.	Exceptional resistance to ageing and the impact of weathering and against ozone, light and UV. Food and metal detectable approved.
AWC767 AWC768 MVQ	Transparent White	-60 °C	200 °C	85 Shore A +/-5	AWC767 - FDA AWC767 - EU 10 / 2011 AWC768 - FDA	O-rings, flat seals, flange seals (gaskets)	Excellent flexibility to withstand cold temperatures with negligible loss in elasticity.
AWC809 PU	Red	-20 °C	115 °C	95 Shore A +/-2	FDA (*), EU 1935/2004 EU 10/2011	O-rings, grooved rings, wipers, slip rings, special seals.	Excellent wear resistance, high level of tear strength and good elasticity. Hydrolysis resistance and can be used in hot water.
AWC822 PU MDx (***)	Dark Blue	-40 °C	90 °C	93 Shore A +/-2	FDA EU 1935 / 2004	O-rings, grooved rings, wipers, slip rings, special seals for the food and beverage industry.	Hydrolysis resistance and can be used in hot water. up to 80 °C.
AWC830 PU	White	-35 °C	90 °C	94 Shore A +/-2	FDA EU 1935 / 2004	Wiper seals, rod and piston seals, buffer seals, anti-extrusion rings for O-Rings, static seals.	For use in food and pharmaceutical applications where FDA- listed material is required.

(*) Approved to 3A Sanitary Standard 18-03 (**) Material produces no medical or surgical qualities (***) FDA METAL DETECTABLE
Please contact your Chesterton Customseal representative for specific applications.

OTHER FDA POLYMER SEALS MATERIALS

AWC341	AWC405	AWC600	AWC610	AWC650	AWC715	AWC718	AWC764
AWC342	AWC510	AWC603	AWC615	AWC651	AWC716	AWC741	AWC800
AWC351	AWC515	AWC605	AWC630	AWC664	AWC717	AWC762	AWC835

Food Contact Zones

There are typically three zones in the Sugar Industry applications that require sealing solutions in line with FDA and other national and international standards and regulations:

- ZONE 1: "Product Contact Zone" - food zone with direct food contact, which requires food-grade quality materials.
- ZONE 2: "Splash Zone" with possible contact with food - which can require food-grade quality materials.
- ZONE 3: "Non-Food Contact Surface" - food-grade quality materials are not necessarily required.

ZONE 1	Product Contact Zone	slicers, strippers, peelers, fillers, hoppers, screen conveyors belts, air blowers
ZONE 2	Splash Zone	directly adjacent to ZONE 1 - refrigerator units, equipment housing, switches
ZONE 3	Non Food Contact Surface	hand trucks, forklift, drains, wheels



CORE CHESTERTON CUSTOMSEAL PRODUCTS FOR THE SUGAR INDUSTRY

Product	Key material type	AWC materials	Application type	Split type available	Example applications
14K	PTFE virgin or filled or Polyurethanes	AWC405 AWC510 AWC520 AWC809 AWC830	Rotary Process Sealing Rotary Bearing protection	Arrow cut	Gland Packing supporting seals Rotary seals for bearings in split Rotary wipers
19K	PTFE virgin or filled Hard Plastics**	AWC405 AWC510 AWC520 AWC650 AWC660	Linear Bearing Support Rings	Skive	Bearing bands WR Back up and support rings 9Ks, 9KLs
20KD	Polyurethanes Rubbers*	AWC700s AWC750s AWC809 AWC830	Static Sealing, Flange Sealing	-	Flange seals Quick couplings seals Cam lock seals Static seals in containers Pressure closing seals
W21K	Polyurethanes Rubbers*	AWC700s AWC750s AWC809 AWC830	Reciprocating Wiping Rotary Wiping	Arrow cut	Cylinder's wipers Rotary wipers
R22KN	Polyurethanes Rubbers*	AWC700s AWC750s AWC809 AWC830	Reciprocating & Rotary	Arrow cut Interlock	Piston pumps Dozing equipment R22KN5 Rotary in Split Floating pistons seals Cylinder's seals
28K/27K	Polyurethanes Rubbers* PTFE or Hard Plastics**	AWC405 AWC510 AWC520 AWC650 AWC700s AWC750s AWC809 AWC830	Reciprocating	Skive	Gland packing replacements Cylinder's seals Valve's stem seals Gland seals in rotating applications pumps, agitators
30K	PTFE virgin or filled	AWC405 AWC510 AWC520	Rotary Process Sealing Rotary Bearing protection	-	Chocolate pumps and mixers Bearing Gearbox protection in drives
30KC	PTFE virgin or filled	AWC405 AWC510 AWC520	Rotary Process Sealing	-	Process seals in pumps and mixers
EPS100	PTFE UHMWPE	AWC100 AWC405 AWC510 AWC520 AWC610	Reciprocating Rotary Static	-	PTFE based SES seals for dispensing, filling Plunger applications Static seals Rotary pressurized applications
EPS500	PTFE UHMWPE Hard Plastics**	AWC405 AWC510 AWC520 AWC610 AWC650	Reciprocating	-	Plunger pumps Rotary pressurized applications

* NBR, EPDM, FKM with food compliance

** POM or PTFE

Metal Detectable Seals

OUR CAPABILITY

Chesterton Customseal has introduced a range of metal detectable (MDx) elastomeric materials. Using metal detectable materials provides increased flexibility to produce elastomer sealing components for the food and beverage industry using best practice requirements. The metal detectable material assists in reducing the risk of contaminating the products being processed.

Utilising metal detectable products assures food, dairy and beverage manufacturers by protecting product safety and integrity. These innovative solutions have been intended to offer companies in the food and beverage, pharmaceutical, and other contamination-sensitive industries, peace of mind at any production stage.

AS THE SEALS WEAR OUT, THE RISK OF CONTAMINATION INCREASES.

Metal detectable compounds recognise unexpected contamination, offering the opportunity to stop the production line and remove the contaminated product on time.

Chesterton Customseal supplies a range of metal detectable materials:

- EPDM ethylene propylene diene monomer rubber
- FKM fluoroelastomer
- PU polyurethane

All these materials are specifically designed to meet the needs of the food, beverage, dairy and pharmaceutical industries.

As elastomer seals degrade, there is a high risk of rubber fragment contamination. Metal detectable o-rings and seals are designed to work with inline X-ray detection, metal detection and magnetic separator equipment for immediate contamination alert.

BESPOKE ENGINEERING ELASTOMER COMPONENTS

Chesterton Customseal also offers bespoke engineering elastomer components for a diverse array of production line applications. Our metal detectable seals are offered in various shapes and sizes, with a variety of elastomer grades available.

All of our Chesterton Customseal products using metal detectable materials have some key features that make them an ideal choice for the food and beverage industries.

SOME OF THE KEY ADVANTAGES:

- Easy detection of lost elastomer fragments
- Reduction of the risk of product failure or recall
- Prevention of the distribution of contaminated products
- FDA compliance for use with drinks and food
- Highly durable, reducing the likelihood of unplanned downtime
- Wide range of operating temperatures for greater safety



Innovative Sealing Solutions

14K Restriction Bushings

Robust, Restriction Bushing for Rotary Equipment

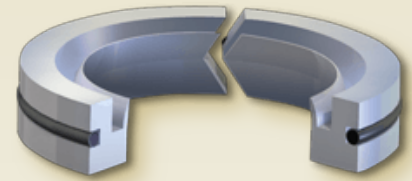
Chesterton 14K Restriction Bushings are used in rotary equipment to form a barrier between the sealing device in the stuffing box or the pump impeller housing and the fluid in the mixing tank. The restriction that is produced reduces flush requirements and helps to prevent suspended abrasive particles from entering the stuffing box area thus prolonging the service life of installed packing sets or mechanical seals.

The 14K's tapered lip design conforms to equipment eccentricities to minimize the annular gap formed around the rotating shafts, thereby creating the smallest possible free flow area for controlling flush flow rates. A secondary beneficial effect of increasing pressure drop with the 14K is that the flush around the shaft becomes very uniform, which is critical in preventing particulates from entering the stuffing box envelope. The dynamic lip acts as a check valve when flush is shut-off.

The solid 14K reduces the number of packing rings required in the stuffing box thus helping to reduce frictional force. Further, it helps to keep the lantern ring in its position and maintain the optimum flush rate.

The 14K is manufactured from superior abrasion-resistant polymers, while the PTFE compound offers broad media compatibility with high-temperature capability.

The 14K restriction bushings are manufactured using a machining process which allows the flexibility to create any size, based on equipment dimensions. Each bushing is individually manufactured and provides excellent performance in pumps, agitators, mixers, refiners, and other equipment.



- Split design simplifies installation
- Minimize risk of entering particles into stuffing box; extend packing and seal life
- Tapered lip design controls fluid bypass and helps increase pumps efficiency
- Dual materials available; plant-wide usage
- Reduces the number of packing rings required which reduces frictional force
- Designed for pumps of all types including agitators, mixers, and refiners

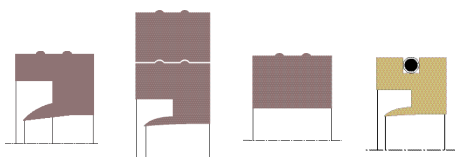
SPECIFICATIONS



Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	pH
AWC520 (PTFE)	25 – 355 (1 to 14)	Up to 200 (400)	0 – 14
AWC800 (EU)	25 – 355 (1 to 14)	Up to 85 (185)	4 – 10

*Contact engineering for speed, beyond these limits
Applicable standard: ISO3069

PRODUCT PROFILES



R14K R14K2P R14KRBS R14KPF

19K Wear Rings

High Performance, Replaceable Wear Rings for Cylinders

Chesterton replaceable wear rings are the solution to costly cylinder remachining and repairs for medium- to heavy-duty hydraulic or pneumatic equipment. These split, replaceable wear rings reduce probability of metal-to-metal contact of moving parts and help prolong equipment life. When installed during the cylinder repair, the risk of recurring damage is significantly reduced.

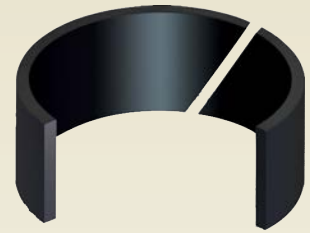
The easy-to-use split 18K and 19K designs are manufactured from a glass fiber-reinforced thermoplastic polyimide resin (heat stabilized nylon) for high bearing capacity and are capable of supporting transverse loads. These wear rings reduce radial movement therefore helping to extend seal life. The lower Young's modulus and higher material flexibility (compared to metal bearings) let the nonmetallic wear rings have more elastic deformation under load and the larger contact area will transfer the load and cause lower surface pressure.

The exceptional physical properties allow for use in a broad range of temperature conditions and provide excellent fluid compatibility. The built-in lubricants help to reduce friction between mating surfaces and reduce risk of fretting and seizing, which further provides good dry running capabilities. 18K and 19K wear rings have excellent dimensional stability.

The use of nonmetallic wear rings helps to prevent the buildup of hydrodynamic pressure in small clearances of the cylinders and helps to prevent diesel effect.

The precise manufacturing technology of the 18K and 19K wear rings provides accurate dimensional and geometrical tolerances, and improved fitting. According to industrial standards sizing, the 18K and 19K are a direct retrofit to existing wear ring grooves which eliminates the need for equipment modification.

The split design makes the installation of the cut wear rings easy (snap-in fitting), allowing them to universally be used on either rods, rams, or pistons in reciprocating applications.



- Heat stabilized nylon with high bearing-load capacity for medium- to heavy-duty applications
- Replaceable wear rings prevent metal-to-metal scoring and prolong equipment life
- Reduce radial movement, therefore extending seal life
- Retrofit existing wear rings grooves and eliminate unnecessary modifications
- Split design minimizes downtime



SPECIFICATIONS

Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Compressive Strength MPa (psi) ASTM D965	Permissible Compressive Load MPa (psi)	Speed m/sec (ft/min)
AWC660 40% (Glass-Filled Nylon)	to 500 (20)	-40 – 121 (-40 – 250)	158.6 (23,000)	55 (7,975)	1.25 (250)

PRODUCT PROFILES



19K

20KD Face and Static Seals

High Performance O-Ring Upgrade for Static Sealing

Chesterton 20K D-Ring is a continuous compression seal designed for use in static applications and is often applied as an upgrade from conventional face seals or O-Ring designs. That is why 20K D-Rings are interchangeable for O-Ring housing and O-Ring designs with back-up rings. 20K D-Ring design provides excellent performance in static applications found in hydraulic or pneumatic equipment including flange and valve control units.

The optimum design provides minimum seal deformation by better fit in the seal cavity and excellent pressure distribution through the seal cross section, by working with better geometrical and dimensional stability (Figure 1.). 20K D-Rings can withstand higher operating pressure compared to conventional O-Rings.



- Upgrade performance of conventional face seal and O-Ring designs
- Superior wear and extrusion resistance versus conventional materials
- Low compression set characteristics
- Unique manufacturing process allows the flexibility to create any size
- Sizes made to accommodate international standards including ISO

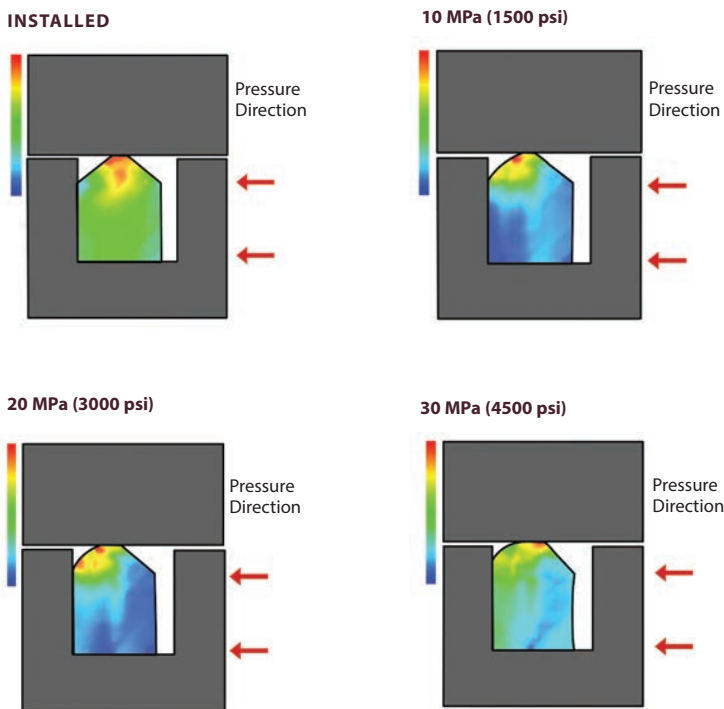


Figure 1. How the 20K D-Ring performs installed and under pressure

20K D-Rings are manufactured from high extrusion-resistant polyurethane materials, which helps to prolong seal service life and improve reliability even in critical high-pressure, heavy-duty hydraulic applications.

Each seal is individually manufactured from our high-precision CNC machining process which eliminates the need for tooling costs associated with new sizes. Designs are available for internal face sealing as well as external face sealing commonly found in single- or double-acting applications.

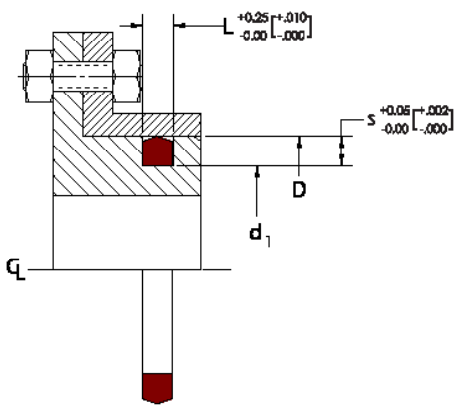


SPECIFICATIONS

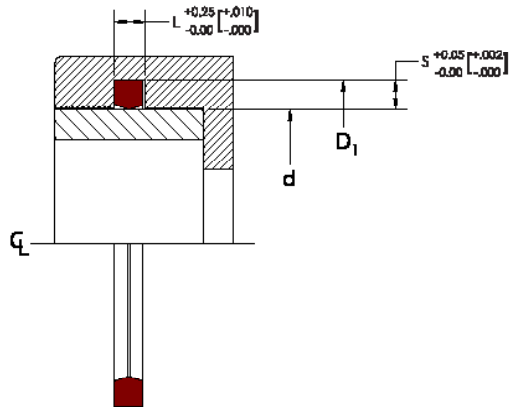
Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Pressure MPa (psi)
AWC704 (FKM)	6 – 304.8 (1/4 – 12)	-30 – 200 (-20 – 400)	16 (2320)
AWC800 (EU)	6 – 2540 (1/4 – 100)	-50 – 85 (-60 – 185)	103.5 (15000)
AWC809 (AU)	6 – 2000 (1/4 – 78.74)	-20 – 115 (-4 – 239)	400 (5,800)
AWC825 (EU)	6 – 2540 (1/4 – 100)	-40 – 85 (-40 – 185)	52 (7500)
AWC830 (EU)	6 – 254 (1/4 – 10)	-35 – 75 (-30 – 175)	52 (7500)
AWC860 (EU)	6 – 508.0 (1/4 – 20)	-50 – 120 (-60 – 250)	103.5 (15000)

* Please contact your Chesterton Customseal representative for larger sizes.
Applicable standard: ISO 3601-2

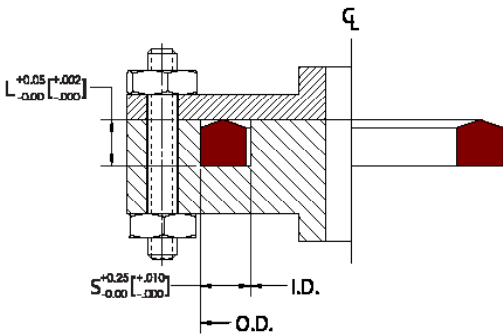
PISTON APPLICATION



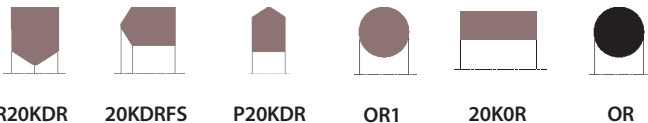
ROD APPLICATION



AXIAL APPLICATION



PRODUCT PROFILES



W21K Wiper Seals

Protect the System from Entering Contaminants

Chesterton® positive rake wipers are designed to effectively clean and dislodge foreign matter from retracting rods or rams thus preventing scoring and system contamination. The sharp, rugged, flared profile provides protection against abrasive particles which can contaminate the system and lead to premature equipment failure. These wipers provide excellent performance on rods or rams in hydraulic and pneumatic applications.

Single- and double-acting wiper designs are available thus providing the best possible function and performance, depending on the application, operating conditions, and utilized seal system. Single-acting wiper seal's function is to keep out contamination from the operating environment. Double-acting wiper seals wipe off the possible residual oil film from the rod, reducing the risk of hydraulic media's external leakage.

The W21K design is manufactured using a machining process which allows for the flexibility to create any size based on equipment dimensions. This design incorporates a built-in static seal on the flange to block contaminants from migrating along the stationary side of the wiper during operation.

Additional custom designs were developed to meet specific application and equipment needs which include snap-in, stepped, and bidirectional wipers.



- Positive rake lip design effectively wipes contaminants away from surface
- Outstanding protection against ingress of particles into the system
- Prolongs service life of seals and hydraulic/pneumatic cylinders
- Manufacturing process allows flexibility to create any size
- Sizes made to accommodate international standards including ISO

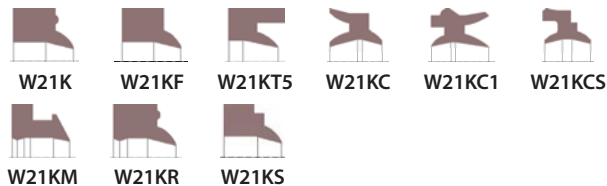
SPECIFICATIONS



Material (designation)	Size Range* mm (inch)	Temperature °C (°F)
AWC341 (MVQ)	6 – 2000 (1/4 – 78.74)	-30 – 200 (-20 – 400)
AWC351 (FKM)	6 – 2000 (1/4 – 78.74)	-30 – 220 (-20 – 428)
AWC742 (NBR)	6 – 2000 (1/4 – 78.74)	-30 – 100 (-20 – 212)
AWC753 (EPDM)	6 – 2000 (1/4 – 78.74)	-49 – 130 (-56 – 266)
AWC800 (EU)	6 – 2540 (1/4 – 100)	-50 – 85 (-60 – 185)
AWC809 (PU)	6 – 2000 (1/4 – 78.74)	-20 – 115 (-4 – 239)
AWC830 (EU)	6 – 254 (1/4 – 10)	-35 – 75 (-30 – 175)
AWC860 (EU)	6 – 508 (1/4 – 20)	-50 – 120 (-60 – 250)

*Please contact your Chesterton Customseal representative for larger sizes.
Applicable standards: ISO 6195A, ISO 6195C

PRODUCT PROFILES



R22KN Rod Seals

Low Friction Design for Food and Beverage Sealing

Chesterton® R22KN seals are single-acting, continuous U-Cup designs. The special lip design provides an optimal amount of radial sealing load with excellent tribological and sealing characteristics thus resulting in minimal frictional resistance and low heat generation. Utilization of R22KN U-Cup assists to reduce breakaway force and dynamic frictional force during operation.

The optimum seal design facilitates controlled pressure distribution through the entire seal component, while the proper expansion space provides free space for deformation under pressure, optimizing seal contact area on the sliding surface.

The positive rake lip profile wipes contaminants away from the mating surface while in operation thus prolonging seal and equipment service life. This seal design is offered as a rod seal and provides outstanding performance in food and beverage applications.

The R22KN design is manufactured using a machining process which allows the flexibility to create any size based on equipment dimensions. A number of unique designs have been derived from the original R22KN to address specific needs and applications in the market. These include designs to address pressure reversal, pressure spikes, and system vacuuming.



- Single-acting, U-Cup design minimizes frictional resistance and breakaway force
- Positive rake lip design wipes contaminants away from mating surface
- Abrasion-resistant design; outstanding performance in food and beverage applications
- Manufacturing process allows flexibility to create any size
- Sizes made to accommodate international standards including ISO

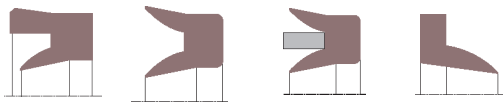


SPECIFICATIONS

Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Pressure bar (psi)
AWC341 (MVQ)	6 – 2000 (1/4 – 78.74)	-30 – 200 (-20 – 400)	150 (2,175)
AWC351 (FKM)	6 – 2000 (1/4 – 78.74)	-30 – 220 (-20 – 428)	150 (2,175)
AWC742 (NBR)	6 – 2000 (1/4 – 78.74)	-30 – 100 (-20 – 212)	150 (3,620)
AWC753 (EPDM)	6 – 2000 (1/4 – 78.74)	-49 – 130 (-56 – 266)	150 (2,175)
AWC800 (EU)	6 – 2540 (1/4 – 100)	-50 – 85 (-60 – 185)	103.5 (15000)
AWC809 (PU)	6 – 2000 (1/4 – 78.74)	-20 – 115 (-4 – 239)	400 (5,800)
AWC830 (EU)	6 – 254 (1/4 – 10)	-35 – 75 (-30 – 175)	52 (7500)

* Please contact your Chesterton Customseal representative for larger sizes.
Applicable standard: ISO 5597

PRODUCT PROFILES



R22KN5

R22KN

R22KN1

R22KNH

R27K Rod Seals

Pressure-sensitive, Stacked Set Sealing

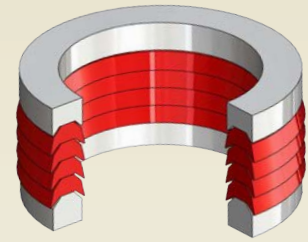
The Chesterton® R27K seal is a single-acting, stacked V-Ring set with a positive rake design to provide optimum operating performance in heavy-duty rod applications. Unlike conventional stacked sets, these designs make contact through the center to enable even loading which minimizes friction and provides longer sealing life.

The minimal gland pressure enables these sets to withstand greater sliding speed than conventional stacked sets. No readjustment of the seal precompression is needed after installation. Flared, pressure-sensitive lip design provides optimum sealing forces on seal rings, which are reactive to pressure thus reducing breakaway and frictional force.

The set is available in various material combinations to accommodate new or used equipment and can be supplied in split or solid designs.

The R27K is manufactured using a machining process which allows the flexibility to create any size to suit the equipment. Each set incorporates a male and female adapter to align and support the seal rings.

Additional profiles have been derived from the original R27K design to address specific needs and applications in the market. These include designs for excessive clearances and deep stuffing boxes.



- Minimal gland pressure offers greater speed capability than conventional sets
- Even stack load design minimizes friction and extends service life
- Flared, pressure-sensitive lip; sealing forces are reactive to pressure
- Material combinations for use in both new and worn equipment
- Delivered as split components for ease of installation

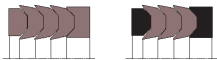
SPECIFICATIONS



Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Pressure Dynamic bar (psi)
AWC351 (FKM) / AWC630 (PEEK)	20 – 2000 (0.787 – 78.74)	-30 – 220 (-20 – 428)	150 (2,175)
AWC809 (PU) / AWC650 (POM)	20 – 2000 (0.787 – 78.74)	-20 – 100 (-4 – 212)	400 (5,800)

*Please contact your Chesterton Customseal representative for larger sizes.

PRODUCT PROFILES



R27K

R27K1

30K PTFE Lip Seals

Advanced Seal for Rotary Equipment

Chesterton® 30K Lip Seals are high performance PTFE lip seals that are ideal for dynamic rotary seal applications. These seals minimize risk of penetration of external contaminants from entering the housing and provide excellent sealing service in bearing and gear box applications which prolongs bearing and equipment service life even in hostile working environments.

The unique 30K lip seal design is mechanically formed to provide optimal sealing force manufactured from distinct PTFE material developed specifically for sealing applications. The PTFE compounds, coupled with the seal design, provide:

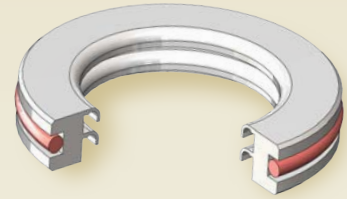
- Excellent fluid compatibility
- Broad range of temperature resistance (low and high temp too)
- High resistance against wear - even in cases of abrasive media or abrasive environment
- High- speed handling capability
- Low friction, reducing contact heat on lips and wear rate
- Outstanding sealing performance compared to conventional rubber lip seals

30K utilizes an O-Ring on the outer diameter of the seal which provides excellent static sealing in the seal cavity. Further, the O-Ring works as an anti-rotational device to protect the seal from rotating with the shaft.

The 30K is manufactured individually, using our unique machining process, which eliminates the need for tooling costs associated with new sizes. The 30K is offered in other unique designs based on your application requirements - whether a built-in wiper is required or space is limited. High pressure version 30KP is available (please see 30KP specification chart for further technical details).

Performance depends on concurrent conditions including shaft hardness, shaft surface roughness, material, lubrication, temperature, and pressure.

30K Series can be used in many different applications: bearing and gearboxing, process seals, stuffing box or medium separator.



- High performance lip seals minimize risk of penetration of external contaminants
- Mechanically formed lips provide optimal sealing force to extend MTBR
- Machining process allows the flexibility to create any size without tooling cost
- Static O-Ring seal prevents rotation and allows for easy installation
- Unique materials ensure plant-wide usage
- Modified lip design for optimized preload and friction force reduction
- Custom made and tailored to application

30K SPECIFICATIONS



Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Speed m/s (ft/min)
AWC100 (PTFE) Polyimide	20 – 600 (0.787 – 23.62)	-30 – 149 (-20 – 300)	Up to 20 (4000)
AWC510 (PTFE)	20 – 2000 (0.787 – 78.74)	-20 – 100 (-4 – 212)	Up to 20 (4000)

30KP SPECIFICATIONS

Material (designation)	Size Range* mm (inch)	Temperature °C (°F)	Speed m/s (ft/min)
AWC510 (PTFE)	20 – 2000 (0.787 – 78.74)	-20 – 100 (-4 – 212)	Up to 5 (984)

PRODUCT PROFILES



30K 30KW 30KSW



30KB 30KWB 30KP

30KC Cartridge Multi Lip Seal

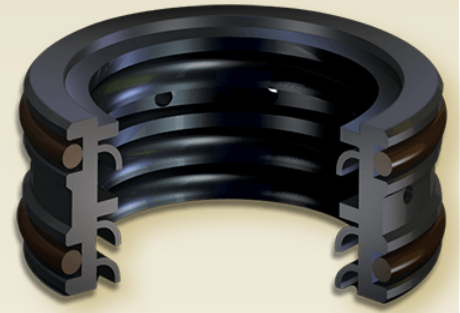
Cartridge Design for Sealing Powders and Viscous Fluids

Chesterton 30KC polymer cartridge seals are used in dynamic rotary seal applications. This cartridge design uses high performance, filled PTFE materials proven to withstand the high shear rates, frictional heat, and abrasives common when either pumping high-viscosity products or moving powders.

The 30KC is designed with an inboard sealing element, an outboard sealing element, and built-in flushing ports. The inboard lip seals process fluid, the outboard lips seal barrier fluid, while the flush port allows for flushing. The versatile cartridge design is extremely tough and able to withstand adhesion between the sealing surfaces and shaft due to reacted material and dry running capabilities.

The 30KC high performance, filled PTFE compounds are coupled with the unique seal design to provide excellent fluid compatibility, temperature resistance and reduced frictional force thus improving performance and reliability in demanding applications.

All engineered cartridges are custom manufactured to equipment dimensions thus eliminating the need for equipment modifications.



- Outperforms conventional packing and lip seal sets when sealing high-viscosity fluids and dry powders
- Decreases downtime; easy-to-install versatile cartridge design
- Improves performance of compression packing; distinct PTFE materials
- Custom-designed cartridges made to equipment dimensions
- Several 30KP seals consolidated in cartridge design
- Integrated flush ports option
- Compressed air or nitrogen purge
- Liquid fluid flush – water or other compatible with the medium

SPECIFICATIONS



Material* (combination) Adapters/ Sealer Rings	Shaft Size mm (inch)	Tempera- ture °C (°F)	Speed m/s (ft/ min)	Pressure MPa (psi)	Mating Surface (Rock- well C)	Surface Finish µm (µ inch)	**Recommended use
AWC100 (PTFE) Polyimide	25 – 200 (1.000 – 7.7875)	-30 – 150 (-20 – 300)	Up to 5 (984)	Up to 1 (150)	45		Excellent dry excellent low viscosity (<2,000cp) powders, oil, resins, glues, paints no water or steam
AWC300 (PTFE) Moly and Glass					55	Dynamic 0.2 – 0.4 (8 – 16)	Excellent high-viscosity (<2,000cp) Good dry, water or steam
AWC400 (PTFE) Carbon and Graphite					55	Static 0.4 – 0.8 (16 – 32)	Excellent in water or steam Good dry and low viscosity powders, asphalt, clay, slurries
AWC510 (PTFE) Mineral (FDA listed)					45		Excellent dry Good in water or steam chocolate and syrups no petroleum liquids

*Fluoroelastomer O-Rings provided (FDA listed w/AWC510)

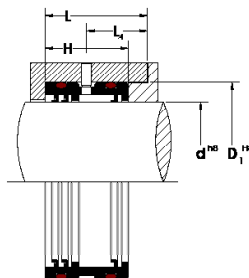
**Run-out to 0,15mm (.005")

Applicable standards: ISO 3069

PRODUCT PROFILES



30KC



100 Series

Cantilever Spring Design

Cantilever Spring Energized Seals, Highly Dynamic Applications

Cantilever spring energized seals are primarily used in highly dynamic applications for rotary and reciprocating equipment, but they can be used in static applications too, when higher deflection springs are needed. The improved spring and seal deflection capability can be required due to excessive expansion or contraction or wide hardware tolerance.

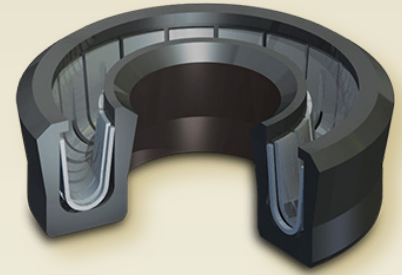
100 Series incorporates a U-shaped seal jacket with a high performance, stainless steel V-shaped cantilever spring to apply positive sealing force to the mating surface.

100 Series design utilizes an asymmetric seal profile, where the dynamic lip has a robust profile in combination with a front angle, providing excellent leakage control and good scraping effect in case of highly viscous medias. The V-shaped cantilever spring design provides the spring tension at the leading edge of the seal only which helps to optimize lip load and minimize frictional force.

Seal jackets are made from high performance fluoroplastic compounds and engineered plastics that provide low coefficient of friction, high abrasion resistance, dimensional stability, and outstanding resistance to most fluids, chemicals, and gases.

This is the most popular series for spring energized seal designs due to its unique attributes, which help to maximize seal and hardware life.

The 100 Series is available in different unique jacket materials to address a broad range of applications.



- Highly dynamic and static applications; plant-wide usage
- Unidirectional designs; available as rod, piston, flange, or static seals
- Single-point profile yields high sealability while minimizing frictional force
- All seals are made-to-order; no equipment modifications required
- Custom designs and materials available upon request

SPECIFICATIONS



Material (designation)	Size Range* mm (inch)	Temperature °C (°F)
AWC400 (PTFE) Carbon	1.2 – 2032 (0.050 – 80)	-156 – 204 (-250 – 400)
AWC520 (PTFE) Unfilled	6 – 600 (1/4 – 23.62)	-35 – 120 (-30 – 250)
AWC630 PEEK	1.2 – 254 (0.050 – 10)	-73 – 204 (-100 – 400)
AWC610 UHMWPE	1.2 – 2032+ (0.050 – 80+)	-253 – 82 (-425 – 180)

*Please contact your Chesterton Customseal representative for larger sizes.

PRODUCT PROFILES



EPS100



EPS101



EPS103



EPS105



EPS107



EPS109



EPS115



EPS119



EPS130



EPS139

500 Series

Stacked V-Ring Seals

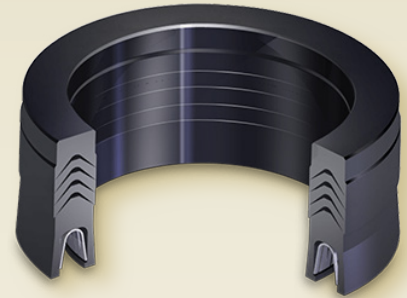
High Performance, Multi-Purpose V-Ring Sets

High performance, multi-purpose stacked V-Ring sets are ideal for demanding applications, where the reliability and seal performance are requirements. Further, they accommodate hardware with deep stuffing boxes. These stacked sets are used in both rotary and reciprocating applications and are available in solid and spilt designs, depending upon application requirements.

A typical 500 Series V-Ring set comprises female and male gland adapters (for supporting and energizing functions) and three to five sealing rings, depending on operating conditions and equipment hardware configuration. The gland pressure (energizing axial force) is transferred between the seal rings, pressurizing them and creating optimal, positive contact to the counter surfaces.

Other 500 Series sets incorporate gland adapter ring, several seal rings (V-Rings) and radial Spring Energized Seal Ring. The radial SES ring is the primary sealing element. When it is pressurized by the system pressure, it activates the V-Rings by pushing against the gland adapter ring. The multiple seal edges reduce the risk of a potential leak path. The gland adapter ring provides support to the entire seal set and protects against extrusion.

The 500 Series is available in several unique materials to address a broad range of applications, where chemical compatibility with media, high or low operating temperature, or high speed (fast reciprocating movements) make the application challenging to the seals.



- Unidirectional design, which replace V-Ring sets
- Multi-purpose V-Ring seal sets; plant-wide usage
- All seals are made-to-order; no equipment modifications required
- Custom profiles available
- V-Ring sets accommodate hardware with deep stuffing boxes

SPECIFICATIONS



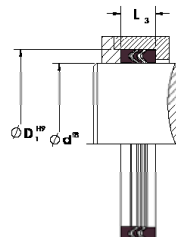
Material (designation)	Size Range* mm (inch)	Temperature °C (°F)
AWC100 (PTFE)	20 – 600 (0.787 – 23.62)	-30 – 149 (-20 – 300)
AWC400 (PTFE) Carbon	1.2 – 2032 (0.050 – 80)	-156 – 204 (-250 – 400)
AWC520 (PTFE) Unfilled	6 – 600 (1/4 – 23.62)	-35 – 120 (-30 – 250)
AWC610 UHMWPE	1.2 – 2032+ (0.050 – 80+)	-253 – 82 (-425 – 180)
AWC630 PEEK	1.2 – 254 (0.050 – 10)	-73 – 204 (-100 – 400)

*Please contact your Chesterton Customseal representative for larger sizes.

PRODUCT PROFILES



EPS500 EPS520 EPS521 EPS540





Food and Beverage Industry Application Table

Industry	Process	Application	Challenges	Product Solution
Chocolate	Several	Pump Seals	Increase reliability, reduce friction	R22KN
Chocolate, Dairy, Beverage, Soybean	Various	Bearing Protection (Pumps, Conveyors), Rotary Valves	High viscosity fluids, reduce friction.	30K, 33K, 30KC, PLS, R22KN5
Chocolate	Alkalization	Rotary	Reduce friction.	R22KN5
Chocolate	Cacao butter extraction	Hydraulic Press	High pressure causing conventional rubber seals failure.	R22KN, AER, WR, PCCS, RCCS
Chocolate, Confectionery	Dispensing	Depositors	Improve MTBF, increase life.	20KD
Dairy, Chocolate	Homogenizing	Homogenizers - Plunger packing seals	Improve MTBF, increase reliability, high pressure, increase life.	R27K, Spring Energized Seals, Vrings
Donut	Dispensing	Piston Pumps	Hot oil application.	20K
Several	Mixing	Mixers	Improve MTBF, reduce friction, increase life.	Spring Energized Seals, R22KN5
Several	Dispensing	Dispensers	Improve MTBF, increase life.	Silicone filled Spring Energized Seals, PEEK
Several	Dosing	Dosing pistons	Improve MTBF, hot temperature application.	R22K, Silicone filled Spring Energized Seals, WR, 22KAER, PCCS, RCCS.
Beverage	Bottling distribution	Rotary distributors	Improve MTBF, increase life.	30K, 33K, Spring Energized Seals, Vrings
Beverage	Bottle Filling	Rotary Unions, Swivel joints	Roll & twist of OEM seals, reduce friction, wear, chemical resistance, improve MTBF, increase life.	30K, 33K, Spring Energized Seals, Vrings, R22KN5

More than a Seal

Training

The Know-How Advantage

Continual development of personnel is one way of attracting and retaining a capable workforce, and it is an area that receives a great deal of attention from Chesterton Customseal. We regard training as a value-adding product that delivers tangible benefits, both short and long term. Appropriate training ensures the correct use of equipment that will deliver longer life for the lowest overall cost of ownership and a rapid return on your training investment.

Contact us to know about our latest training schedule.

Chesterton Legacy

Wide Range of Product Portfolio

View the full line of Chesterton Polymer Seals, including hydraulic and pneumatic seals, rotary seals, and spring-energized seals by visiting chesterton.com or contact us to request our new polymer seals catalogue.

Chesterton ISO certificates are available on chesterton.com/corporate/iso

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Where to from here?

Contact your local Sales Representative to discuss your specific needs.



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