Specialists in Seals & Service
Hi-Tech Seals Inc.
TECH TALK
VOLUME 54

# HTS & Our Communities

## *At Look Back At 2018*

At Hi-Tech Seals, we are proud to support our community, local charities, and encourage our employees to do the same. 2018 was no different.

Hi-Tech Seals' long-standing practice of offering parts at no charge to front counter customers whose cash sale does not meet our $25.00 minimum continues. Instead, we ask customers to donate to the charity of the month and they get their product for free! At the end of the collection period Hi-Tech Seals matches all customer donations, thus creating a win-win situation for everyone involved! We also gave back through our 2018 calendar promotions. Over the course of select months during 2018, we donated a portion of a specific parts sales to our local charities.

Over the past year Hi-Tech Seals has supported the education of today's youth in various ways. We have donated to post-secondary scholarships, provided parts and kits to different projects, and encouraged participation in school run charity initiatives by covering the entry fees.

One occasion where we provided support to today's youth was by donating parts to a group of University of Sherbrooke mechanical engineering students. These students designed and created a prototype device to help clean up small plastic particles on polluted beaches and restore its ecosystem. Over the past few years Hi-Tech Seals has also donated to a project initiated by two NAIT instructors. This project engages grade 4 students to use their math, science, and problem-solving skills to create a pulley system that would lift objects, all while having fun.

Hi-Tech Seals staff have also participated in several other charitable and volunteer activities, such as:

- Charity and fun runs
- Fostering & rehabilitating stray and homeless animals
- Volunteering at soup kitchens, food banks, and homeless shelters
- Coaching various kids sporting teams

As mentioned in our December 2017 Hi-Tech Seals & Our Communities article, our Calgary team continues to volunteer monthly at The Mustard Seed, serving those in need with a warm breakfast. A member of the Edmonton HTS purchasing team ventured to B.C. again this summer to participate in the yearly picking, chopping, processing, and packaging of vegetables that would otherwise go to waste. These packages are sent around the world to help feed those who otherwise would go hungry. The Legacy Water Foundation, run by a member of our accounting team and her husband, continues to bring water to those in need. Over the past few months Legacy Water Foundation has repaired and built numerous water wells in the South Sudan.

As a new year begins, Hi-Tech Seals will continue to support our local communities and charities and we encourage you to do the same. Even the very smallest of donations can make a difference somewhere, in someone's life.

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# Kitting Update

## *New Bagging and Counting System*

Hi-Tech Seals is proud to announce that we have added a bagger and an Accu-Count® to our impressive lineup off packaging equipment. The Accu-Count® can rapidly and accurately count and dispense parts. The bagger presents a custom labelled bag that is then filled with the dispensed parts and heat sealed. This reliable automated system allows Hi-Tech Seals to optimize our packaging and kit creation processes.

To date, the new bagging system has accurately packaged parts with an O.D. ranging from 0.375" up to 2". We have also successfully completed test runs with parts that have an O.D. of 0.250". The bagging system can handle a variety of bag sizes, including 4" X 5", 5" X 6", 7" X 9", and 9" X 12". Additional sizes are available upon request.

# Technically Speaking

## *Low Temp. Material vs. Materials with Low Temp. Capabilities*

With our head office in the northernmost major metropolis in North America, Edmonton, AB, we at Hi-Tech Seals are no strangers to the unique demands encountered by sealing products in cold temperatures. Low temperature performance may be one of the most misunderstood and misleading differentiators when comparing various elastomers. Not only does a rubber product become less flexible and more brittle at lower temperatures, it also undergoes a certain degree of contraction, decreasing overall compression and seal force.

Most common methods to obtain low temperature capabilities within any given family of elastomer is through modification of both hardness and ingredient composition. Both will inherently create detrimental features to the seal's overall performance, which needs to be considered for the application as a whole. Through the lowering of durometer, a rubber can retain a certain level of elasticity when temperatures drop below the typical threshold of any given elastomer. Yet, this added elasticity will decrease the pressure handling capability of the seal and increase the likelihood of premature failure through extrusion. Modification of ingredients to create a lower temperature class of material will more than likely decrease high temperature handling capabilities, as well as decrease a material's ability to resist certain chemical attacks.

Published tests of low temperature handling capabilities typically use a brittleness evaluation. The material's lowest breaking result when impacted at a given temperature will be used for presentation to clients. This result would typically be indicative of a static seal, at uniform pressure, which was engaged at an ambient temperature, and subsequently entered a low temperature environment. Unfortunately, this test holds very little relevance or correlation to true low temperature sealing performance where a seal may be required to move dynamically against mating surfaces and retain sealability against variable pressures. For a true indicator of low temperature seal performance, the glass transition temperature or 10% retraction test result should be considered.

Through a holistic approach to your specific application, Hi-Tech Seals is able to recommend a material that will not only optimize your performance while encountering the low temperatures, but also provide a solution that will provide superior sealing performance across the full breadth of the potential environment. Our knowledge and experience with an excess of 12 different elastomer families, and hundreds of custom compounds gives us a unique ability to tailor our solution to best suit your needs.

# Featured Products & Materials

*Check Out the Latest Products and Materials That Hi-Tech Seals has a Spotlight on!*

### Hammer Union Seals

A hammer union comprises of a thread end, a nut end, and a hammer nut which, when cinched up, compresses a composite seal assembly thereby preventing leakage. The seal assembly comprises a metal insert of a size to pass into the seal groove of conventional hammer unions and a small seal acting between the insert, the thread end and the nut end. The small seal is conveniently an O-ring or a Hammer Union Seal (Lip Seal) and is of a size that is compressed when the seal assembly is inserted into the thread end of the hammer union, thereby preventing the seal assembly from falling out of the threaded end when it is inverted.

Hammer union seals are available in a variety of materials to meet the needs of different application environments, including Nitrile, Viton™, Hydrogenated Nitrile, Virgin PFTE, and low temperature alternatives. They are also available with a stainless steel or brass anti-extrusion ring.

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### Engineered Thermoplastic Seals

Engineered thermoplastic seals (ETS) are a lip seal that incorporate a spring into the seal design. The Spring loads the seal lip against the mating hardware, creating a seal capable of compensating for movement in a dynamic application. They are normally used in single acting dynamic applications and should be oriented with the spring towards the pressure side. ETS exhibit improved sealing performance in demanding applications where standard or traditional materials breakdown and fail prematurely.

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### Tungsten Carbide

Tungsten carbide material features extreme wear resistance and hardness. The material is typically forged by the reaction of tungsten (W) metal and carbon (C). The result is a grey powder that can be pressed and formed into virtually any shape. Several chemical compositions can be used to provide better properties for varying applications. Hi-Tech Seals can provide parts with various binders, the most common being Nickel (Ni) and Cobalt (Co).

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### FS Seals

FS Seals are a high-pressure ring, with a uniquely designed elastomeric seal element that encompass metal garter springs. This design is capable of sealing areas where a high degree of seal deflection is necessary to compensate for variations in piping, casing, or large diameter parts.


# Understanding Abbreviations

## *Making Sense of it All*

This is the second edition of our Understanding Abbreviations series. The first edition covered the ASTM abbreviations for commonly used elastomers and thermoplastics. Question, do you know what ASTM stands for? If you are uncertain of what is this and other organization and standard abbreviations stand for, this edition is for you.

| Abbr. | Organization and Standard | Organization and Standard Description |
|---|---|---|
| **ANSI** | American National Standards Institute | ANSI is a private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system. |
| **API** | American Petroleum Industry | API's mission is to promote safety across the industry worldwide and has led the development of petroleum, natural gas, and petrochemical equipment and operations standards. |
| **APEGA** | Association of Professional Engineers, Geologists, and Geophysicists of Alberta | APEGA regulates the practice of engineering and geoscience in Alberta on behalf of the government of Alberta. |
| **ASME** | American Society Mechanical Engineers | ASME International positively impacts public health and safety, consumer confidence, and overall quality of life by setting global general agreed upon standards. |
| **ASTM** | American Society of Testing Materials | ASTM International is a globally recognized leader in the development and delivery of voluntary consensus standards. Their standards are used to improve product quality, enhance health and safety, strengthen market access and trade, and build consumer confidence. |
| **BS** | British Standard | BS are standards that have been put into place by the British Standard Institute that oversee virtually every aspect of modern society. |
| **DIN** | German Standardization Institute | DIN is the German national organization for standardization and is the German ISO member body |
| **FDA** | Food and Drug Administration | FDA is responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation's food supply, cosmetics, and products that emit radiation. |
| **GFA** | Gasket Fabrications Association | The GFA is a trade association for companies use, which provide custom-fabricated components and services like gaskets, tapes, adhesives, polymers, die-cutting, laminating, converting, and more. |
| **ISD** | International Seal Distributors | ISD was formed to enhance the success of members through information, education, and interaction. Its members make, sell, install and/or maintain mechanical and hydraulic seals, packing, gaskets, O-rings, and related fluid sealing products and range from the largest distributors and manufacturers in the industry. |
| **ISO** | International Organization for Standardization | ISO international standards ensure that products and services are safe, reliable, and of good quality. For business, they are strategic tools that reduce costs by minimizing waste, errors, and increasing productivity. |
| **NORSOK** | Standard set out by Norwegian Petroleum Industry | NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding, and cost effectiveness for petroleum industry developments and operations. |
| **NSF** | National Sanitation Foundation | NSF International development public health standards and certification programs that help protect the world's food, water, consumer products, and environment. |
| **REACH** | Registration, Evaluation, Authorization and Restriction of Chemicals | REACH addresses the production and use of chemical substances, and their potential impacts on both human health and the environment. |
| **RoHS** | Restriction of Hazardous Substances Directive | RoHS, also known as Directive 2002/95/EC, originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. |
| **SPE** | Society of Petroleum Engineers | SPE is the largest individual-member organization serving managers, engineers, scientists, and other professionals worldwide for the upstream segment of the oil and gas industry. |
| **UID** | University of Innovative Distribution | UID is a renowned educational program focused on the unique needs of the wholesale-distribution industry and is known world-wide for excellence in education. |
| **UL** | Underwriters Laboratories | UL helps companies demonstrate safety, confirm compliance, enhance sustainability, manage transparency, deliver quality and performance, strengthen security, protect brand reputation, build workplace excellence, and advance societal wellbeing. |
| **WRAS** | Water Regulations Advisory Scheme | The purpose of WRAS is to contribute to the protection of public health by preventing contamination of public water supplies and encouraging the efficient use of water by promoting and facilitating compliance with the Water Supply (Water Fittings) Regulations and Bylaws in Scotland. |

# Happy Holidays

## Hi-Tech Seals' Holiday Hours

The staff at Hi-Tech Seals would like to wish our customers and their families a joyous and safe holiday season.

| | Reg. Hrs. | Dec 24th | Dec 25th | Dec 26th | Dec 31st | Jan 1st | Jan 2nd | On Call # |
|---|---|---|---|---|---|---|---|---|
| Edmonton, AB | 7:30 - 5:00 | Closed | Closed | Closed | 7:30 - 1:00 | Closed | Open | 780.438.6055 |
| Manufacturing Centre, Edmonton, AB | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 780.438.6055 |
| Calgary, AB | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 403.720.2856 |
| Winnipeg, MB | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 204.775.7881 |
| Newmarket, ON | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 905.936.9666 |
| Boucherville, QC | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 450.655.7325 |
| Conroe, TX | 8:00 - 5:00 | Closed | Closed | Closed | 8:00 - 1:00 | Closed | Open | 936.206.3124 |

If you experience any sealing or gasket emergencies over the holiday season, Hi-Tech Seals offers an on-call service. To reach a Hi-Tech Seals representative after hours, contact the branch nearest to you from the list of numbers above. Service charges may apply.


# MILESTONES

We are pleased to share with you employees that have achieved milestones of service in recent months.

5 YEAR ANNIVERSARY
Art Stangle
Jarrod Brandt

15 YEAR ANNIVERSARY
Mike Contrada

10 YEAR ANNIVERSARY
Jenny Ong
Rick Sackiw

20 YEAR ANNIVERSARY
Stephanie Berrigan
Jackie Campbell

From all of us at Hi-Tech Seals, we thank you for your hard work and dedication over the years.


Hi-Tech Seals has over 700 product lines and 31,500 active part numbers.

# DEFINING TERMS

Technical terms and what they mean

## TR 10 Test

TR 10, temperature retraction, test is when a specimen is stretched 50%, frozen, and then gradually warmed at a constant rate. The temperature at which the material retracts 10% from the elongated position is considered the TR-10 value. It is a good indicator of low temperature sealing ability since it is the lowest temperature at which the specimen exhibits rubber-like properties and resilience.

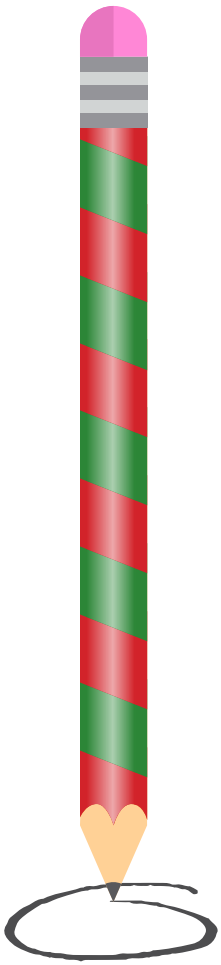
## Rapid Gas Decompression

Under high pressure, gases tend to permeate into the surface of an elastomer, seeping into the core of the material. This will happen until the internal pressure of a material creates an equilibrium with the external pressure of the fluid media. When the external pressure experiences a sudden and significant drop, the gases that had permeated the elastomer will escape, more rapidly than material can handle, in order to maintain equilibrium. This can cause extreme fissures and ruptures. Rapid gas decompression (RGD) is also known as explosive decompression (ED).

## Coefficient of Friction

A value that shows the relationship between the force of friction between two objects and the normal reaction between the objects that are involved.

# December Tech Talk



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# HTS Word Search

**Complete the word search and you could win a Bluetooth Speaker from BOSE**


ABBREVIATIONS
BAGGING
BERRIGAN
CAMPBELL
CHARITIES
DRILL BIT INSERT
GIVING
HAMMER UNION SEAL
HAPPY HOLIDAYS
THERMOPLASTIC
TUNGSTEN CARBIDE
ZIRCONIA

Please fax your responses to 780.409.9149 by January 15th, 2019.

Name: _____
Company: _____
Location: _____
Day Time Phone #: _____

*Congratulations to last edition's word search winner, Andrew Dickson!*

## Hi-Tech Seals Branches:

**Head Office & Branch** | 9211 - 41 Ave NW | Edmonton, AB | T6E 6R5 | Ph: 780.438.6055 | Fax: 780.434.5866

**Manufacturing Centre** | 9504 - 41 Ave NW | Edmonton, AB | T6E 6G9 | Ph: 780.439.4894 | Fax: 780.436.9502

**Calgary Branch** | Bay #3, 5940 - 30 St. SE | Calgary, AB | T2C 1X8 | Ph: 403.720.2856 | Fax: 403.279.2662

**Winnipeg Branch** | 445 Egesz St. | Winnipeg, MB | R2R 2V5 | Ph: 204.775.7881 | Fax: 204.775.7954

**Toronto Branch** | 1180 Kerrisdale Blvd; Unit #8 | Newmarket, ON | L3Y 8Z9 | Ph: 905.953.9666 | Fax: 905.953.8739

**Montreal Branch** | 1450 Rue Nobel, Suite #20 | Boucherville, QC | J4B 5H3 | Ph: 450.655.7325 | Fax: 450.655.7359

**Conroe Branch** | 12064 FM 3083 77301 | Conroe, TX | United States | 77301 | Ph: 936.206.3124 | Fax: 936.756.0538