

Low Temp. Material vs Materials with Low Temp. Capabilities Don't Understand the Difference? Let us Help

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.



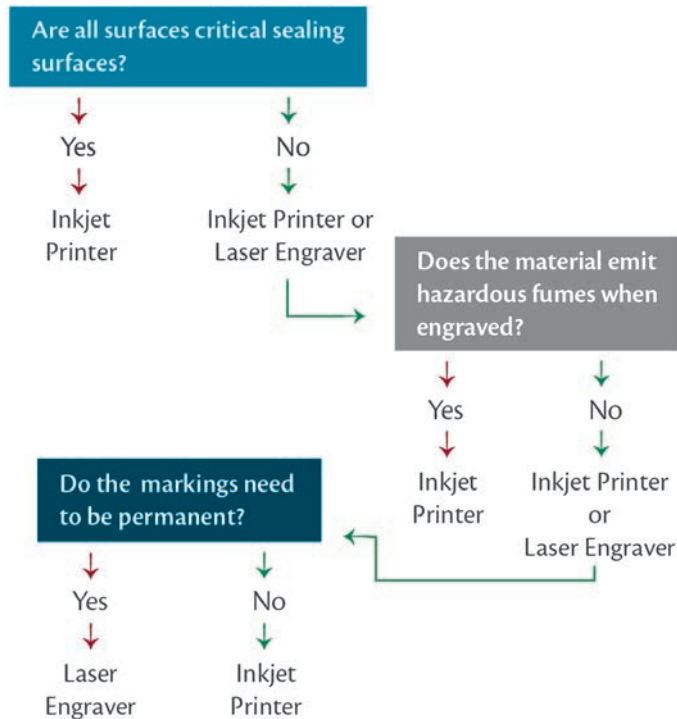
When Information on Labels Isn't Enough

Laser Engrave or Inkjet Your Components

The bags and labels that hold parts typically possess important information. They help your staff and customers identify the part inside, measurements, materials, and might even have your company name and logo on them. What happens when the bag is thrown away or misplaced? Will your staff be able to identify the part number and material? Will your customer remember what they purchased, or where they purchased it from?

Having certain information on the part itself, along with the bag or label, can improve the re-ordering experience for the customers as they will be able to identify the part with less effort. Having your name on the part will also expand your brand exposure among those handling the part.


To impose the desired information onto your part, Hi-Tech Seals can use our Epilog Laser Engraver or Hitachi RX2 Inkjet printer. When deciding which technique is best for your part and application there are important factors to consider.



Hi-Tech Seals' Epilog Laser Engraver can etch legible text as small as 1/8" in height. The maximum height of the text or company logo is only limited by the size of the part and engraver's bed dimensions, 36" x 24" x 9 1/2". When engraving round parts, Hi-Tech Seals uses our part rotator device. This device allows the parts to rotate while being engraved, without distorting or warping the content being engraved.

The most common materials that we engrave are nitrile, hydrogenated nitrile, urethane, PEEK, and bronze filled PTFE. These materials do not emit hazardous fumes when engraved and create a contrast between the lasered and non-lasered part material, making the engraved markings easy to see. Some materials that can't be engraved due to hazardous emissions include fluorocarbon/Viton™, chloroprene, and silicone.

Our Hitachi RX2 inkjet printer can print up to 3 lines of letters and numbers. To date, we have printed on balls with a diameter as small as 3/8" and parts with an O.D. of just over 5 1/2". For best visibility of the markings, the parts should be a contrasting colour to the ink. There are no material restrictions for the inkjet printer, as it does not emit harmful fumes when printing on materials.

To determine which technique is best for marking your parts, contact the Hi-Tech Seals location nearest to you. 

Technically Speaking

Mud Motor Boot Compounds

This edition of Technically Speaking will continue with the fourth installment of our six-part series on Hi-Tech Seals compounds. Previous installments have covered the keys to compounding successful sealing solutions, our downhole tool industry compounds, and our rapid gas decompression (RGD) compounds. In this Technically Speaking, we will cover our specially formulated mud motor boots compounds, H7B1 and H8B1.



Mud motor boots have always been a limiting factor in the performance of any down-hole tool. Historically, the issues encountered were both at the installation of the boot and the in application performance. The stretch and torque forces that are

required for installation of standard mud motor boots required the utilization of equipment that could cause the potential for unintended damage to the product. Many times the boot is torn during the installation process, while other times unobservable damage occurs, allowing for an inherently flawed product being sent to the field.

While in application, boots can undergo upwards of 350 flexural motions every minute, exerting both stretching and compression forces. These forces are experienced in conjunction with significant flow rates past the boot, while encountering a variety of fluids and contaminants. Furthermore, thermal forces, both from the temperature of the well and mechanical heat generated at the joint, result in expansion of the grease packing and can create internal pressure within the boot. These factors can, in their own way, contribute to a premature failure of the mud motor boot, and in turn, result in costly down-time during drilling operations.

Taking all parameters of the application into account, Hi-Tech Seals has developed a compound, in two durometers, specifically to improve the performance of the mud motor boot in application, as well as during installation. Our H7B1 and H8B1, Hydrogenated Nitrile (HNBR) compounds offer significantly improved mechanical properties, tear strength, and chemical resistance. They do this over a larger temperature range than the typical materials found in the market. Moreover, ease of installation has allowed us to reduce our customers' costs, their assembly time, and improve their confidence in the reliability of the product as it leaves the facility.

	ASTM	H7B1		H8B1	
		Requirements	Results	Requirements	Results
Original Physical Properties					
Hardness, Shore A	D2240	70 ±5	68	80 ±5	82
Tensile Strength, psi	D412	4000 (min)	4779	3700 (min)	4703
Elongation, %	D412	400 (min)	415	250 (min)	291
Modulus @ 100%, psi	D412	-	405	1200 (min)	1217
Compression Set, 22 hrs @ 150°C, %	D395 Method B	35 (max) (button)	24	30 (max)(button)	21.1
General Operating Temperature	-	-	-40°C to 160°C	-	-40°C to 160°C

Complete specification sheets with ASTM callouts are available through your Hi-Tech Seals Representative. 

Featured Products

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



Labyrinth Seals

Labyrinth seals, also referred to as labyrinth rings or bearing isolators, are a type of non-contact mechanical seal that were originally designed for use in the machine tool industry. They have continued to be designed into many different industries and applications. They are an alternative to contact or rubber seals, especially at higher speeds and where fine or coarse granular contamination occurs in rotating equipment. With virtually limitless RPM and no rotating friction or wear due to the non-contact design, these seals can greatly extend the working life of major components such as pumps, motors, and turbines.



Metal Encased PTFE Lip Seals

Often times conventional elastomeric rotary lip seals are unsuitable in applications with excessive shaft speeds or where elevated operating temperatures occur. Advancements in radial lip seal technology using variants of PTFE materials and innovative lip designs can have dramatic effects on durability, chemical compatibility, and performance in critical components. Metal encased, or canned PTFE radial lip seals can be manufactured with a metal case made of steel, aluminum, or stainless steel and various filled or unfilled PTFE lip materials, dependent on the application.



Mechanical Seals

A mechanical seal is simply a method of containing fluid within a vessel, typically pumps, mixers, etc., where a rotating shaft passes through a stationary housing or where the housing rotates around the shaft. Historically most pump shafts were sealed using rings of soft packing, compressed by a packing gland. This type of shaft seal required a fair amount of leakage just to lubricate the packing and keep it cool. Then came the development of the mechanical seal. A mechanical seal accomplishes the job of restraining product leakage around the pump shaft with two very flat surfaces, one stationary and one rotating. Even though these mechanical seal faces require some leakage to form a hydrodynamic film, this leakage is minimal and normally evaporates, becoming unnoticeable.



Protective Caps & Plugs

Caps and plugs are widely used to protect, mask, or finish many products. Hi-Tech Seals offers a wide selection of push fit, threaded, and slide on protectors. They are available in standard and metric sizes and in plastic, silicone, and urethane materials.

Hi-Tech Seals & Our Communities

A Look Back At 2017

This past year has not only been a year of growth and success for Hi-Tech Seals, it has also provided the company and our employees with numerous opportunities to give back to our communities.

One of Hi-Tech Seals' long-standing practices at our front counters is to offer parts at no charge to customers whose orders are under our cash sale minimum of \$25.00. Instead, we ask them to donate to the charity of the month and they get their product for free. In 2017 Hi-Tech Seals collected over \$10,000 from our front counter donations. This has given us the opportunity to support both large and small scale charities, such as the Canadian Cancer Society, Alberta Children's Hospital, Habitat Cycle of Hope, and Breakfast Club of Canada.

As most know, the southern states went through a devastating year due to natural disasters. Hi-Tech Seals stepped up and offered a helping hand. Our employees, customers collected clothing, shoes, toys, and personal hygiene products to help those in need. A big thank you goes to Waggoner's Trucking for delivering three pallets of donated goods to our Conroe branch, that were then dispersed to local charities.

A member of our accounting department and her husband run a charitable organization, The Legacy Water Foundation. It focuses on providing clean drinking water for third world countries, such as South Sudan, Ghana, Liberia, and Haiti. This past year the organization successfully completed two major projects at Senya Secondary School in Ghana. They drilled a well near the boys dorm to provide fresh water for their basic hygiene needs, and built a washroom facility improving hygiene and dignity for the girls.




Our Calgary branch has been busy volunteering at the Mustard seed. They volunteer once a month to prepare and serve breakfast to over 200 individuals. One Hi-Tech employee adds, "As our shift starts at 6:00 am, we all agree that it was a great start to the day."

Once a year, one of our purchasing staff ventures to British Columbia to pick, chop, process, and package vegetables that would otherwise go to waste. These packages are then sent to places like North Korea, Asia, Eastern Europe, and Africa to help feed those who may not eat otherwise. This is a strenuous week-long endeavor in which this staff member is happy to take part in.



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

- Organizing and participating in charity and fun runs
- Coaching various sports teams
- Volunteering at soup kitchens, food banks, and homeless shelters

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



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.

	Regular Hrs	Dec. 22 nd	Dec. 25 th	Dec. 26 th	Jan. 1 st	Jan. 2 nd	On Call Number
Edmonton, AB	7:30 - 5:00	Open	Closed	Closed	Closed	Open	780.438.6055
Manufacturing Centre, Edmonton, AB	8:00 - 5:00	Open	Closed	Closed	Closed	Open	780.438.6055
Calgary, AB	8:00 - 5:00	Open	Closed	Closed	Closed	Open	403.720.2856
Winnipeg, MB	8:00 - 5:00	Open	Closed	Closed	Closed	Open	204.775.7881
Newmarket, ON	8:00 - 5:00	Open	Closed	Closed	Closed	Open	905.936.9666
Boucherville, QC	8:00 - 5:00	Open	Closed	Closed	Closed	Open	450.655.7325
Conroe, TX	8:00 - 5:00	Open	Closed	Closed	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.*



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

5 years of service:


Chris Ammar
Jeff Chimera
Jeff Famisan
Steve Sims

10 years of service:

Terrie MacLean

20 years of service:

Dallas Bond

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

2018 Calendar is Ready!

Get Yours Now!

Our 2018 desk calendar is now available. Get yours today by contacting the Hi-Tech Seals location nearest to you.



DEFINING TERMS

Technical Terminology and What They Mean

Filler

A compounding material which may be added to a polymer. They are typically in a finely divided form and in relatively large proportions. Fillers are generally added to materials to reduce cost or to modify specific properties.

Deflashing

The process used to remove excess moulding compound, flash, or resin bleed from the body of a moulded seal or component. Flash may be removed by cutting, breaking, grinding, or tumbling.

Deburring

The process of removing burrs or any unfinished or raised edge of a plastic, rubber, or metal surface with the help of tools or equipment.

Curing Agent

A substance that is used to harden a surface or material by cross-linking of polymer chains.

I P L E K E C N S C S N H T G
L P I L U H H V F L E J L B N
K O F O I H V O M O R A R Y I
H E W M J F X L Y A F I I N V
R R E T J J R U D M T U N V A
G R Z Z E P H N C T J S K O R
A O W G E M E T L H R H J Z G
J J P E X L P E N O A P E N N
V E E W A R N E C I C R T H E
J P E C L E U R R S R W I K A
B X H P S W G I P A C Y D T E
O A J S A S C N Q W T X B B Y
S T O O B I D G D K H U M A R
G N I H S A L F E D G U R H L
M U D M O T O R N H C D T E C

HTS Word Search

Complete the word search and be entered to win!

DEFLASHING

CALENDAR

LABYRINTH

CHARITY

MUD MOTOR

INKJET

VOLUNTEERING

ENGRAVING

BRITTLINESS

BOOTS

LOW TEMPERATURE

CHIMERA

Please fax your responses to 780.409.9149 by January 15th, 2018.

Name: _____

Company: _____

Location: _____

Day Time Phone #: _____

Congratulations to last edition's winner Joe Mlinaric!

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 | 105 Gladstell St. | Conroe, TX | United States | 77301 | Ph: 936.206.3124 | Fax: 936.756.0538