



Desiccant Breathers

The first line
of defense

**AGAINST
CONTAMINATION**



**DRY.
CLEAN.
RELIABLE.™**

Don't Let Dirty Air and Moisture Destroy Clean Oil.

Have you noticed condensation droplets forming inside your gearbox, hydraulic unit or storage tank—or worse: rust buildup, free water and contaminants in the hydraulic oil, reduced lubrication efficiency, visible signs of abrasion, or even a strong oily odor while the unit is operating?

These are all red flags that point to a common root cause: moisture and airborne dirt particles are entering your system unfiltered each time it pulls in air to balance internal pressure or internally generated from oil degradation and machine wear. At the same time, oil aerosols are escaping into the environment every time the system exhales. It's a silent but steady exchange that compromises both performance and cleanliness. Ignoring these warning signs means you're on the fast track to costly maintenance, potential equipment failure, and unnecessary risk to both your employees and the environment. But a simple device called a desiccant breather can help you avoid these issues.

A desiccant breather is a filtration device designed to protect industrial equipment by preventing moisture and contaminants from entering lubricants, hydraulic fluids, and other systems.



Desiccant breathers contain silica gel beads that adsorb moisture from incoming air, preventing water vapor from contaminating the system.

The silica gel changes color when saturated, signaling the need for replacement. A high-efficiency filter (often rated at 3 microns) traps dust, dirt, and other airborne particulates, ensuring only clean, dry air enters the equipment. When the system heats up or cools down, air expands or contracts. The desiccant breather allows air to pass through while filtering moisture and particles, maintaining system pressure, and preventing vacuum formation.

Desiccant Breather Benefits:

- › Prevents condensation and water ingress
- › Adsorbs water in the oil
- › Filters out particle contamination and avoids ingress
- › Extends equipment and oil life
- › Improves equipment reliability & performance
- › Lower maintenance costs
- › Minimizes downtime
- › Environmentally friendly
- › Easy installation & maintenance

Applications:

Industrial equipment like gearboxes, pumps, and hydraulic systems represent significant investments, and protecting them from premature failure is essential. Desiccant breathers offer a cost-effective way to safeguard these applications.

Breathers for Gearboxes

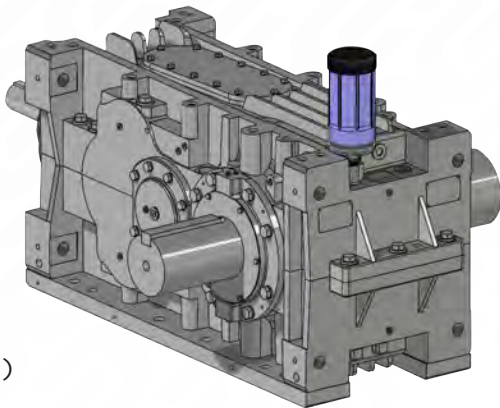
Gearboxes are critical across industries, where a single failure can stop production and trigger costly repairs. Desiccant breathers prevent moisture and airborne particles from entering the sump, preserving lubricant condition, and reducing bearing and gear wear to extend service life.

DISPOSABLE

- › Standard Series
- › VentGuard™ Series (intermittent operation)
- › HydroGuard® Series (continuous operation)
- › Extreme Duty Series (harsh environment/vibration)

SERVICEABLE

- › ACM
- › TDB
- › KL (harsh environment/vibration)



Breathers for Pumps

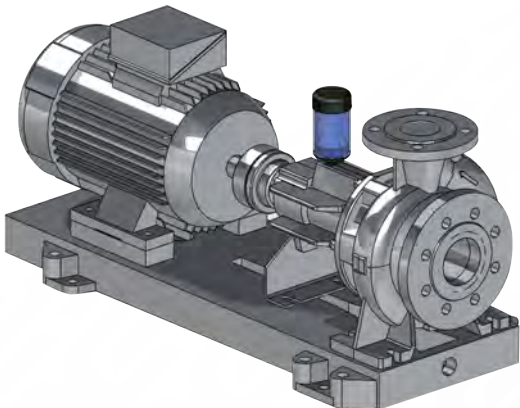
Pumps are vulnerable to contamination that accelerates seal and bearing failures. Breathers keep the reservoir air dry and particle-free, maintaining oil condition, supporting reliable, continuous operation.

DISPOSABLE

- › Standard Series
- › VentGuard™ Series (intermittent operation)
- › HydroGuard® Series (continuous operation)
- › Extreme Duty Series (harsh environment/vibration)

SERVICEABLE

- › ACM
- › TDB
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Breathers for Storage Tanks

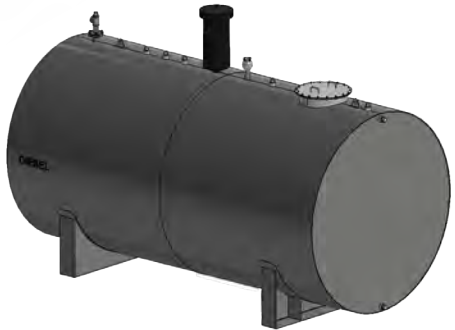
As tanks expand and contract with temperature and pressure changes, they “breathe” in humid, dirty air that promotes corrosion, sludge, and contamination. Installing desiccant breathers captures moisture and particulates at the vent, protecting the tank from contamination.

DISPOSABLE

- › Standard Series
- › VentGuard™ Series

SERVICEABLE

- › ACM
- › TDB
- › RS (very large applications)



Breathers for Hydraulics

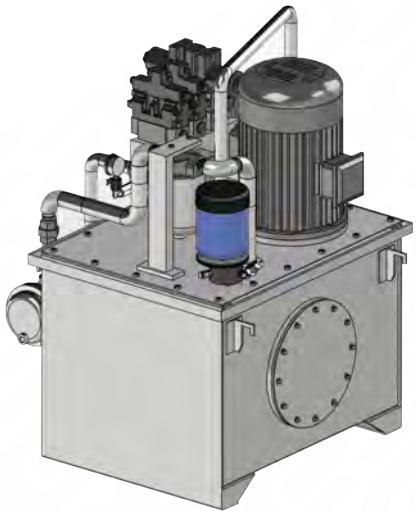
Hydraulic systems depend on clean, dry reservoir headspace to keep fluid in optimal condition and protect sensitive pumps and valves. Desiccant breathers keep the headspace air dry and particle-free, preventing corrosion and internal contamination, and helping maintain system responsiveness and uptime.

DISPOSABLE

- › Extended® Series
- › Extreme Duty Series (harsh environment/vibration)
- › Ventguard™ Series

SERVICEABLE

- › TDB
- › KL (harsh environment/vibration)
- › RS (very large applications)



Breathers for Wind Turbines

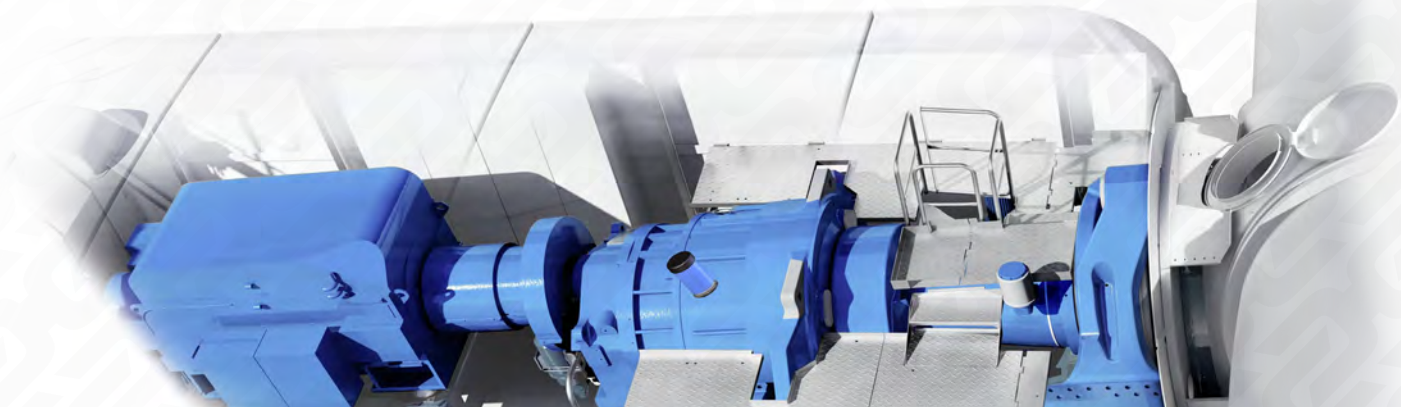
Wind turbines face variable, often aggressive environments where moisture, salt, and dust accelerate lubricant breakdown and bearing wear. Desiccant breathers protect against moisture and particulates, helping preserve lubricant condition, reduce service needs, and support long-term, reliable turbine operation.

DISPOSABLE

- › Extended® Series
- › Extreme Duty Series (harsh environment/vibration)
- › Ventguard™ Series

SERVICEABLE

- › TDB
- › KL (harsh environment/vibration)



Features That Matter:

01. WATER VAPOR ADSORBENT

Silica gel adsorbs water from incoming air, indicating condition with a color change.

02. FILTER ELEMENTS

Filter elements at the top and bottom of the breather remove airborne contamination in disposable desiccant breathers. Serviceable and non-desiccant breathers include a pleated filter element.

03. FOAM PADS

Foam filters at the top and bottom of the breather capture oil mist and disperse incoming air evenly over filtration and drying areas.

04. CHECK VALVES

Durable, high-quality umbrella check valves are located beneath the unit, designed to resist clogging and sticking. This ensures enhanced protection in wash-down environments by isolating the equipment from ambient conditions, which extends breather service life and maintains system reliability.

05. RUGGED HOUSING

Shock-absorbing, clear casing provides reliable service, easy visual maintenance, and UV resistance.



06. INTEGRATED STANDPIPE

The integrated standpipe design allows even airflow distribution throughout the unit, preventing inaccurate readings of desiccant saturation. It also provides excellent vibration resistance and dissipates impact throughout the breather, eliminating weak points.

07. OIL MIST REDUCER

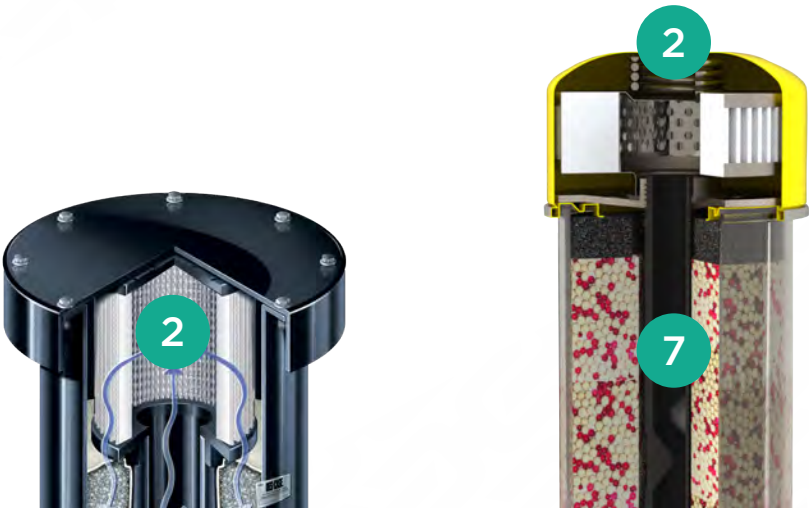
In the Extended Series, the oil mist reducer is situated inside the standpipe, made from polypropylene for maximum chemical compatibility. Mimicking nature's intricate honeycomb design, this feature allows oil mist to coalesce and drain back into the reservoir, rather than compromising the desiccant. In the TDB Series, an integrated baffle design protects the desiccant from oil mist and splashing.

08. THREADED MOUNTING

Internal or external threaded mount allows for durability and stability and easily replaces standard breather caps.

09. EXPANSION CHAMBER

The expansion chamber and internal diaphragm allows for expansion and contraction of air within the casing as a result of temperature variations during steady-state operations. Standard in HydroGuard breathers.



Our Breather Portfolio

Disposable Breathers

HYDROGUARD® SERIES

- › Built in expansion chamber and check valves create a nearly sealed system.
- › Best for continuous-duty, steady-state equipment like compressors and transformers



STANDARD SERIES

- › Reliable, cost-effective protection for general equipment
- › Simple upgrade from non-desiccant or OEM breathers



VENTGUARD™ SERIES

- › Check valve design reduces desiccant use by breathing only when needed
- › Ideal for low-flow, intermittent applications like gearboxes and pumps



EXTENDED® SERIES

- › Combines check valves with oil mist control and double desiccant capacity
- › Designed for high-flow systems needing extended service life

Pre-filled and ready to use, these breathers are designed for single use. They combine desiccant and filtration media in a compact, maintenance free unit. Once saturated or clogged, the entire breather is replaced.

EXTREME DUTY SERIES

- › Built for harsh environments with vibration resistance and broad chemical compatibility
- › Provides fine filtration down to 0.3µm

Adapter Kits & Accessories

Des-Case provides adapter kits for best-practice connection between your application and the filtration system, maximizing system integrity while minimizing contamination, equipment, and labor. Des-Case offers a broad selection of adapters and accessories designed to meet a wide range of equipment connection needs, with options in materials, thread types, and port sizes to ensure proper integration across diverse applications.

Serviceable Breathers

ACM SERIES

- › Compact design for small, dusty environments



REBUILDABLE STEEL SERIES

- › Rugged steel housing for extreme temperature and corrosive environments
- › Handles large airflow and a wide range of desiccant volumes

Designed for reusability, serviceable breathers can be disassembled, serviced, and refilled with fresh desiccant and filtration media. They are built to withstand extended use with robust materials.



TDB SERIES

- › Splash guard protects desiccant from oil contamination
- › Ideal for hydraulic systems in dusty environments



KL SERIES

- › Heavy-duty steel standpipe for vibration and dust resistance
- › Durable for harsh, heavy dust conditions

Rebuild Kits

Des-Case offers rebuild kits for its serviceable breathers, allowing users to reduce waste and lowering total cost of ownership. Instead of replacing an entire breather when the desiccant is spent, users can simply replace the key components, making it a more sustainable, cost-effective, and efficient solution.

Desiccant Breather Technology

ISOLOGIC® SENSOR TECHNOLOGY

- › Eliminates guesswork with precise breather replacement alerts using RFID and wireless technology
- › Market's first connected and most accurate breather

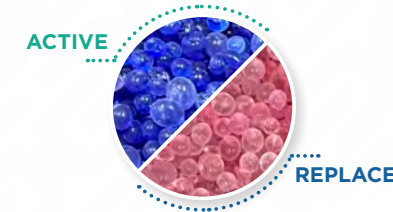
Innovative solutions designed to simplify breather use and maintenance, reducing downtime and improving equipment reliability through smarter monitoring and intuitive features.

COLORASSIST™

- › Highest capacity desiccant extends service life by 30%, lowering ownership costs
- › Color indicator on breather wall improves visibility for accurate moisture diagnosis

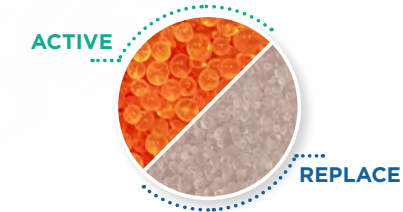
Desiccant Options

Desiccant gels are materials designed to adsorb significant amounts of moisture from their surroundings, thereby maintaining dryness and preventing damage to equipment. Des-Case offers multiple options of desiccant alongside customized layered options such as activated charcoal for oil vapor or molecular sieve for low humidity drying capability. **All breathers utilizing our desiccants are REACH compliant.**



Blue to Pink Silica Gel

- › Most reliable indication (water molecule-based)
- › Best visual color difference
- › High moisture capacity
- › 100% silica gel



Orange to White Silica Gel

- › pH based indicator
- › High moisture capacity
- › 100% silica gel



ZR Gel

- › pH-based indicator
- › Extends drying range to very low humidities
- › Lower adsorption capacity than silica gel
- › 25% silica gel and 75% molecular sieve

When selecting a breather for a given application, consider the following:

What is the size of the application?

How often does the system breathe? Intermittent or Continuous?

What is the maximum airflow required by the application?

What is the ambient temperature and humidity?

Will the breather be prone to vibration, impact or shock?

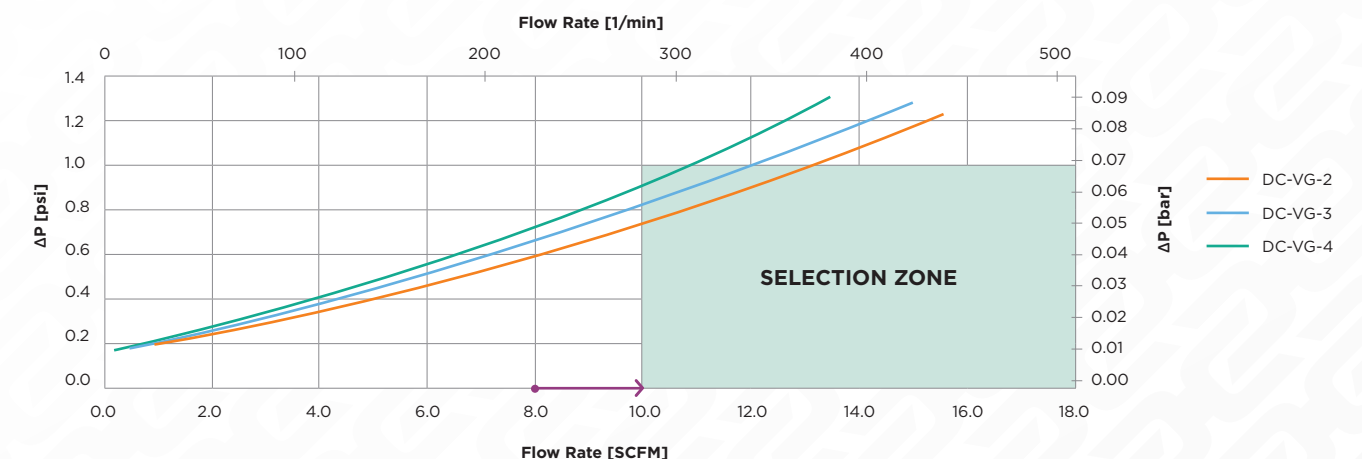
What is the connection size required?

Choosing a Breather Model

Breather Sizing Tip

When selecting a breather based on airflow, always apply a safety factor. A breather's airflow rating is based on a new unit, but as it accumulates dust and moisture, its airflow slightly decreases. To ensure consistent performance and protect your equipment, Des-Case recommends a 1.25 minimum safety factor to your required airflow.

Example: When sizing an application that has a required airflow of 8 cfm (227 l/min), look for breathers with a max airflow of at least 10cfm (283 l/min) at 1psid (0.07 bar). For the VentGuard Series, that would be the **VG-2**, **VG-3** or **VG-4**?

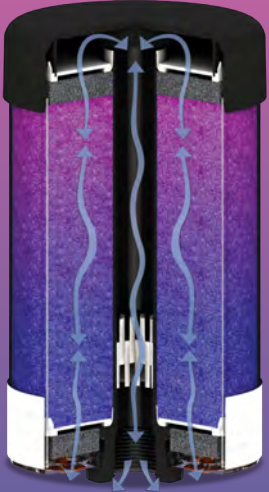


What the Breather Tells Us

Not all color changes are created equal.

When your Des-Case breather turns color, it's not just time for a change, it's a message about what's happening inside your system. It's not just a filter. It's a diagnostic tool.

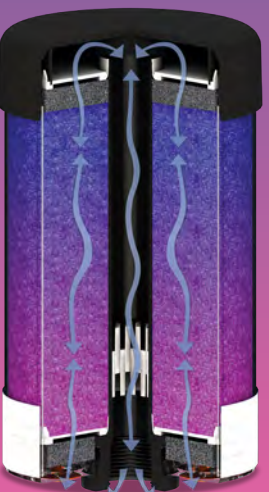
TOP DOWN



Moisture is coming from the inside

If the breather changes color from the top down, the water source is internal, often a leaking cooler, moist new oil, or seal failure.

BOTTOM UP

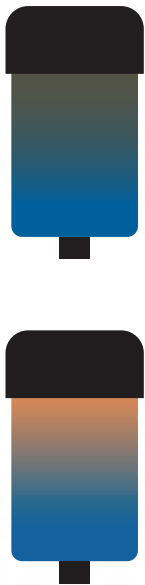


Moisture is coming from the outside

If the breather changes color from the bottom up, moisture is entering from the outside, typically from humidity, rain, washdowns, or process fluids.

Mitigating Oil Exposure to Your Desiccant Breather

Desiccant breathers normally change color as they adsorb moisture. However, oil mist or splash—common in hydraulic or gearbox applications—can discolor the desiccant. Yellow oil may turn blue gel brown/black and pink gel orange. If oil contamination occurs, replace the breather to prevent clogged filters and reduced airflow. To reduce oil carryover, use breathers with oil mist-reduction features, remote mounting, or demisting adapters. For vaporized oil, adding activated charcoal inside the breather is effective.



A green/brown color indicates that the silica gel has adsorbed oil, but is not exposed to moisture.

An orange color indicates the silica gel has adsorbed oil and moisture.

Performance You Can Trust

Des-Case invented the desiccant breather and has remained the market leader ever since, offering the most comprehensive product portfolio in the industry.

We've made significant investments to support our innovation with real data. Our in-house engineering lab is equipped to perform a wide range of tests that validate performance and ensure our products meet the demands of real-world applications.

A few of our current testing capabilities include:

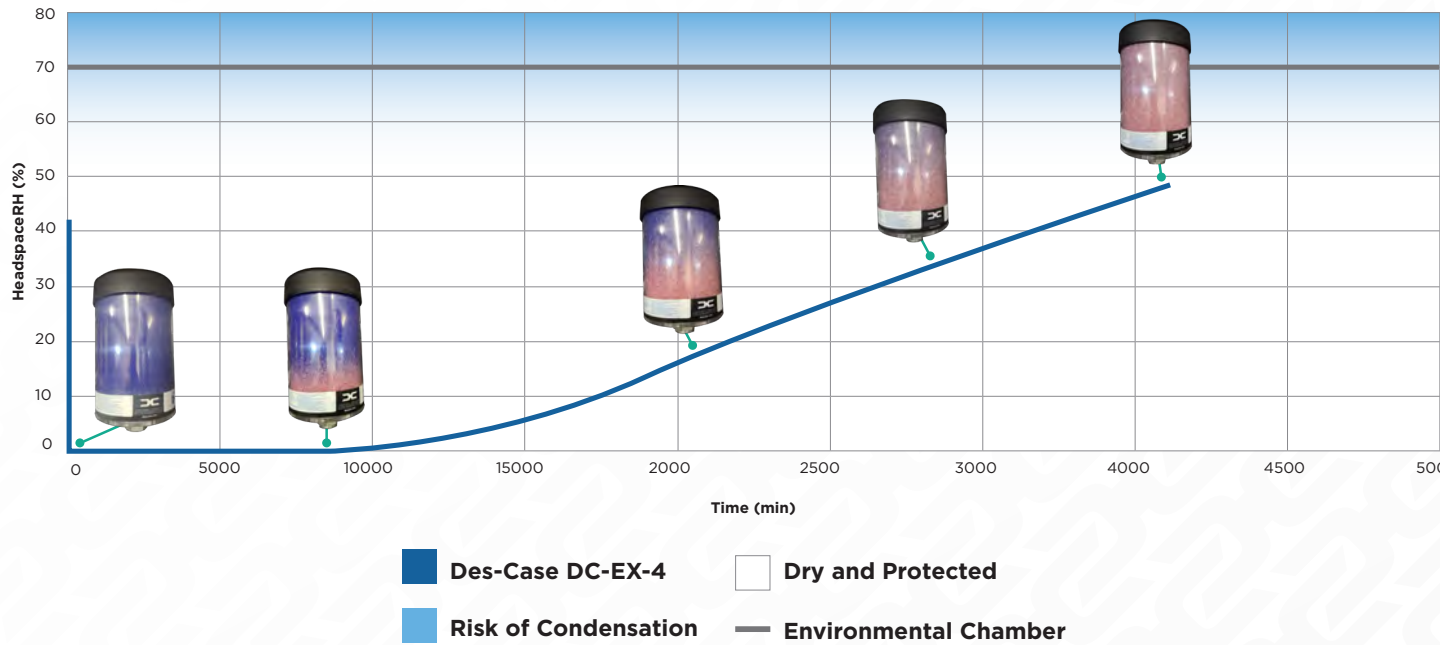
Reliability / Durability

- Drop Test
- Impact Test
- Pull Force Test
- Vibration Test
- Shock Test
- Leak Test
- UV Test
- Chemical Compatibility Test
- Shipping Test

Performance

- Airflow/Pressure Drop Test
- Cracking Pressure Test
- Filter Media Efficiency Test
- Filter Media DHC Test
- Desiccant Plate/Isotherm Test
- Breather - Desiccant Life/Effectiveness Test
- Temperature Test
- Oil Misting Impact Test

Example: Below is an example of how we use this testing equipment to create meaningful data and comparisons. We are able to graph out the life of a desiccant breather through headspace humidity and color indication, ensuring that our breathers give customers the best service life in the industry.



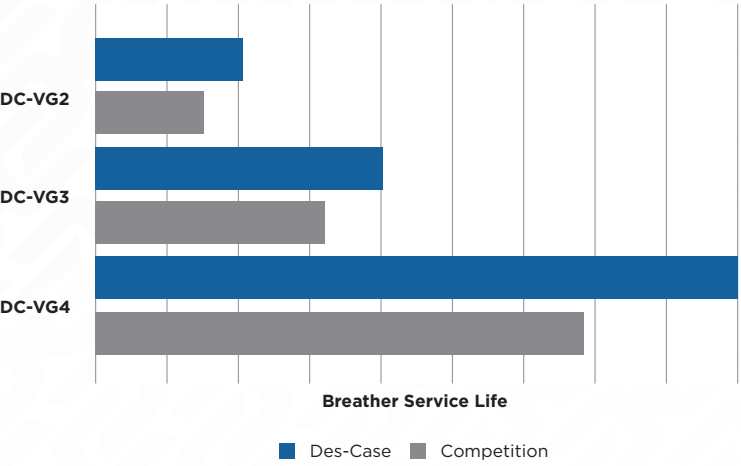
This test is conducted in an environmental chamber set at 25°C and 70% RH. The breathers are mounted to a sealed box in chamber conditions, and air is pumped in and out of it at a rate of 1.5 cfm. Service life is determined by color indicator and headspace humidity.

"Des-Case's post-sales support has been nothing short of **outstanding.**"

"Their team took the time to understand our equipment challenges after we experienced issues with a competitor's desiccant breather. They didn't just replace a product—they partnered with us to diagnose the problem and delivered a tailored solution that has performed flawlessly ever since. We've seen a noticeable improvement in system reliability and couldn't be more satisfied."

— Gavin B.
Maintenance Manager,
Major Steel Plant

Des-Case vs. The Competition

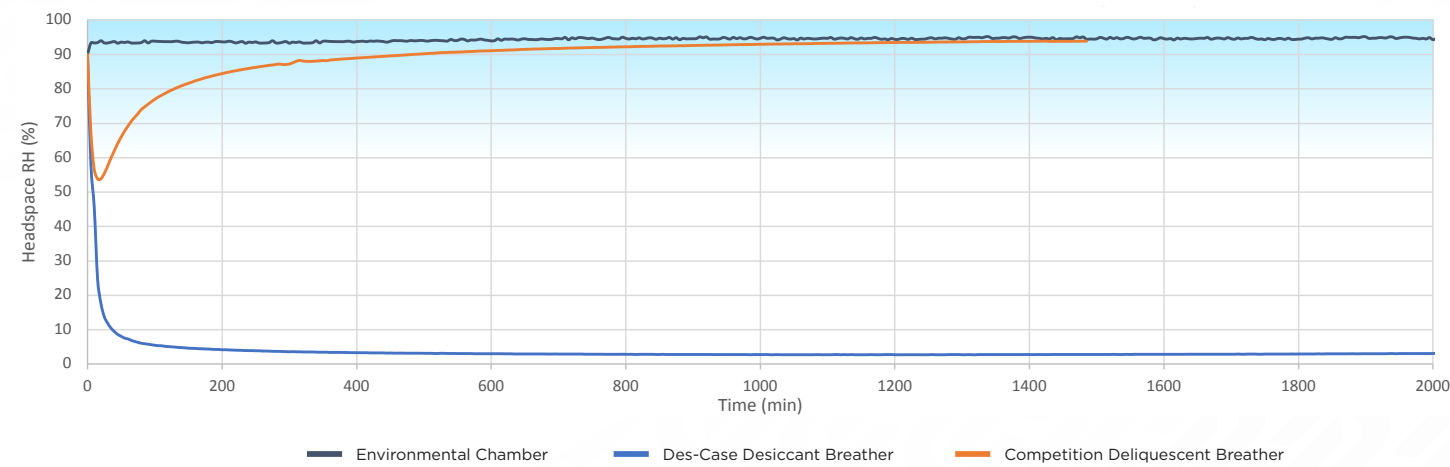


Air being pumped at an equal rate into breathers at 77°F (25°C) and 90% relative humidity. Life measurement based on color indicator and headspace humidity.

Des-Case vs. Deliquescent Breathers

Though sold as an alternative to desiccant breathers, deliquescent breathers don't keep a dry headspace and require frequent maintenance. The salt bed liquefies into brine when exposed to moisture and humidity, quickly reducing absorption, and providing no reliable capacity indicator. Des-Case Desiccant Breathers adsorb moisture into solid media, maintain low headspace RH, and include particle filtration and color-change indicators for longer, cleaner protection.

In the below graph, you can see that a deliquescent breather only slightly dries headspace before quickly returning to ambient humidity, while the Des-Case Desiccant Breather dries to less than 10% RH and maintains that headspace for an extended time.



This test is conducted in an environmental chamber set at 25°C and 95% RH. The breathers are mounted to a sealed box in chamber conditions, and air is pumped in and out of it at a rate of 1.5 cfm.



This intervention not only restored the hydraulic system's integrity but also eliminated the need for costly oil replacements—

saving the facility nearly \$30,000

and extending oil and equipment life significantly.

Success Story

A major metal casting facility in the UK faced a significant challenge when routine oil sampling from a 1585 gallon hydraulic unit revealed over 450 ppm of water contamination—posing a serious risk of equipment failure and costly downtime. The root cause was traced to humid ambient air entering through OEM vent ports that lacked moisture filtration. Rather than replace the oil, the facility implemented a proactive solution by installing two Des-Case DC-VG-4 desiccant breathers, which absorb moisture and block further ingress. Within two weeks, the breathers showed visible desiccant saturation, and follow-up oil samples confirmed water levels had dropped to under 50 ppm, classifying the oil as dry. This intervention not only restored the hydraulic system's integrity but also eliminated the need for costly oil replacements—saving the facility nearly \$30,000 and extending oil and equipment life significantly.

We're so confident you'll love the results you see when using our breathers that we'll even send you one to try **completely free!**

www.descase.com/request-breather

#1

in desiccant breather
sales worldwide

Trusted by

10,000+

facilities globally

Engineered and
assembled in the

**USA &
Netherlands**

Comprehensive
testing exceeding

**ISO/ASTM
standards**

For over 42 years, Des-Case
has led the way in industrial
equipment protection.

Our breathers are trusted across the globe—
from harsh mining sites to high-precision
manufacturing facilities—because they work.
Designed for reliability, built for durability, and
backed by rigorous testing, Des-Case breathers
are not just another option—they are the
industry's benchmark.

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