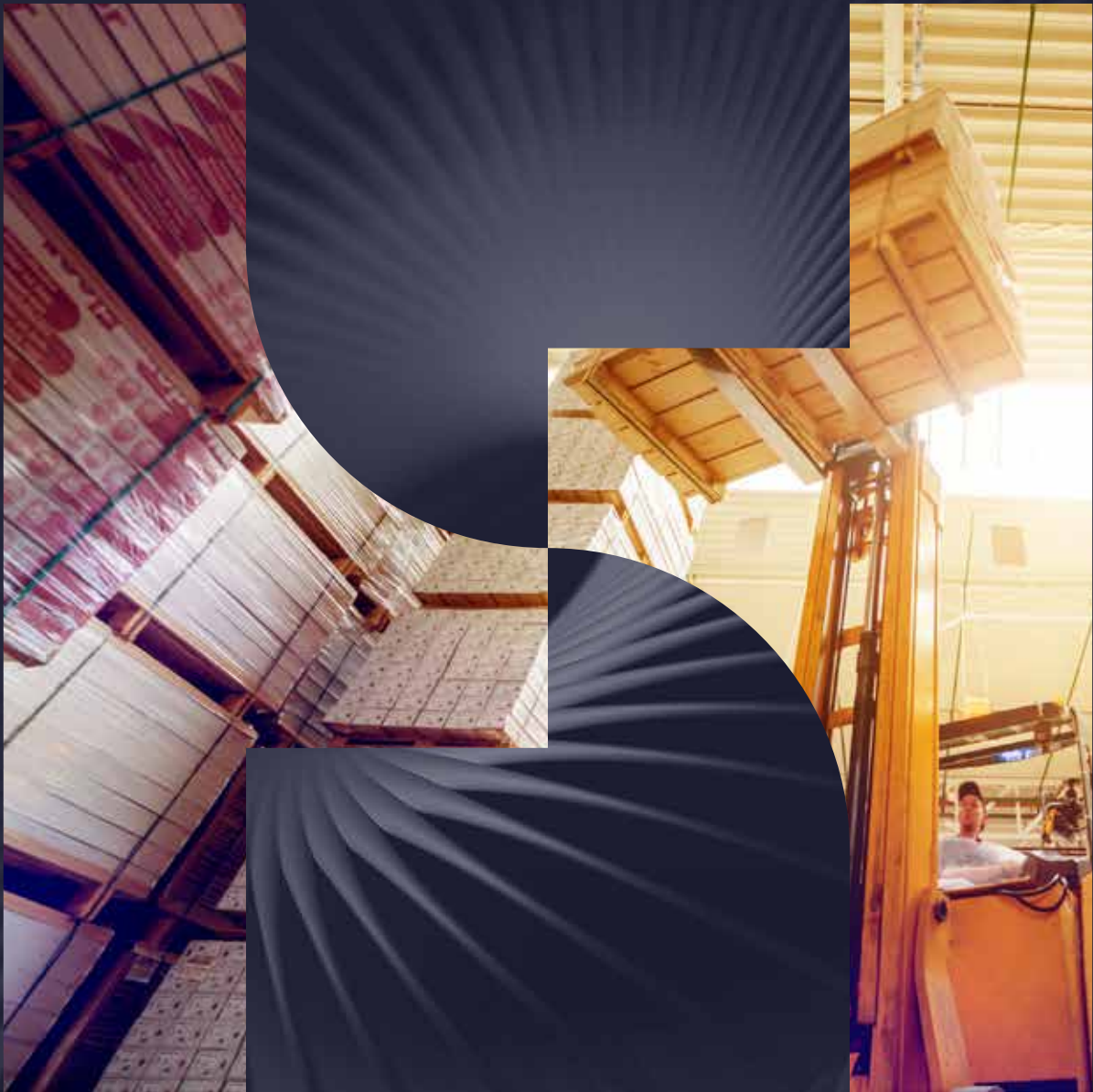


# Preservation and Storage



**Humiscope**



Not everything is resilient to environmental fluctuations. Sometimes for your company to succeed, you need to master your indoor environment.



There is a direct correlation between high relative humidity (RH) and moisture damage to stored products.

**Common humidity related problems**

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Corrosion and rust

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Mildew, mould, and fungus

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Bacterial growth

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Degradation of photographs and documents

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Storage/Cardboard boxes collapsing

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High energy consumption and cost

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**Why Does It Happen?**

Relative humidity (RH) is the percentage of water that air holds at a certain temperature. Absolute humidity is the quantity of water vapor in a sample of air. As the temperature in the air increases, so does its ability to retain moisture.

Excess moisture in the air tends to degrade paper, cardboard, and books. Likewise, excess water vapour in the air is a real threat to the preservation of documents, artefacts, and relics.

RH of over 70% provides the ideal conditions for mould to grow. If you are storing products like food, seeds or clothing, mould essentially leaves them unusable.



# Humidity can lead to moisture damage, bacterial growth and corrosion. Once this has occurred the object will unlikely ever return to its former condition

On ferrous metals, a 60% RH and over will see corrosion and rust occur. This can escalate quickly damaging the product substantially. Depending on the extent of the damage, the cost to fix it can be exorbitant.

To put this into perspective, the outdoor climate in Queensland is above 60% RH all year round and reaches 70% RH and over for six months of the year. And in most cases humidity is higher inside than outside.



## Heating and Cooling Applications for Storage

Heating to keep storage areas dry is a frequently used application. While heaters can reduce the RH of the area, it does nothing to remove the moisture from the atmosphere. The removal of moisture is the main requirement in preventing water damage, rust, mould, and corrosion.

Similarly, air conditioning systems can generally not maintain the air conditions required for the conservation of certain materials.

Using either or a combination of the above will not allow you to maintain consistent and steady conditions. It is simply not an effective solution to remove moisture from the air.



# The Best Solution

## Dehumidifiers

Depending on your specific needs a Refrigerant or Desiccant Dehumidifier is the most cost effective, energy efficient and stress-free solution. Both remove moisture from the air.

### Advantages:

Create and maintain the ideal relative humidity (RH) regardless of external temperature or season.

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Installation can be retrofitted in line with current systems, alleviating disruptions.

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Automatic on and off. Once the dehumidifier reaches its set point, the heater elements cycle off while fans continue to recycle air until dehumidification demand is needed.

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Saving energy consumption and power costs.

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**Dehumidification is the most cost effective, energy efficient and stress free solution. They draw much less electricity than heaters and air conditioners.**

### Benefits:

Elimination of mould which can appear and cause damage to certain organic materials: books, dried fauna and flora.

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Prevention of salt build-up. Which can occur on the surface of dried animals and old pieces of metal stopping bronze disease.

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Prevention of unpleasant odours from mould. If the area is occupied by humans, controlling humidity adds to the comfort of the area.

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Elimination of mould provides a safer breathing environment.

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Low relative humidity reduces the presence of insects.

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Low relative humidity also avoids damage caused by condensation in buildings.

Dehumidifiers are unaffected by ambient temperature. They create and maintain the ideal climate all year round.

# Comparing Performance

## Desiccant vs Refrigerant

The main benefit of a desiccant dehumidifier is that it performs exceptionally well when used in cooler temperatures, or when a low dew point is required. As there is no actual water produced during the process, these units can work effectively at sub-zero temperatures.

In comparison, refrigerant units are more economical at higher temperatures i.e., 30° degrees C.

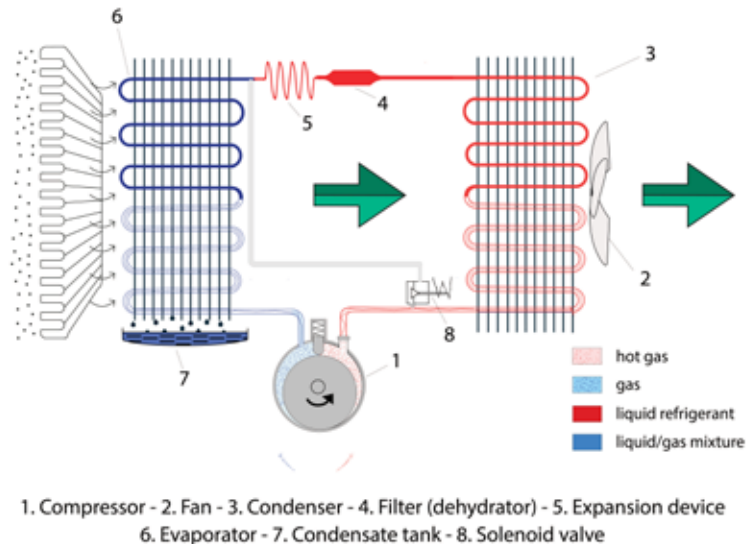
Once installed, dehumidifiers dry exterior air from mechanical ventilation systems and external infiltration.

### Desiccant Dehumidifiers

Desiccant dehumidifier performance is unaffected by external air temperature and can maintain a consistent climate in all seasons.

They reduce the moisture from the air by removing its water.

It works by passing air through a rotating desiccant wheel to extract moisture from the air. As the wheel rotates, a small portion of the rotor is used to reactivate the wheel. In this portion the desiccant is heated so the moisture is released and is then ducted out from the dehumidified space.

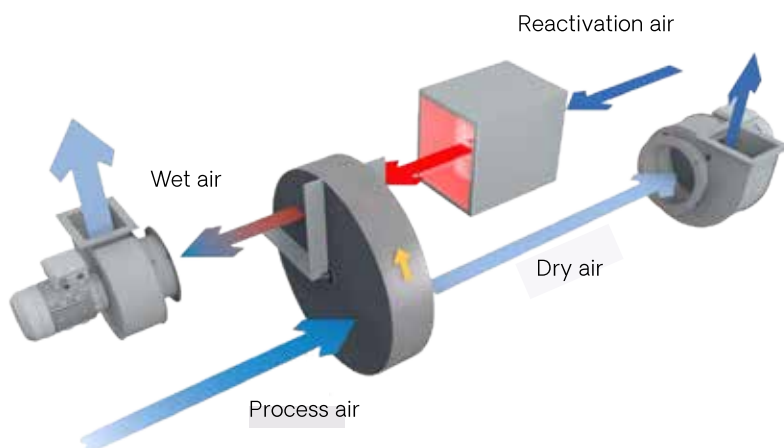


### Refrigerant Dehumidifiers

Refrigerant Dehumidifiers work in a similar way to refrigerators. It is an energy efficient application that actually targets the moisture in the atmosphere.

Utilising the efficiency of heat pump technology, refrigerant dehumidifiers actively removes the moisture from the air and condenses it internally.

It works by drawing moist air over a refrigerated coil with a fan. The cold evaporator coil of the refrigeration device condenses the water, which is removed and then the air is reheated by the condenser coil. After that, it releases warm, dry air back into the environment at a controlled, comfortable humidity level.





With over 35 years'  
experience in  
dehumidification  
technology,  
it's safe to say  
we know our stuff.

master your indoors

### What are you storing?

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#### Seed Storage

Seed storage facilities protect a very large investment. The cost of seed can be very high, and in research applications, the seeds may be irreplaceable. It can be detrimental when fungus and mould attack seeds in storage.

A desiccant dehumidifier is the best way to extend seed life and protect against fungus and mould.

Dehumidifiers deal with humidity directly by absorbing the moisture from the air as a vapour. There are no cooling coils to freeze, no condensate to drain and the desiccant that absorbs the moisture becomes even more efficient in cold weather.



#### Cardboard Packaging & Storage

Stacking boxes on top of each other, maximises storage space. However, cardboard and paper are sensitive to humidity. If cardboard absorbs moisture from the surrounding air it tends to collapse, especially under weight.

A dehumidifier will create and maintain the ideal climate, eliminating issues of storage boxes softening and collapsing.



#### Honey and Hive Storage

The ideal way to store honey to ensure smooth honey extraction. After harvesting, honey can be stored. Temperature and moisture are two of the most important factors to consider. Keep honey away from high temperatures and temperature fluctuations and from contact with moisture. Dry storage is what is required.

Depending on the temperature and storage space, either a desiccant or refrigerant dehumidifier can work in providing the optimal indoor environment for storing honey.



### What are you storing?

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#### Paper Storage

The long-term storage of paper needs very special conditions.

Paper – As a fibrous product it is naturally hygroscopic and vulnerable to temperature and humidity changes. In attempt to reach a balance with its surroundings, paper collects and releases moisture, which can affect its shape, dimensions, strength, and performance. If the paper neither absorbs nor loses moisture, then it remains in its optimal state.

**Excessive humidity is one of the environmental factors that accelerate chemical and biological reactions.**

*‘ We chose Humiscope because they had a great understanding of our requirements which led to a tailor made option suited to our process and available budget.*

*~ Dallas Garratt, GM ~ Cap-XX*



#### Photographic Film Storage

As with paper, the long-term storage of film records needs very special conditions. The old flammable nitrate film shrinks and decomposes with age.

Humidity is a key factor affecting acetate film degeneration. The optimum conditions required are 30% Relative Humidity at 20°C if the safety of the stored film is to be guaranteed. Extensive research has shown that, without doubt, humidity is the most significant factor affecting acetate film degradation.



#### Warehouse and Storage Facilities

Humidity control plays an important part in ensuring the products you store maintain the same quality as when they were first received. Two major concerns for warehouses are mould and corrosion.

The optimal humidity level will depend on what you store and the natural indoor temperature of the space. You will need either a refrigerant or desiccant dehumidifier.

# Storage Conditions

Table of recommended conditions for the storage of different materials. Source Royal: Decree Law 486/1997

Examination Rooms	Temperature 17° - 27° C Humidity 45 - 65% Natural ventilation			
Standard Documentation Deposits	Temperature 15° - 21° C Humidity 45 - 65%			
Offices and Work Areas	Temperature 17° - 27° C Humidity 45 - 65% Natural ventilation			
Deposits for Special Supports Environments	Temperature 10° - 18° C Humidity 40 - 50%			
CONDITIONS FOR OTHER SUPPORT TYPES	Ambient Temp (°C)	Oscillation	Relative Humidity (%)	Oscillation
Paper	From 16 to 20 (optimum 18)	+/-1	From 30 to 50	+/- 5
Parchment	From 2 to 18	1°h	From 50 to 60	3%h
Vinyl	Less than 21		50	
B/W Photos	From 16 to 20 (optimum 18)	+/-2	From 30 to 35	
Colour Photos	From 2 to 4		From 30 to 45	
Magnetic Support: Data, audio, video Optics	From 17 to 20 From 16 to 20		From 20 to 30 From 35 to 45	
Microfilm	From 18 to 20	+/-2	From 30 to 40	
Secure Microfilm	10		From 30 to 40	
Nitrates	10		From 30 to 40	

*"We are very happy with the outcome. Drying times were reduced by 50%. Essentially we created our own climate"*

~ Peter Schulte, Managing Director, Schultes Meat



# Who we are

We are a group of engineers, technicians and draftsmen dedicated to our clients and committed to providing energy efficient indoor environment systems; from simple applications to specially engineered solutions.

## Our services



### Design and Installation

We are experts in designing, building and installing state-of-the-art climate control systems from simple applications to specially engineered solutions.



### Rentals

Whether the application is a temporary project or being able to test the technology before investing, renting is a risk-free option.



### Service & Maintenance

With over 35 years' experience we are able to service any brand dehumidifier regardless of make or model. We can identify where improvements can be made.

We hold ourselves to the highest professional standard.

## 01

### Dedicated

We are dedicated to our clients and providing the best solution possible.

## 02

### Supportive

We exist to support our clients, their business and each other

## 03

### Integrity

We build and maintain trust with our clients by being honest, consistent and not compromising on our values

“ From the first phone call I made to you and to the follow-on communication, was perfect. Thank you. ~ Neil Rattray, Supervisor, BSA

Call us – obligation  
free – and we can  
talk through your  
specific concerns  
and suggest some  
solutions that would  
work best for you!

# Humiscope

Master your indoors

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