Pakistan Brand

Sabro

DESICCANT dehumidifier Catalogue

www.sabrotechnology.com

Inspired By The Stimulus to Grow through Knowledge, interlaced with the zeal and sheer commitment, of an enthusiastic team and **Gripped by the Obsession of Three Brothers** of turning the dream- into reality, Sabro has evolved, grown and expanded since its inception in 1969.

It was the fruit of commitment, hope and hard work that enabled us to be the pioneers of HVAC manufacturing in Pakistan, exporting to over 22 countries, encapsulating 3 continents. We now thrive as an agile manufacturer for a complete range of HVAC manfacture including Chillers(Hermetic-Scroll/S.H. Reciprocating/Screw), Self-Contained units, Air-Side Equipment, Mini Split Units & a menagerie of customized manufacture tailored to suit every HVAC requirement of the customer.

For over five decades, Sabro has been a trusted brand name that has exceeded expectations nationwide & internationally, catering to the needs of both domestic as well international customers.

Sabro

DHF Models series

2023 2024

Dessik

Desiccant Dehumidifier for Low-moisture Environments

Food Industry

Pharmaceutical Industry

Sabro

DHF Models series

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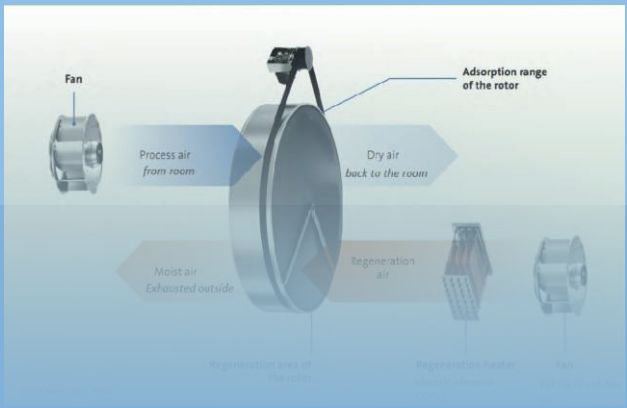

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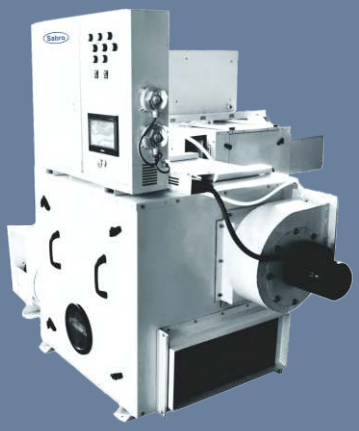


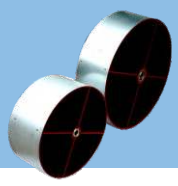
SABRO DELIVERS

- A solid foundation for ***DE-HUMIDIFICATION***
  With state-of-the-art technology.
- Diverse ***APPLICATIONS***
  UP Grade your manufacturing process.
- UnLimited ***CUSTOMIZATION***
  At competitive cost.

Sabro

Introduction

The **DHF desiccant dehumidifier** is designed to efficiently dehumidify air in low moisture applications.
DHF Series dehumidifier is equipped **with internally sealed desiccant rotor unit**, the rotor contains isolated sections that provide precise balance for process (moisture adsorption) air & reactivation air flow. The casing is made with heavy gauge of galvanized steel sheets. All sheet metal parts are finished with electrostatic backed powder paint resulting excellent corrosion resistence which ensures long life of the unit. The unit is factory assembled internally wired, operationally tested at factory before dispatch. The unit is ready for field operation after necessary duct - work and electrical field wiring. The **DHF dehumidifier** can be installed at any suitable location inside or outside the building such as, at floor, with ceiling & concealed installation.



End-to-End Solutions in Air Treatment

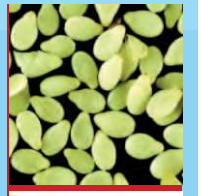
Pakistan Brand

Sabro

The Premier & Largest Manufacturer of Desiccant Based De-humidification Systems in PAKISTAN.

Temperature sensitive items like spices, seeds etc. can be dried quickly in any weather using low temperature dry air.

Sabro Desiccant Dehumidifiers, based on the state-of-the-art Desiccant De-humidification drying technology, dry the products to the desired level without affecting the product quality.



Wide Range of Applications

Processin-Production

- Candy & Confectioneries
- Dairy Production
- Food Processing
- Investment Casting
- Laboratories
- Pharmaceuticals
- Safety Glass
- Spray Drying

Storage

- Film & Magnetic Media
- Military Hrdware
- Metal Components
- Electrode
- Seeds
- Sugar
- Tea / Coffee
- Turbine

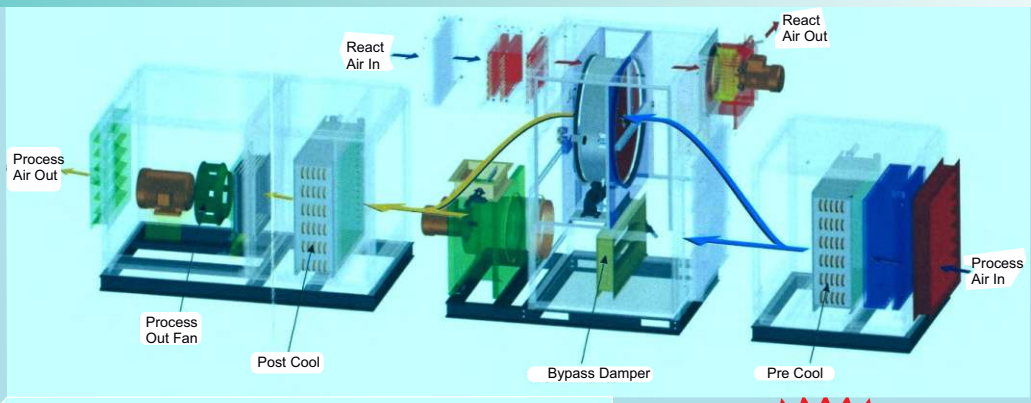
Packaging

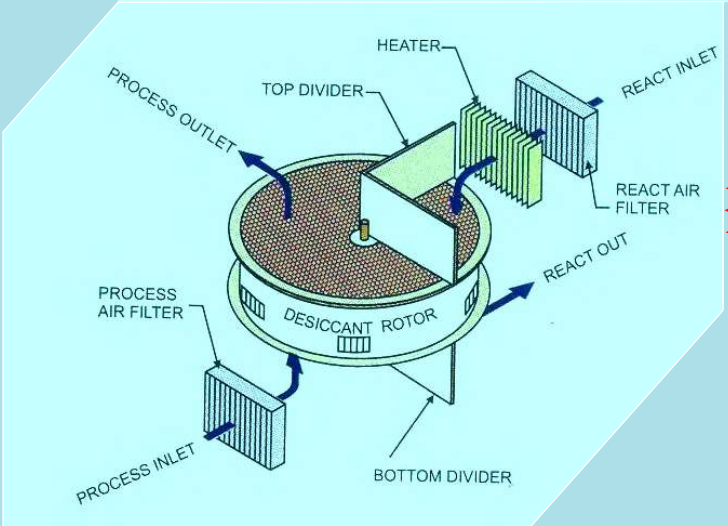
- Cereal
- Chemical-Fertilizers
- Chips-Snack Food
- Candy & Confectionery
- Dairy Products
- Leather
- Spices
- Tea / Coffee

Unique Applications

- Falcon Breeding Areas
- Special Egg Incubation enclosures

Diverse Applications UP Grade your manufacturing process
UnLimited Customization at Limited Cost





Incorporating high performance, ECODRY™ metal silicate fluted desiccant synthesized rotor's

High efficiency and reliability

- A totally self-contained unit.
- CNC fabricated unit(s) with powder coated finish.
- Rotor media has high performance metal silicates synthesized in situ.
- Rotor incorporates robust internal structure with stainless steel perimeter flange for industrial quality and durability.
- Rotor perimeter flange extends media and seal life.
- Edge hard face coating on rotor ensures long life and good sealing for media and seals.
- Rotor is non-flammable with organics < 2%.
- Water cooled inter-cooler.

Pharmaceutical and Chemical Industry

Many materials used to produce pharmaceuticals have a physical affinity for moisture. This can cause lumping or caking of powdered material. Further, some powders that are bound into a capsule or formed into a tablet under high pressures will adhere only when in a dry state, Humidity can cause a tablet to crumble. To assure consistently high quality drugs, the processing area and machinery must be surrounded by air whose dryness is accurately known and controlled. The same sort of lumping and caking of powdered substances is also a major problem in industrial chemical production. Some chemicals decompose in the presence of water vapor. In other situations, water vapor can actually cause a chemical reaction that changes the character of the product.

Food Industry

When exposed to high relative humidity, such familiar foods as potato chips, dry breakfast cereals, and soda crackers exhibit an affinity for water. These and similar foodstuffs are manufactured using high temperature processes, so we expect that excess water has been driven out and the foods are dry. However, if these foodstuffs are allowed to remain exposed in a humid environment, even for a short time, they will absorb water from the surrounding air and characteristically become soggy and rubbery.

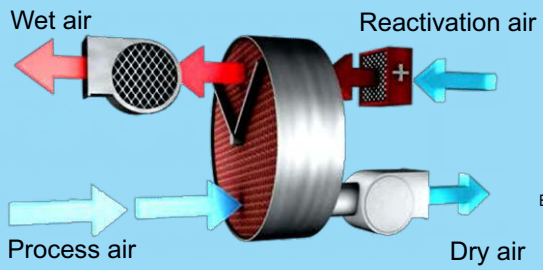
Libraries and Museums

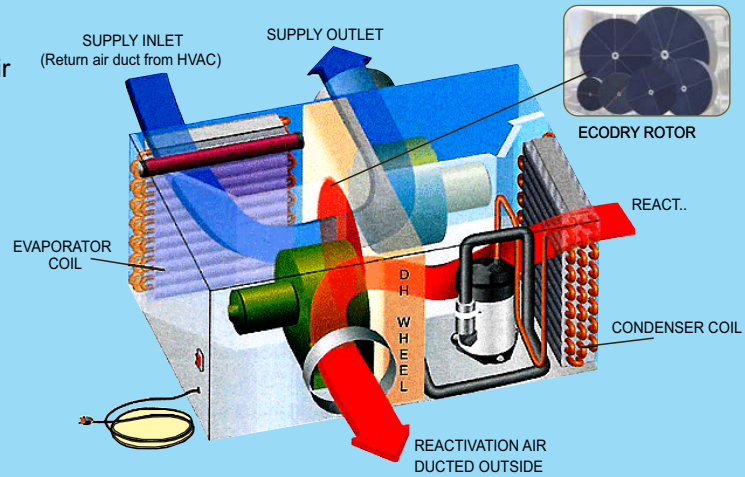
Museums and libraries should maintain humidity levels of 40-45% RH. Museums, archives and libraries require special environmental conditions, especially in tropical, hot and humid climates. For antique preservation, archives and libraries should maintain humidity levels of 40 - 45% RH. This level of humidity prevents drying out of the material while, at the same time, minimizing degradation of the material by microbes, mold and mildew.

Critical Material Storage Rooms

Moisture is the natural enemy of preservation. It results in the decay of paper, parchments and photographic film, causing organic colors and dyes to fade. If proper measures are not taken in time, artifacts that are generally made of organic material i.e wood, leather, paper, natural fiber, bone, ivory, etc. could be lost forever.

In de-humidifier, desiccant wheels are used.
-Its operation involves two air streams, one large air volume (process air) which is to be dehumidified and other one small air volume (reactivation air) used for reactivation of desiccant rotor.
-The process air passes through slowly rotating rotor, the water vapors are adsorbed by the rotor material, causing reduction in humidity of the air.
-This dry air is then introduced into the space where low humidity is required. To remove the moisture adsorbed by the desiccant rotor, reactivation air which flows counter direction to the process air, is heated up by passing through heaters before entering into rotor.
-As this hot air is passed through the smaller segment of rotor, the rotor material releases its moisture into air. the moisture leaves the de-humidifier as wet air which can further be used in meeting humidity requirement of another area. Positive sealing between chambers prevents mixing of process and reactivation air.





Relative Humidity

Anyone who has suffered the discomforts of hot,humid summer weather understands that it is not just the heat, but also the humidity that makes the air feel so miserable. That “muggy” feeling comes from the relative humidity or saturation level– that is, the amount of water contained by a pound of air at a specific temperature and atmospheric pressure.
When air has 50% relative humidity (RH), we say it is 50% saturated (the terms are numerically so close that we use them interchangeably). The air contains about half the water it could hold at the same temperature and pressure. Obviously, as air approaches 100% saturation, it can take on less and less water until at 100% RH, the air cannot hold more water. Relative humidity is determined by comparing the “wet-bulb” and “dry-bulb” readings of a humidity measuring device- a hygrometer (see the table below). Once known, these values identify a point on the psychometric chart (see Appendix I, page 35) where air vapor mixture properties can be read directly.

Dessicant Rotor

Desiccant Rotor is made of a special absorbing substance known as 'Desiccant' that induces or sustains a state of dryness in its local vicinity in a moderately well-sealed container. In the dehumidifying process the process air is pushed through the sorption rotor. The humidity in the air is transferred to the rotor material, and the dry air exits the dehumidifier. As the rotor rotates the moist rotor material will enter the regeneration section where hot air will dry the rotor. The now humid air is sucked out to the outside.

Thermostat

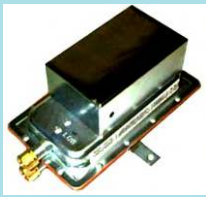
Our Desiccant Dehumidifier has also safety features like thermostat which maintains the temperature of the system does not let the system exceeds the limit. If it crosses the high temperature limit, the system gets turned off.

Humidistat for Humidity Control

To meet the desired ratio of humidity, Dessik is equipped with a Humidistat. A Humidistat measures and controls the relative humidity which helps the user to achieve the required humidity percentage according to his need making our unit user friendly.

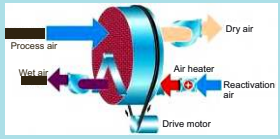
Differential air pressure switch

The Differential Pressure Switch is a general purpose proving switch designed for HVAC and energy management applications. It may be used to sense positive, negative or differential air pressure.



Rotor Drive

Rotor drive keeps the desiccant rolor rotates with a constant and smooth speed leaving no vibration. It maintains the performance of rotor by helping it rotating and performing efficiently. This rotor drive is driven by a high quality motor which plays the pivot role in the whole function.

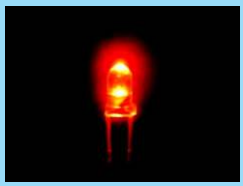


Easy installation, maintenance and Low operating Cost

Dessik can be installed at any suitable location inside or outside the building (floor, ceiling or concealed). Due to simplicity of its design and function, it makes maintenance and service very easy. We've designed it for low operation costs.

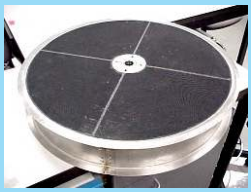
Operation and fault indication

Dessik has electric panel having special electric circuit designed to give an instant indication if the unit has stopped operating for any reason or any of its components needs maintenance. The relevant LED will flash timely in the event of an error, in order to save time.



Eco Dry Inside and Washable dessicant rotor

Synthesized metal silicate desiccant of an inert inorganic fiber substance is used in Dessik which is fully water washable, absorbent and non-toxic in nature. 80% of the media weight is active desiccant which ensures high performance & minimal heat carry-over.



Complete Self Contained Unit

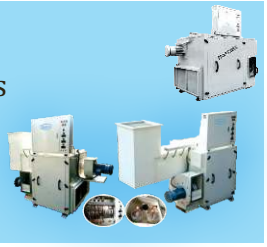
Desiccant Dehumidifier is a complete self contained unit which means it is easy to install, move and operate. Keeping in view the suitability of location and easy maintenance of the unit, it can easily be moved and placed wherever enough place is available.

Suitable for continuous operation

As our Desiccant Dehumidifier is a quality product, it is suitable for continuous operation giving maximum output as required

Models Range

These compact units are available in a range of models, with a variety of options and controls that let you build the system that's right for your building, your industry and your budget. Keeping in view the requirements we design and provide you that exactly suits your environment.



Sabro Desiccant Dehumidifier is a complete Dehumidification Package system. An indoor pool requires year-round humidity level between 40 and 60% for comfort, energy consumption, and building protection. Fluctuations in RH outside the 40 to 60% range can increase levels of bacteria, viruses, fungi and other factors that reduce air quality. For swimmers, 50-60% RH is most comfortable. High RH levels are destructive to building components. Molds, and mildew can attack wall, floor and ceiling coverings; and condensation can degrade many building materials. In worst case, the roof could collapse due to corrosion from condensing on the structure.

The Indoor Design Conditions for Various Types of Pools

Type of Pool	Air Temp. ˚C	Water Temp. ˚C	RH %
Recreational	24 to 29	24 to 29	50 to 60
Therapeutic	27 to 29	29 to 35	50 to 60
Competition	26 to 29	24 to 28	50 to 60
Diving	27 to 29	27 to 29	50 to 60
Whirlpool/ Spa	27 to 29	36 to 40	50 to 60

Generally, indoor pool air is maintained approx. 1 to 2˚C above the pool water temperature (but not above the comfort threshold of 30˚C) to reduce the evaporation rate and avoid chill effects on swimmers. For comfort of the swimmers and avoiding damage to the interiors by molds, fungus, mildew and excessive condensation, humidity is maintained at 50-55% RH levels.

Sabro Desiccant Dehumidifiers offer simple and most economical solutions to humidity control. The Sabro dehumidifiers remove excessive moisture from the air inside the pool area by continuously circulating dry air and thus controlling RH between 50 to 60%.
This prevents discomfort of swimmers and hampers the growth of microorganism in the pool interior.

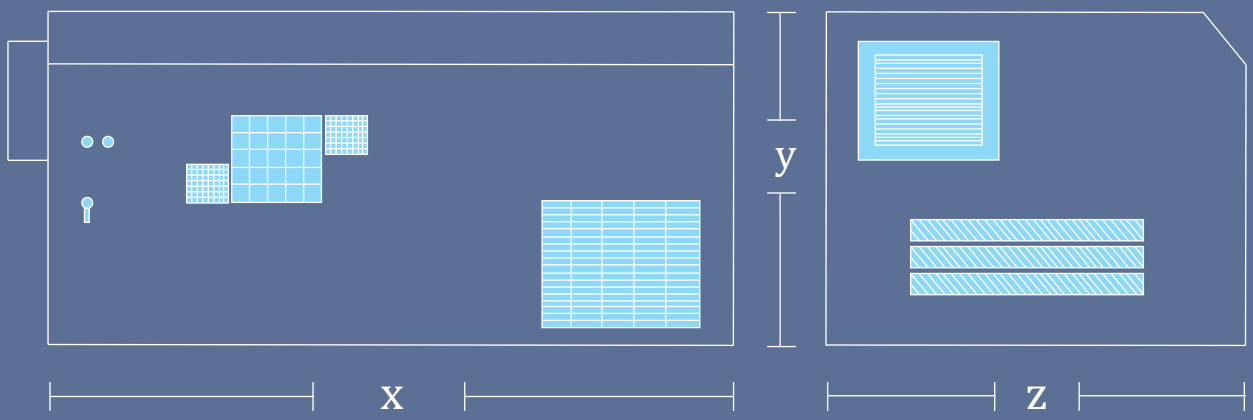
Technical Specifications

Description		DHF 100	DHF200	DHF 400	DHF 600	DHF 900	DHF 1200
Process air							
Air flow rate	Lit/sec	47.2	94.4	172	283	423	565
(Standard)	M3/h	170	310	620	1020	1525	2033
	CFM	100	182	365	600	900	1200
Fan external	Pa	150	150	200	200	200	200
static pr. (ESP)	In H2O	0.6	0.6	0.8	0.8	0.8	0.8
Process fan motor power KW		0.11	0.11	0.37	0.55	1.1	1.5
Motor winding insulation class		F	F	F	F	F	F
Reactivation air							
Air flow rate	Lit/sec	16	28	59	95	142	193
(Standard)	M3/h	56	102	212	340	510	695
	CFM	33	60	125	200	300	409
Fan external	Pa	100	100	150	150	150	150
Static pr. (ESP)	In H2O	0.4	0.4	0.6	0.6	0.6	0.6
Reactivation fan motor power KW		0.09	0.09	0.11	0.37	0.55	0.75
Motor winding insulation class		F	F	F	F	F	F
Reactivation heater							
Heater power	KW	1.9	3.5	7.5	12	16	22
Air temperature rise °F (°C)		182(83)	184 (84)	189 (87)	189 (87)	189 (87)	184 (84)
Electrical data							
Total power	KW	2.11	3.71	8.0	12.94	17.7	24.2
Voltage supply		220-1-50HZ			380-415-3- 50-HZ		
Air filter							
Filter class		Eu3 grade leak tight filter					
Dimensions (MM)	Height	500	500	500	550	580	600
	Width	914	965	1016	1040	1143	1219
	Depth	610	635	685	725	790	865
Weight (APPROX.)	KG	47	58	80	110	165	182

ON DEMAND, Larger Capacities(up to 12000CFM of process air) Models are Available

Dimensional Data

Dimensions(mm)



Dimensions(mm)

Dimensions (mm)	DHF 100	DHF 200	DHF 400	DHF 600	DHF 900	DHF 1200
Height (y)	500	500	500	550	580	600
Width (x)	914	965	1016	1040	1143	1219
Depth (z)	610	635	685	725	790	865

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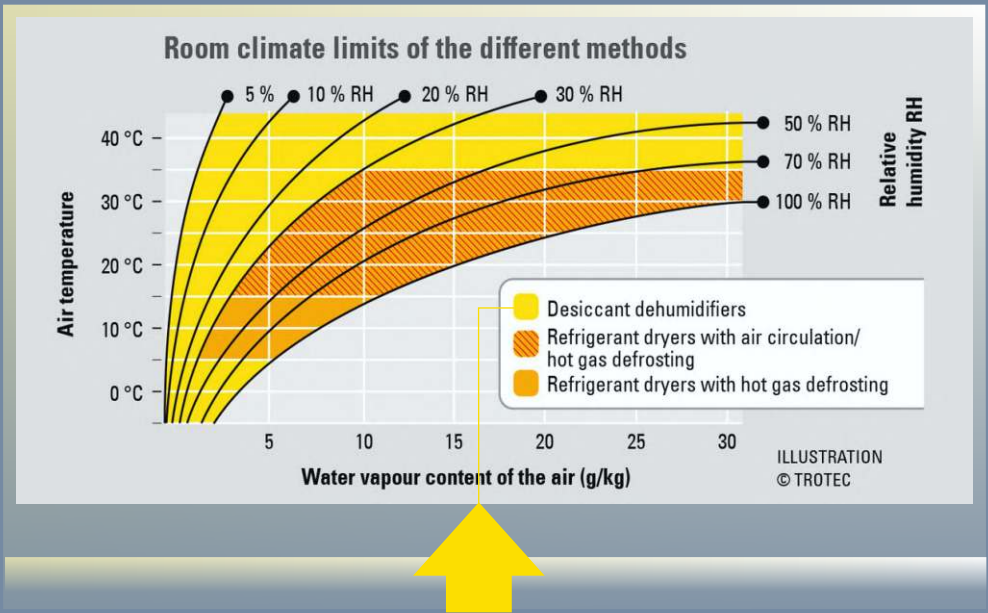
Performance Curves & RH Comfort Level

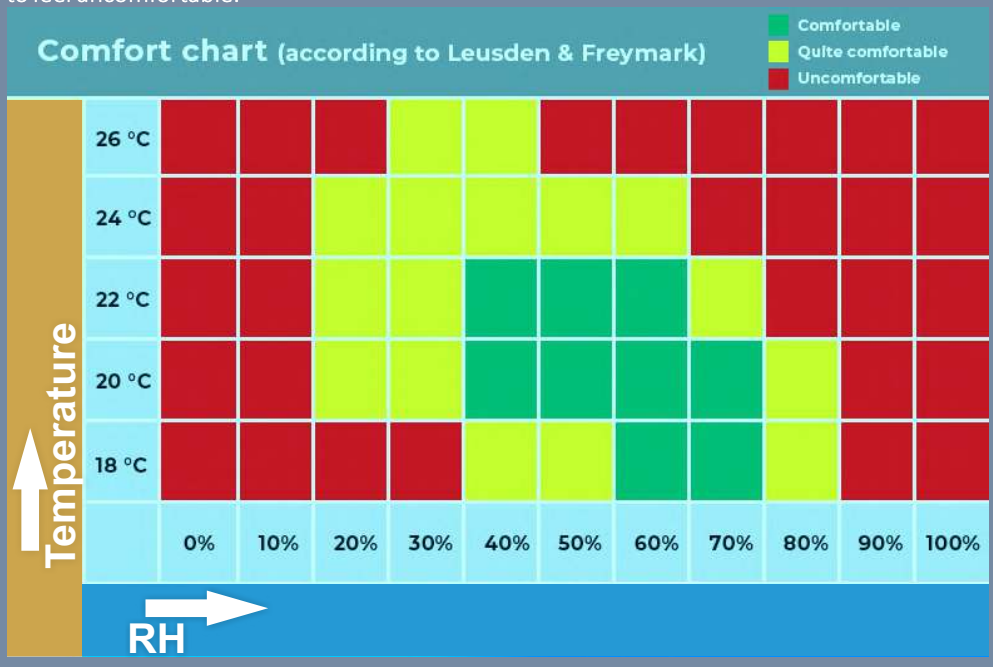
Performance Curves



Desiccant Dehumidifier performance curves - Yellow shaded Area

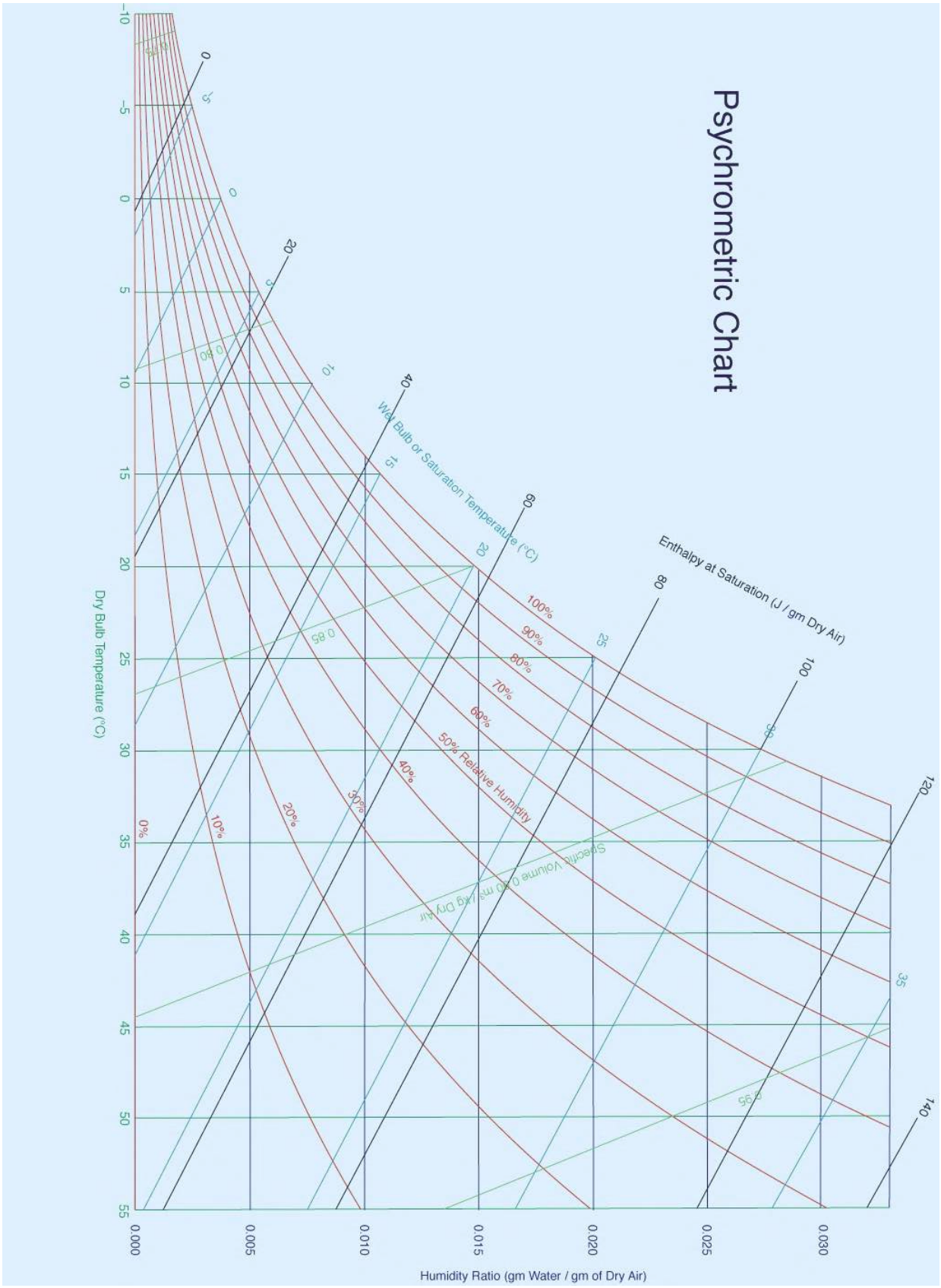
RH Comfort Level Illustration

The illustration below shows the optimum conditions for human comfort are between 20-22°C with an RH (relative humidity) level of 40-60%. Anything beyond these parameters starts to feel uncomfortable.



Notes:

Psychrometric Chart



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Made In PAKISTAN
Since 1969

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