



**Total Environmental
Conditioning Solutions™**

® and™ Trademarks of Bry-Air (Asia) Pvt.Ltd.

Example of Base Dehumidifier Specification for Bry-Air Package Unit

Specification includes all options. Specifier to delete those not required.

PART 1 GENERAL

1.01 SUBMITTALS

A. Submittal Package

- 1) Manufacturer shall provide a maximum of 3 copies or 1 digital copy (e-mail) of clearly legible project specific documents containing only information specific to the application for approval by the Owners Representative prior to final design and manufacture. As a minimum, the submittal package shall include the following: (Note: Generic/standard drawings and or forms are not acceptable.):
- 2) Project specific drawings defined as documents containing only information specific to this application.
- 3) Dimensioned views of the equipment with clearance and service access areas required for all system components clearly defined, including:
 - a. Plan view
 - b. Side elevation
 - c. System weight as proposed including all unit-mounted and remote-mounted components required to meet these specifications.
- 4) Electrical schematic wiring drawing including:
 - a. Utility requirements
 - b. Identification of items requiring field connection
- 5) Other drawings as required:
 - a. Gas piping schematic
 - b. Chilled water piping schematic
 - c. Refrigeration piping schematic with component list
 - d. Steam piping schematic
 - e. System flow diagram

B. Operating & Maintenance manual

- 1) Manufacturer shall provide a maximum of 3 copies and 1 CD of the operating and maintenance manual for the proposed equipment. As a minimum, the manual shall contain:
 - a. Installation guidelines
 - b. Start-up checklist
 - c. Troubleshooting guide
 - d. Sequence of operations
 - e. Required maintenance activities and their recommended frequency
 - f. A list of recommended spare parts
 - g. 24-hour, 7-day service assistance telephone number
 - h. Material Safety Data Sheet for the desiccant wheel
 - i. Manufacturer's data for major components

1.03 SAFETY AGENCY LISTED & CERTIFICATION

- A. Main control panel enclosure to be manufactured and labeled as UL 508A guidelines.
- B. All coils to be manufactured in accordance with ARI standards

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site.
- B. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids. Inspect for damage.
- C. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.05 STANDARD WARRANTY

- A. The manufacturer shall provide a warranty during the first year of operation (twelve months from date of shipment). The warranty shall consist of repair or replacement of defective parts only, labor not included. The warranty does not apply to maintenance items such as but not limited to filters, belts, and seals.
- B. If any defects appear under this warranty, the manufacturer will be notified, and the manufacturer shall provide appropriate replacement parts only at no cost to the owner.
- C. The manufacturer shall warrant its desiccant wheel to maintain the specified adsorption capacity for a period of two years commencing from the date of shipment.

1.06 EQUIPMENT SUPPORT

- A. The manufacturer shall provide support for the equipment for a minimum period of 15 years following shipment of the equipment. This support shall, as a minimum, consist of:
 - 1) The manufacturer shall provide spare parts required for the proposed equipment for the full term of the 15-year support period, regardless of whether the equipment remains in current production.
 - 2) The manufacturer shall ensure that qualified factory service technicians are available to assist the owner 24 hours a day, 7 days a week.

PART 2: PRODUCTS

2.01 MANUFACTURER

- A. The manufacturer of the dehumidifier shall have a minimum of 10 years of documented field operating experience and a minimum of one thousand units in the field of the specific equipment proposed.
- B. The manufacturer shall design, produce and service the proposed equipment in a consistent and high-quality manner.
- C. Basis of design and source for dehumidifier system: Bry-Air, Inc. Sunbury, Ohio.

2.08 EQUIPMENT

- A. Provide complete factory assembled and tested unit(s) of sizes, arrangements, capacities, and performance as per schedules and specifications.

B. Unit Construction

The unit casing shall be constructed of 1/8" aluminum line welded and sealed as a single unified structure. Structures depending on screws for casing construction are not acceptable.

1) All air handling structures shall be insulated as required to minimize exterior sweating and heat transfer. Interior surfaces shall be covered with a rigid foil faced thermal insulation held in place by an adhesive applied to the entire securing area. Insulating material shall have a minimum thermal rating of at least R-6.5 per inch thickness determined by ASTM C518 and a water absorption rating of not more than 0.3% by ASTM Test Method C 209, and shall have an operating range of -100°F to 250°F. Manufacturer shall offer as an option aluminum internal liner minimum of 0.060" thickness or double wall construction; to prevent exposed insulation in the process air stream.

Specifying engineer to define insulation covering requirement

2) All major components such as coils, filters, blowers, etc., provided on the system shall be easily accessible without disassembling plenums or distributing ductwork. Access panels shall be provided, constructed and insulated with the same material as the dehumidification system. All access panels shall be equipped with complete, compressible, resilient, foamed elastomer gaskets with a fastening system that assures the air and vapor tight integrity of the dehumidification system. Access panels for filter replacement shall hinged and have quick release fasteners that eliminate the need to remove hardware. All other access panels shall have secure fasteners. All access panels shall be labeled.

3) Connections for ductwork shall be provided with slip joint or flanged connections.

4) All exterior surfaces shall be degreased and cleaned prior to finishing, primed with an industrial primer, followed by a continuous coat of high quality U.V. resistant exterior paint. All hard to reach pieces shall be painted prior to assembly to assure proper coating.

5) The entire system shall be provided on a welded structural base frame.

6) The dehumidifier shall be capable of continuous operation indoor or outdoor. All access panels shall be vapor tight, as shall all joints between casing and electrical conduits and between the system casing and any components mounted in separate enclosures.

Specifying engineer to define installation location: indoor or outdoor

7) The system shall include access panels for inspection and for any maintenance required by the operating and maintenance manual. These panels shall be fastened by secure rust resistant hardware. The system shall be airtight to the extent of not leaking more than 1% of the rated flow when the casing is under 5" WC of negative pressure. Panels without gaskets shall not be acceptable.

2.09 DESICCANT DEHUMIDIFIER

A. The desiccant wheel media shall be a monolithic, extended-surface contact medium, fabricated entirely of inert, inorganic binders and glass fibers formed into narrow passages in the direction of airflow. The wheel shall be bacteriostatic and non-toxic. It shall also meet the following requirements:

1) The glass fibers which form the support matrix shall be made from uniform continuous strands larger than five microns in diameter which are non-respirable and shall not be considered a possible health risk by the International Agency for Research on Cancer (IARC)

2) The wheel shall be tested according to ASTM E84-90 (Standard Test Method for Surface Burning of Building Materials) and shall achieve the following results:
a. Flame spread index = 0
b. Smoke developed index = 10

- 3) The desiccant shall be evenly impregnated throughout the structure for predictable, consistent performance and for maximum wheel life.
- 4) The desiccant impregnated into the contact medium shall be silica gel. The desiccant wheel shall be a fabricated extended surface contact media with a multitude of small passages parallel to the airflow. The rotary structure shall be a monolithic composite consisting of inert silicates with microscopic pores designed to remove water in a vapor phase. The desiccant shall be hydro thermally-stabilized silica gel.
 - a. Desiccant wheel shall be 100 to 400 mm deep in direction of air flow as per schedule.

B. Desiccant Wheel Support and Drive Assembly

The wheel shall be a single piece for fast removal and simple handling. The desiccant wheel shall be supported by two 200,000 hour rated, sealed, non-maintenance type bearings, preloaded and pre-lubricated for high temperature environments. Rotor bearings shall be press fit to the rotor hub and the rotor shall be mounted with a removable central shaft for easy service. The rotor shaft shall be securely mounted to rigid horizontal supports inside the dehumidifier cabinet to ensure precise location of the rotor relative to the seals. Roller supports shall not be acceptable.

C. Air Seals

The process and reactivation air streams shall be separated by air seals and internal partitions so that the humid reactivation air does not mix with the dry process air. The proposed equipment shall meet the following minimum requirements:

- 1) The dehumidifier shall have full-face seals on both the process air entering and the process air leaving sides of the wheel. These shall seal the entire perimeter of both air streams as they enter and leave the wheel. Partial seals shall not be acceptable. The seals shall be silicone or viton, with a low-friction, abrasive-resistant design to extend seal life and reduce the force needed to turn the desiccant wheel. Seals shall be easily inspected and removable without the use of any tools.

D. Airflow Gauges

To set and verify the specified air flow rates through the unit, the casing shall be equipped with differential pressure gauges which measure and display the pressure drop across the desiccant wheel. The dial of the gauges shall be scaled to display the correct air volume in the middle of the dial.

E. Service Access Panels

Provide labeled and gasketed access panels at all areas requiring routine service and at internal control component locations.

PART 3 EXECUTION

3.01 Follow equipment manufacturers written instructions for handling and installation of equipment.

3.02 All equipment shall comply with applicable local and national codes.

3.03 Included in the scope of this specification.

A. Start-up and operator training to be performed by the dehumidifier manufacturer.

3.04 Not included in the scope of this specification are:

A. Furnishing of equipment and labor necessary to unload the equipment at the job site.

B. Furnishing of labor for installation.