

SECTION 44 44 13.15 02

RANDOM PACKING MEDIA AND APPURTENANCES
04/08

PART 1 GENERAL

1.1 WORK INCLUDED

This Section covers the work necessary to furnish the internal process components, as specified herein, for one FRP decarbonator vessel. The components shall consist of a packing section, packing supports, bed limiters, influent distribution header, parting boxes and weir distribution troughs, demister section, demister supports, effluent and overflow piping, and other miscellaneous appurtenances as required to install the components in the FRP vessel.

1.1.1 Other Requirements

- a. See Section 44 44 13.15, DECARBONATOR TOWER SYSTEM - GENERAL, for additional requirements.
- b. See Section 44 44 13.15 01, FIBERGLASS REINFORCED PLASTIC (FRP) DECARBONATOR.

1.1.2 Coordination

The manufacturer of the components specified herein shall coordinate the design, fabrication, and erection with other suppliers of the overall system components as required to provide a complete operational system.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B16.1 (2006) Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication Drawings

Complete manufacturer's drawings showing the dimensions of the packing supports, demister support, packing material, influent distribution header and weir trough distributor system and other

accessories that are being provided for the specific installation.

SD-03 Product Data

packing media

Complete narrative including a description of the process, functional description and physical characteristics of the system components, and process performance parameters. Include a discussion of maintenance requirements and system limitations.

SD-05 Design Data

process calculations

Complete process calculations showing calculated values for NTU (number of transfer units), and HTU (height of transfer units). Calculations shall include assumed values for mass transfer coefficients, hydraulic loading, air-to-water ratio, ambient conditions, safety factors used, and other assumptions.

SD-07 Certificates

certificate

Written performance guarantee for service conditions and removal rates specified herein.

Written manufacturer's warranty on materials and workmanship.

SD-08 Manufacturer's Instructions

instructions

Instructions for shipment, storage, handling, and installation of the system components.

1.4 SERVICE CONDITIONS

See Section 44 44 13.15, DECARBONATOR TOWER SYSTEM - GENERAL, for service conditions.

1.5 PERFORMANCE REQUIREMENTS

See Section 44 44 13.15, DECARBONATOR TOWER SYSTEM - GENERAL, for requirements.

1.5.1 WARRANTY

In addition to the warranty provisions stated in the General Conditions, the manufacturer of the item(s) specified herein shall provide a written warranty against defects in materials and workmanship for a period of 5 years.

PART 2 PRODUCTS

2.1 GENERAL

The use of a manufacturer's name and product identification number is for

the purpose of establishing the standard of quality and general configuration desired. Products of other manufacturers will be considered in accordance with the General Conditions.

2.2 MANUFACTURERS

Packing and Tower Internals (Packing support plate, liquid distributor, bed limiter, grating support for mist eliminator, and mist eliminator):

1. Jaeger Products, Inc.
2. Koch Engineering Company, Inc.
3. Norton Chemical Process Products.
4. Glitsch, Inc.
5. Or approved equal.

2.3 RANDOM PACKING MEDIA

The [packing media](#) shall have the following characteristics:

1. Material: Polypropylene.
2. Packing Type: Pall-Type Rings or Equal.
3. Packing Size: [3.5 inch](#).
4. Void Space, Minimum: [95 percent](#).
5. Dry Bulk Weight, Maximum: [5 lb/cu.ft](#).
6. Static Pressure Loss @ Maximum Operating Conditions: Consistent with Blower Specification in Section [44 44 13.15 03](#), AIR SUPPLY BLOWERS.
7. Packing Depth: [22.5 feet](#) (minimum). Manufacturer shall provide [process calculations](#) to confirm the packing depth.

2.4 INFLUENT DISTRIBUTION HEADER

Provide a flanged influent distribution header complete with stainless steel bolts, nuts, and header end clamp. The distribution system shall be sized for a maximum pressure drop of [2 feet](#) at the maximum rated flow. The system shall be designed to provide even distribution of the flow to the top of the packing bed. The distribution header shall be FRP, and the branch headers shall be FRP or PP. The main header flange shall utilize 125-pound bolt pattern as per [ANSI B16.1](#). Bolt pattern shall straddle the vertical centerline of the inlet pipe.

[Fabrication Drawings](#) shall be coordinated with decarbonator vessel manufacturer.

2.5 PACKING SUPPORT GRIDS

Provide polypropylene or FRP support grids as required to support the media based upon the maximum operating weight of packing material (with fouling and liquid hold up) as determined by packing manufacturer or [15 pounds/](#)

cubic foot of packing, whichever is greater. Coordinate the design of the media support grid with the manufacturer of the FRP vessel who shall include the support systems for the grids in the vessel design. Grid openings shall be sized to prevent passage of packing media, and shall have a minimum open area of 80 percent of the tower cross-section.

2.6 DEMISTER

The towers shall be equipped with mist eliminators constructed of polypropylene, PVC, or fiberglass mesh. The mist eliminator shall be capable of removing 90 percent of all entrained water droplets greater than 10 microns in diameter and 99 percent of all droplets greater than 40 microns in diameter. The mist eliminator shall have a minimum of 4 inches and a maximum depth of 12 inches and shall be provided with an FRP or polypropylene support grid. Mist eliminator and support grid assembly shall pass through a 24-inch diameter manhole for servicing. Coordinate the design of the demister support grid with the manufacturer of the FRP vessel which shall include a support system for the grid in the vessel design.

2.7 BED LIMITER

The towers shall be equipped with a bed limiter to prevent migration of packing into the liquid distributor. The bed limiter shall be constructed of polypropylene or PVC.

2.8 DESIGN OF TOWER INTERNALS

The tower internals shall be designed to allow removal and replacement through the manways provided.

PART 3 EXECUTION

3.1 GENERAL

a. The manufacturing, shipment, storage, handling, and installation shall be in strict accordance with the applicable standards and the manufacturer's printed instructions.

b. All assembled parts and components ready for shipment shall be securely bundled, coiled, or crated and adequately protected from damage and corrosion during shipment and storage.

3.2 PACKAGING

All fabricated pieces shall be marked corresponding to the fabrication drawings prior to shipment. The fabricator shall be responsible for proper packaging, loading, and protection of all materials to prevent damage during transit.

3.3 INSTALLATION

Media and tower internals, except for the packing support, shall be field installed by the installing contractor according to manufacturer's instructions. Field installation is mandatory to ensure complete and random filling of the packed section and to avoid breakage of the media. The Contractor shall provide all necessary hardware and instructions for installation, and all items shall be properly tagged.

3.4 MANUFACTURERS' CERTIFICATE

Provide manufacturer's **certificate**(s) in accordance with Section 01 78 00.00 40, CLOSEOUT SUBMITTALS.

3.5 OPERATION AND MAINTENANCE MANUALS

Provide operation and maintenance manuals as specified in Section 01 78 23, OPERATION AND MAINTENANCE DATA.

3.6 MANUFACTURERS' REPRESENTATIVE

The decarbonator manufacturer shall provide the services of a qualified field representative to be present at the jobsite during the installation of the components to provide technical assistance and direction.

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