Closed loop glycol and amine systems pick up solids, oils, dissolved hydrocarbons and well inhibitors from the natural gas stream, fouling the fluids and causing a loss in operating efficiency. Sludge buildup, foaming and contaminate discoloration can account for the loss of glycol to the gas stream or total shut down of the dehydration or sweetening process. A cartridge type fiber filter will remove the solids contaminant, but a charcoal bed is required to remove oils, dissolved hydrocarbons, well inhibitors and degradation compounds from the glycol or amine systems.

The Nowata Filtration activated carbon adsorber, canister type filter is designed to purify glycol and amine streams which minimizes fouling and keeps operating efficiency high. Canister type carbon cartridges are the most economical type of activated carbon adsorbers for flow rates up to 3 gallons per minute. The canister makes charcoal replacement much easier and cleaner, plus contaminated spent charcoal canisters are much easier to dispose of than loose charcoal.

Nowata Filtration offers one and two canister housings. Each canister contains 34 pounds of granulated charcoal and is rated for 1.5 gallons per minute of flow. In a typical 400 gallon glycol dehydration system a single canister will usually last between 8 to 10 weeks. The glycol should be checked regularly for foaming or discoloration which indicates it is time to change the canister. Unlike fibrous filter cartridges for the removal of solids, a charcoal canister will not necessarily experience an increase in pressure differential across the unit.
Standard Construction for Glycol / Amine Filtration

“C” Series

The "C" Series filters are designed for low pressure charcoal treatment of triethylene glycol and amine, natural gas dehydrators and sweeteners. These units are constructed from welded carbon steel. Internal canister support, screw and seal washer are plated carbon steel. The flat top closure uses four 3/4” diameter bolts attached to the vessel wall which swing away from the top during canister removal. The closure seal is a standard size, commercially available, Buna O-Ring. 1” internal pipe thread inlet and outlet connections are standard. Internal pipe thread vessel drain and vent are also provided.

“C” Series Optional Construction

Materials of Construction

The "C" Series housing is constructed of all carbon steel with plated carbon steel internals.

Seal Material

The Standard Buna O-Ring seal will operate to 250°F. Viton and Ethylene Propylene seals are available for special service. For best charcoal operation efficiency, the operating temperature should be held below 120°F.

Connections

Inlet and outlet connections are available in smaller than standard sizes to fit customer requirements. 150# RF ANSI flanges are available by special order. Internal pipe thread drain and vent connections are standard. Flanged or external pipe thread, and non-standard sizes are available by special order. Special purpose connections such as relief valve fittings and pressure taps are available to meet a customer's specific requirements. Nonstandard connection location, unusual mounting heights or dimensions are also available.

ASME Code Construction

The "C" Series filters are designed in accordance with the Pressure Vessel Code of the American Society of Mechanical Engineers. When required, each unit can be stamped with the "UM" or "U" symbol, denoting fabrication and testing performed by specific procedures. "U" symbol vessels are registered with the National Board of Boiler and Pressure Vessel Inspectors.

Dimensional Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. Working Pressure PSI</th>
<th>Shipping Weight</th>
<th>No. of Canisters</th>
<th>Glycol/Amine Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1N15N1C</td>
<td>150</td>
<td>255</td>
<td>1</td>
<td>1.5 GPM / 90 GPH</td>
</tr>
<tr>
<td>C2N15N1C</td>
<td>150</td>
<td>325</td>
<td>2</td>
<td>3 GPM / 180 GPH</td>
</tr>
</tbody>
</table>

Charcoal Canister Design

The all steel charcoal canister is 11” O.D. x 22” long. The granulated charcoal is held in place by a fabric outer sleeve just inside the perforated steel shell. The charcoal will not migrate downstream due to a cloth inner seal and perforated rigid metal core. Each cartridge has gaskets attached to each end and lifting handles on the top for ease of replacement. The canister contains 34 pounds of granulated charcoal. Charcoal adsorbers operate most efficiently when the operating temperature is less than 120°F. Operation at a temperature greater than 220°F is not recommended. The Nowata Model 11NC22 replacement canisters are shipped in individual cardboard boxes which can be used for handling and disposal of spent canisters. The Nowata 11NC22 is a replacement for industry standard activated charcoal elements that are 11” O.D. x 22” long.