Medical Gas Cylinder Storage Requirements

Over the years much has been written regarding the storage of medical gas cylinders in patient care areas. The National Fire Protection Association (NFPA) provides codes that define the use and storage of these medical gas cylinders to ensure that life safety is maintained across the organization.

The 1999 edition of NFPA 99 references the storage of these nonflammable medical gas cylinders in section 4-3.5.2.2(b).

1. Storage should be planned so that cylinders can be used in the order in which they are received from the supplier.
2. If stored within the same enclosure, empty cylinders shall be segregated from full cylinders. Empty cylinders shall be marked to avoid confusion and delay if a cylinder is needed hurriedly.
3. Cylinders stored in the open shall be protected against the extremes of weather and from the ground beneath to prevent rusting. During winter, cylinders stored in the open shall be protected against accumulations of ice and snow. In summer, cylinders stored in the open shall be screened against continuous exposure to direct rays of the sun in those localities where extreme temperatures prevail.

The Joint Commission has stressed since 2005 that full and empty cylinders must be segregated and labeled to avoid confusion and inadvertent error under standard EC.02.06.01, EP 1. In 2014, the Joint Commission issued a clarification regarding segregation and what constitutes a full or empty cylinder.

That clarification is as follows:

<table>
<thead>
<tr>
<th>Segregated=physically separated</th>
<th>Unopened cylinder=full</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Separate racks</td>
<td>Opened cylinder=empty</td>
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<tr>
<td>• Physical barriers</td>
<td>OK to use a partially filled cylinder (don’t store with unopened cylinders)</td>
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<tr>
<td>• Color code rack</td>
<td></td>
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<tr>
<td>• Other effective means of separation</td>
<td></td>
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</tbody>
</table>

When a cylinder is considered empty by the Joint Commission?

Once a cylinder valve has been opened, it is considered empty even if gas remains in the cylinder. An organization can still use the remaining gas in the opened cylinder, but for storage purposes any opened cylinders must be physically separated from unopened (full) cylinders. An organization is permitted to have a full, partial and empty rack, as long as the full cylinders are segregated from all other cylinders.
In the February 2014 issue of the Joint Commission Perspectives, these five steps were provided to ensure medical gas safety:

1. Make sure all medical gas cylinders are always secured.
2. Make sure full and partial or empty cylinders are physically separated to prevent staff confusion when retrieving a cylinder during an emergency.
3. Consider an open cylinder as empty and keep these cylinders physically separated from full cylinders.
4. Monitor and manage the amount of nonflammable medical gases stored in patient care areas.
5. Make sure all repairs are completed by qualified staff.