NSF/ANSI 24-2006

Plumbing system components for recreational vehicles

21 Flexible vent systems, pipe, and fittings

21.1 Scope

Flexible vent systems covered by this Section are for use as dry vents in recreational vehicles.

21.2 Performance

Pipe and fittings shall not increase in weight more than 0.50 percent when tested according to 21.6.

21.3 Dimensions

The flexible vent system shall have an unobstructed minimum nominal diameter of 1.25 in (31.8 mm) and a minimum wall thickness of 0.125 in (3.1 mm) or 0.0469 in (1.191 mm), and an interior with no recesses or crevices above the fixture flood level.

21.4 Flexibility

The flexible vent system shall withstand 300 flexures of 180° on a 6-in (152.4 mm) radius at both -20 °F (-28.9 °C) and 120 °F (48.9 °C) without permanent kinking, cracking, reduction of airways, or leakage. Leakage shall be determined by testing at a 5 psi (34.5 kPa) hydrostatic head for 24 hours. The testing shall be conducted with pipe and fittings attached according to the manufacturer's recommendations.

21.5 Fittings

Fittings may be an integral part of the flexible vent piping. They shall be clamped or permanently attached by solvent or other bonding to form a liquid or gas-tight seal. The portion of the fitting used to attach the flexible vent line to the drainage system shall be a standard configuration and compatible with the fitting. Any external clamp shall be corrosion-resistant.

21.6 Chemical resistance

Pipe and fittings shall not increase in weight more than 0.5 percent when tested according to ASTM D543 using the chemicals in table 1.
Table 1 – Chemical resistance testing

<table>
<thead>
<tr>
<th>Chemicals</th>
<th>Concentration in water solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>sodium carbonate</td>
<td>0.1 N</td>
</tr>
<tr>
<td>sodium sulfate</td>
<td>0.1 N</td>
</tr>
<tr>
<td>sodium chloride</td>
<td>5%</td>
</tr>
<tr>
<td>sulfuric acid</td>
<td>0.1 N</td>
</tr>
<tr>
<td>acetic acid</td>
<td>5%</td>
</tr>
<tr>
<td>hydrochloric acid</td>
<td>0.2 N</td>
</tr>
<tr>
<td>sodium hydroxide</td>
<td>0.2 N</td>
</tr>
<tr>
<td>Ivory soap®</td>
<td>5%</td>
</tr>
<tr>
<td>household detergent</td>
<td>5%</td>
</tr>
</tbody>
</table>

— Use pipe test specimens at least 6.0 in (152.4 mm) long. Fittings specimens shall be complete.
— Test three specimens with each reagent.
— Weigh specimen to the nearest 0.1 g and completely immerse in chemicals for 72 h.
— Remove from chemicals, wash specimens with tap water, dry with room temperature forced air wipe with clean dry cloth both inside and out to ensure no chemicals remain in tubing corrugations, continue to air dry 120 to 135 min, and reweigh.
— Calculate the weight increase to the nearest 0.01%.

21.7 Water absorption

Water absorption shall be determined as follows:
— Weigh 3 cleanly cut pipe specimens at least 6 in (152 mm) long, or 3 complete fittings, to the nearest 0.1 g.
— Immerse in water at 73 ± 3 °F (23 ± 2 °C) for 48 h.
— Remove specimens, dry with room temperature forced air wipe dry with clean dry cloth both inside and out to ensure no water remains in tubing corrugations and reweigh immediately.

Calculate the average percent weight gain to the nearest 0.01% and use to determine compliance with 21.2.

●
●
●