Nails

Cooperative Extension South Dakota State University

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Nails
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On any construction job, the cost of nails used is so small, compared with their importance, that they should always be of the best quality. Sizes (length) are indicated by "penny," abbreviated as "d" (as in 8d). Length of all nails will be the same in a particular penny size, regardless of head or shank configuration. Only the diameter changes. Use nonstaining siding or casing nails to prevent siding from discoloring due to nail weathering or rusting.

**NAIL SIZE AND NUMBER PER POUND**

<table>
<thead>
<tr>
<th>Size</th>
<th>Length (in.)</th>
<th>Diameter (in.)</th>
<th>No. per Pound</th>
<th>Diameter (in.)</th>
<th>No. per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>4d</td>
<td>1-1/2</td>
<td>.102</td>
<td>316</td>
<td>.083</td>
<td>473</td>
</tr>
<tr>
<td>5d</td>
<td>1-3/4</td>
<td>.102</td>
<td>271</td>
<td>.083</td>
<td>406</td>
</tr>
<tr>
<td>6d</td>
<td>2</td>
<td>.115</td>
<td>181</td>
<td>.102</td>
<td>236</td>
</tr>
<tr>
<td>7d</td>
<td>2-1/4</td>
<td>.115</td>
<td>161</td>
<td>.102</td>
<td>210</td>
</tr>
<tr>
<td>8d</td>
<td>2-1/2</td>
<td>.131</td>
<td>106</td>
<td>.115</td>
<td>145</td>
</tr>
<tr>
<td>10d</td>
<td>3</td>
<td>.148</td>
<td>69</td>
<td>.127</td>
<td>94</td>
</tr>
<tr>
<td>12d</td>
<td>3-1/4</td>
<td>.148</td>
<td>63</td>
<td>.127</td>
<td>88</td>
</tr>
<tr>
<td>16d</td>
<td>3-1/2</td>
<td>.165</td>
<td>49</td>
<td>.134</td>
<td>71</td>
</tr>
<tr>
<td>20d</td>
<td>4</td>
<td>.203</td>
<td>31</td>
<td>.148</td>
<td>52</td>
</tr>
<tr>
<td>30d</td>
<td>4-1/2</td>
<td>.220</td>
<td>24</td>
<td>.148</td>
<td>46</td>
</tr>
<tr>
<td>40d</td>
<td>5</td>
<td>.238</td>
<td>18</td>
<td>.165</td>
<td>35</td>
</tr>
</tbody>
</table>

**COMMON AND BOX NAILS**
Common and box nails are for normal building construction, particularly framing. Smooth box nails of the same penny size will have a smaller diameter than common nails. Since this smaller diameter has less tendency to split the lumber, they are recommended for most uses. You also get more box nails per pound, as shown in the table.

**Scaffold Nails**
Scaffold or "double-headed" nails can save you time and trouble in many operations where the fastener must later be removed – as in scaffolding, bracing, concrete forms, and temporary fastening during framing layout.

**Casing and Finish Nails**
These are for use when you do not want large nailheads visible, such as in interior and exterior trim nailing, interior paneling installation, and exterior siding application. To further reduce visibility, both may be driven deeper into the material with a nail-set and the holes filled with wood filler of matching color.

**Nonstaining Nails**
For long service and freedom from staining, use nonstaining nails. They are necessary where exterior exposure is combined with need for good appearance; for example, in siding, fascias, soffits, exterior trim, and wood decks. Galvanizing is the most common nail coating, and offers good protection against staining. Nails also are made of metals or alloys not subject to corrosion, including aluminum, bronze, and stainless steel.

**Deformed-Shank Nails**
A variety of deformed-shank patterns such as screw shank, ring shank, and barbed are available. These all have greater holding power than smooth nails. Often, you may use a smaller size deformed-shank nail and still do the job satisfactorily. Ring shank nails should always be used for installation of plywood underlayment or subfloor/underlayment. Screw-shank nails should be used for wood strip flooring application.

**Nails Commonly Used for Residential Construction**

- **Common and Box Nails:**
  - Common
  - Box

  - 16d for general framing.
  - 8d and 10d for toenailing.
  - 6d and 8d for subfloor, wall sheathing and roof sheathing. Size depends on thickness of plywood sheathing.

- **Scaffold Nails:**
  - 8d and 10d most common, for scaffolds, bracing, and any temporary fastening that must be later removed.

- **Siding Nails:**
  - Nonstaining nails of size specified for siding thickness (usually 6d and 8d)

- **Casing and Finish Nails:**
  - Casing
  - Finish

  - 4d, 6d, and 8d most common, for exterior and interior trim and paneling where large nailheads should not show. Use casing nails for exterior siding.

- **Roofing Nails:**
  - A special type, commonly available. Size depends on thickness of roofing material.

4d to 6d size depends on drywall thickness; for ½ in. drywall, use 4d drywall nails.

For underlayment and finish floor:

- **Screw shank**
- **Ring shank**

Special nail types are available. For 3/8 in. UNDERLAYMENT over plywood subfloor, use 3d ring shanks; for 5/8" UNDERLAYMENT over plywood subfloor, use 4d ring shanks. For hardwood strip flooring, use either 8d hardwood nails or 2½ in. hardened, spiral-threaded nails.

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