

Types of Nails

Nails and spikes are manufactured in many lengths, diameters, styles, materials, finishes and coatings, each designed for a specific purpose and application, as shown in Figure 1.1, below.

Figure 1.1: Nail Types

232 Wood Reference Handbook

Figure 3.2
Nail Types

Type of Nail	Head	Shank	Point	Material	Finishes and Coatings	Common Lengths mm	Common Lengths in.
Common (Spikes)	F	C, S	D	S, S	S	100-200	4-16
Exceeding (Spikes)	Cx, F	C, S	D, N	S	S, Ghd	125-250	5-10
Standard or Common	F	C, R, S	D	A, S, E	S, Gd	25-150	1-6
Box	F, LF	C, R, S	D	S	S, Pl, Ghd	10-125	3/4-5
Finishing	Bl	C, S	D	S	S, B	25-100	1-4
Flooring and Ceiling	Cx	C, S	R, D	S	S, B, H	28-60	1-1/8-3-1/4
Concrete	Cx	S	Con, R, D	St	H	13-75	1/2-3
Ceiling and Decking	F, O	C, S	D	A, S	S, Ghd	50-63	2-2-1/2

Notes:
 1. Refer to Figure 5.3 (= 234) for Head, Shank and Point abbreviations.
 2. Refer to Table (= 235) for Materials, Finishes and Coatings abbreviations.

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Heads

Many different shapes of nail heads are manufactured. Sometimes a choice of head shapes is available for a single type of nail. Nails with flat heads or square shoulders under the head are measured from the end of the points to just below the heads, while nails with brad or countersunk heads are measured over their total length. T-shaped and D-shaped heads are often used to manufacture nails for pneumatic nailing guns; the nails are lightly attached to each other or collated with plastic, allowing quick loading of clips of nails.

Shanks

Nail shanks are made smooth or deformed. The deformed shank is usually spiral (or helical) or ringed, but variations of these such as barbed and fluted nails are available. Spiral deformations are usually formed by threading while drawing the wire, but sometimes are threaded after drawing.

Spiral nails are available in many sizes and designs. They can provide greater withdrawal resistance than smooth shank common nails and can also reduce wood splitting. Some typical applications for spiral nails are; flooring underlay, panelling, gusset plates, soffits, siding, and roofing.

Ring-threaded nails also have high withdrawal resistance created by the keying action of displaced wood fibres against the nail grooves. Applications include fastening for gypsum wallboard, plywood underlay for flooring, and sheathing.

Points

The shape of the point affects the tendency of the wood to split when a nail is used close to an end or edge because the shape dictates whether the nail acts like a wedge or like a punch. The sharper the point, the higher the holding power due to wedging of wood fibres against the fastener, the easier it is to drive the nail, but the greater the tendency of the nail to split the wood.

There are five basic types of points: diamond, blunt diamond, long diamond, duckbill and conical. The most widely used nail point is the diamond. It is fairly easy to drive and gives good holding power. Use of the blunt diamond point reduces splitting, but also reduces holding power; a slight taper helps maintain withdrawal resistance. Splitting can also be reduced by purposely blunting the point of the nail before driving. The long diamond point is easiest to drive, but may tend to split the harder wood species. Duckbill points are not as common but are occasionally used for clinching to increase resistance.

The most widely used nail point is the diamond which is a good compromise between ease of driving, minimization of splitting, and holding power.

Figure 1.2: Shanks and Points

Figure 5.3
Nail Heads,
Shanks and
Points

Part	Type	Abbr.	Remarks	
Heads	Flat Counter-Sink	Cs	For nail concealment; light construction, flooring, and interior trim	
	Gypsum Wallboard	Dw	For gypsum wallboard	
	Finishing	Bd	For nail concealment; cabinet-work, furniture	
	Flat	F	For general construction	
	Large flat	Lf	For tear resistance; roofing paper	
	Oval	O	For special effects; cladding and decking	
Shanks	Smooth	C	For normal holding power; temporary fastening	
	Spiral or Helical	S	For greater holding power; permanent fastening	
	Ringed	R	For highest holding power; permanent fastening	
Points	Diamond	D	For general use, 35° angle; length about 1.5 x diameter	
	Blunt Diamond	Bt	For harder wood species to reduce splitting, 45° angle	
	Long Diamond	N	For fast driving, 25° angle; may tend to split harder species	
	Duckbill	Db	For ease of clinching	
	Conical	Con	For use in masonry; penetrates better than diamond	