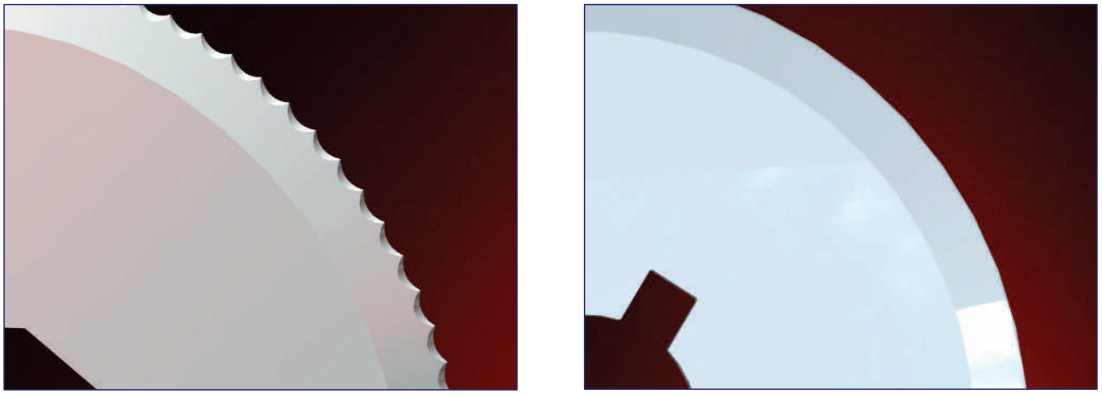
Technical Bulletin

HYDE™
Industrial Blade Solutions

Scallops - How They Can Improve Cutting Ability

In certain applications, adding scallops to a beveled-edge blade is a great way to improve cutting performance. Scallops on the blade's edge produce a more aggressive cutting action and can increase blade life in many applications.

A scallop is a sharpened recessed curve along the blade's edge. Scallops feature sharp "points" at the leading edge of the cut and offer more linear cutting surface than a standard beveled-edge in the same space (Dia. #1). How do these features improve a blade's cutting ability?



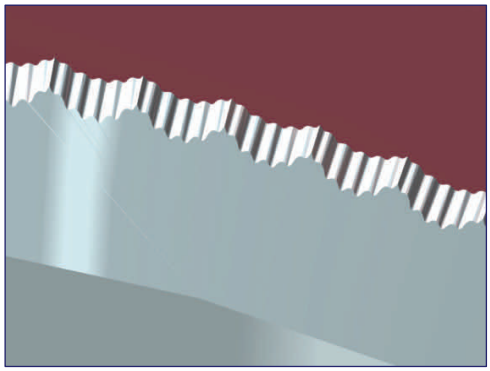
Dia. #1 - A scalloped-edge versus a standard beveled-edge on circular blades

- **More Aggressive Cutting Action** – Scallops on the blade's edge improve its cutting ability by providing single point penetration into the work being cut. At the same time, the center of effort shifts around each scallop, introducing a wide range of cut angles to the material being cut. It is this "rocking" motion that increases the aggressiveness of the blade's cutting action. Because of this, scalloped-edge blades are able to cut tougher materials more effectively than standard beveled-edge blades.

- **Longer Blade Life** - Scallops improve blade edge retention because the tips initiate the cut, easing the amount of force required to cut for the recessed edges of the blade. The points actually protect the sharp inside curves that continue the cut, resulting in the curves wearing more slowly over time. Also, scallops increase the cutting edge length by up to 35% (the average is approximately15%). In many applications, more cutting edge and reduced edge wear result in longer blade life.

Scallops were developed as an offshoot of the standard beveled-edge. Examining a plain beveled-edge under a microscope will show various scratch marks, which are a result of the grinding process. Ultimately, these "micro-serrations" enhance the sharpened edge's ability to cut.

Scallops come in a variety of configurations, from shallow to deep, short to long, pointed to wavy. Hyde IBS has even developed blades with "micro-scallops" – many small scallops within the larger scallop (Dia. 2) – for certain applications.



Dia. #2 – micro-scallops close-up view

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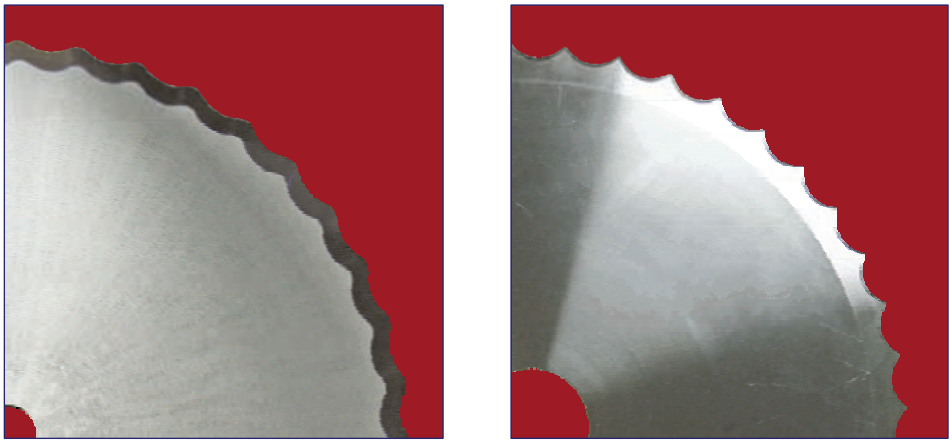
Hyde offers two standard scallop designs - a "pointed" scallop and a "wavy" scallop (Dia. 3). Each has its advantages and each excels in certain applications.



Dia. #3 - A pointed scallop design versus a wavy scallop design on circular blades

- **Pointed Scallop Design** - The pointed scallop design features a series of arcs ground into the edge of the blade, with the junction of every pair of arcs forming a defined point. This design offers a very aggressive cutting action and is recommended for tough-to-cut materials, such as thermoplastics (i.e. Teflon) and composite materials (fiberglass, etc.). The pointed scallop design is also well suited for applications where the speed of the cut is important, due to the aggressiveness of its cutting action. Available on both circular and straight blades, this design is the most common scallop used on circular blades such as those used in food processing.

- **Wavy Scallop Design** - The wavy scallop design does away with the points and replaces them with a smoother wave-like series of arcs. This design is a little less aggressive in the cut than the pointed scallop but is still more aggressive than a standard beveled-edge. The wavy scallop design is better suited for materials where a point would be susceptible to breakage, such as wire reinforced hydraulic hose. The wavy scallop also offers a smoother cut finish, making it the design of choice for cutting cloth and textiles. Available on both circular and straight blades, this design is the most common scallop used on straight machine blades, such as those used for textile cutting.

Hyde IBS recommends scalloped-edge blades for all your "tough" or abrasive cutting applications, such as cutting leather, rope, seat belts, cardboard, reinforced hydraulic hose and most synthetic or composite materials.