

# Scoring Big with Lasers: Lasers and Packaging Technology

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Lasers can add attributes to a package that typically cannot be accomplished by conventional methods such as blades and other mechanical methods. The always-sharp laser eliminates the inconsistent score quality often associated with conventional blade scoring. This consistency in the depth and uniformity of the scored line provides repeatable strength and quality of tear while maintaining package strength and barrier properties. With the control software built into laser systems, users can adjust the score depth for all types of packaging materials simply by making a change in the program. The expense and time involved in replacing blades and rotary dies is eliminated. Laser equipment can run alone as a separate operation or be integrated into an existing production line.

## Advanced applications

Recent breakthroughs in vision, beam steering and on-the-fly power control have advanced the technology and created new uses for lasers in package design. In addition to scoring, lasers are particularly suited

for kiss cutting, through cutting, and perforating or a combination of the above. The laser beam works equally well in any direction and

can be positioned with mirrors to create complex and unusual shapes at high speed. The pattern is easily changed or adjusted simply by

modifying the program that controls the laser. Intricate shapes and hole patterns can also be created without distorting or losing registration with other package features. The "forceless" nature of the process permits fragile and/or thin materials to be worked with little support or tooling. Lasers are always sharp, even with materials that normally present problems with mechanical methods, such as abrasive and adhesive backed materials.

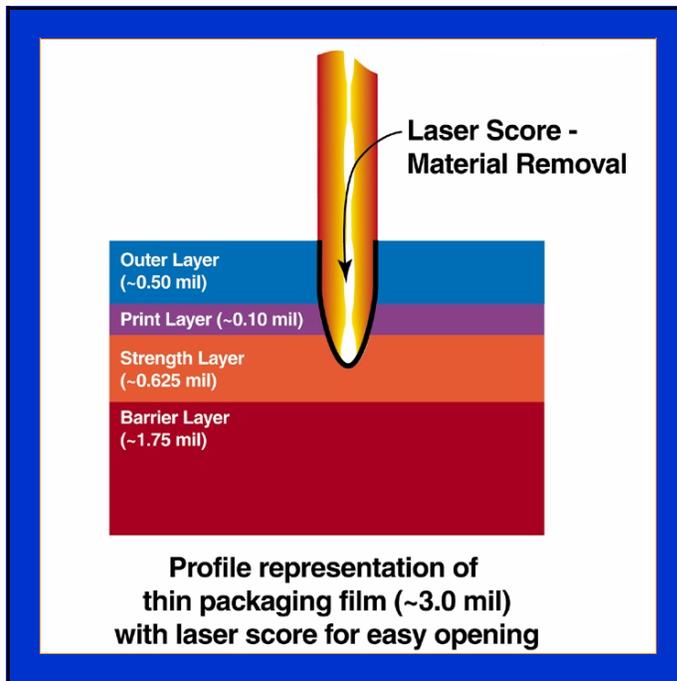


Fig. 1: Laser scoring for a controlled tear while maintaining package strength and barrier properties.

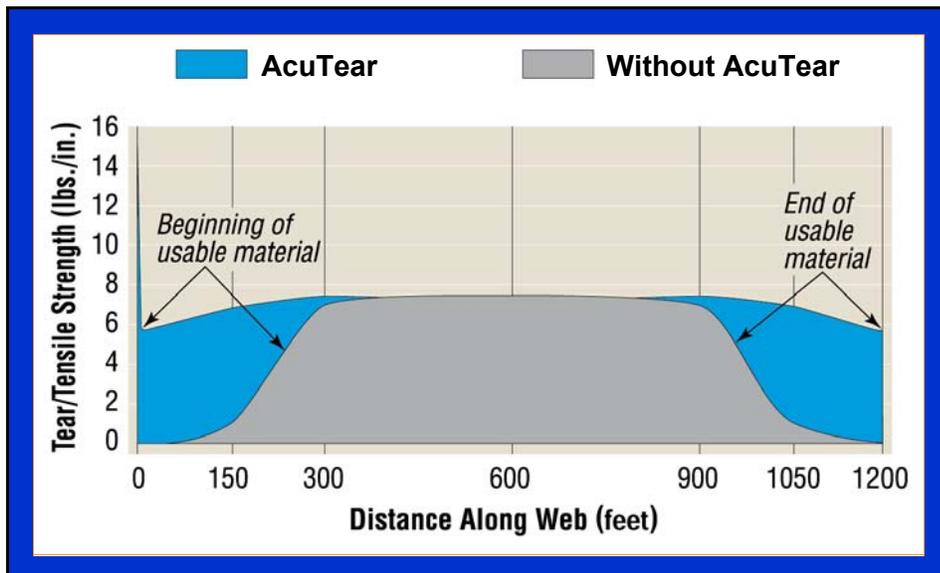


Fig. 2: With the development of systems such as the AcuTear/AcuBreathe™ system, good product is produced virtually from start to finish.

**Power control is key**

Advances in the control of laser power have not only increased the laser's ability to create consistently repeatable score/tear properties but also are now allowing package designers to designate how hard or easy a package is to open. If an easy tear is desired, laser power is simply increased slightly and vice versa for a stronger tear area.

Another important result of the innovation in laser power control is the ability to have a very consistent process throughout the full length of rolls of film, from the start of the roll to the end, dramatically reducing scrap. In the past, the laser power had only one setting and until you reached the proper web processing speed, you were producing scrap, at times 100' or more at each end of a roll. With development of the AcuTear / AcuBreathe system from Preco Laser Systems good product is produced virtually from start to finish, as shown in Figure 2.

**Today's Consumer**

Whether the consumer is an individual or an industrial buyer, a product's packaging has a remarkable impact on the buying decision. Consumers today value a user-friendly package as a

**We Have All Experienced a Bad Tear Day...**

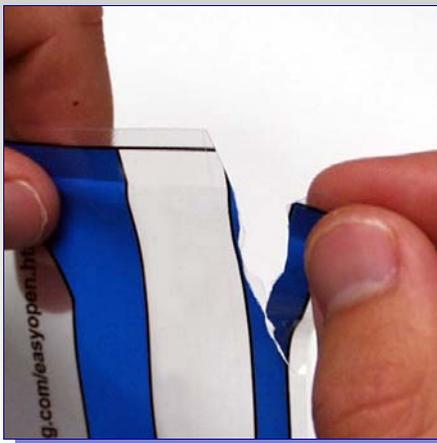
*Laser Scoring Has Proven to be the Solution to Creating a Consistent Tear*

**The problem**

We have all experienced a bad "tear" day with a package that would not tear open, no matter how hard we tried, or with one where the tear simply ran the wrong way. How many times have we searched for scissors or a knife to finally open a package that was supposed to be "easy" to tear open? As consumers we have all experienced these frustrating situations

**The solution**

With laser scoring there is no reason for anyone to be frustrated with an "easy open, easy tear" package. Laser scoring is the hands-down proven solution to creating a consistent and



controllable tear. Lasers apply a very small (0.001 to 0.020 inch), single-point source of heat, yielding a very fine score while maintaining extremely tight tolerances. The line created before the packaging film folded into a bag is virtually undetectable. The laser vaporizes a narrow trough to a controlled depth on the film where the tear is designed to be. As the film is folded and sealed into a bag, the scored lines from both sides of the bag are aligned. A slight tearing motion at the edge of the score line will trigger the desired directional tear, leaving the contents of the bag intact.

powerful part of the overall product. Purchasing decisions are made in part on the augmented product, the value added features that packaging can create. Today, end-users of medical and industrial products demand that the packaging enhance the overall functionality of a product. As converters come up with new value-added features, such as the resealable zipper, demand for more improvements flourishes. Each package has to be better and more user-friendly than the last.

Barrier packaging, zippers and stand up pouches are part of the answer. Without effective easy-opening these advanced features are not a complete solution. Consumers do not want to have to find a scissors or tug on a package, only to get a tear that runs down the side of the bag. Laser scoring is extraordinarily compatible with barrier and zipper packaging design providing a complete packaging solution with a myriad of applications.

**What does it all mean?**

Lasers are a tool to bring a next natural step in the progression of flexible packages. With the multitude of recent advances in both the flexible packaging field and in laser scoring, the time seems to have come for laser scoring

to become a way to create additional added value to flexible packages. With producers ever increasing need to focus on user-friendly packages, laser scoring is now an economically viable option for creating an attractive, functional and most of all easy-to-open package.

*Preco Laser Systems, LLC, an industrial laser systems manufacturer, utilizes a combination of innovative process development, production services, and equipment manufacturing. The company can be reached at 800-775-2737.*