

# Expert Interview: Seat belt fabric

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*Interviewer:* Stretch vs. resiliency – what is the difference?

*Expert:* Stretch is the elongation of something when you pull on it; resiliency is how well it returns to its pre-stretched shape. They are two different properties: a rubber band stretches and is resilient and taffy also stretches but is not resilient. Steel doesn't stretch much but is fairly resilient and so on ...

*Interviewer:* Besides the material, what other things affect stretch and resiliency?

*Expert:* How the material is used is important. If it's a cloth, is a knit or a weave? What sort of weave? How fast is it pulled? Silly putty stretches if you pull slowly but it fractures if you pull it fast. Some materials return to their original shape (are resilient) very quickly, others take time. So geometry and loading rate are important when considering stretch and resiliency.

*Interviewer:* Do we want seat belts to stretch and be resilient?

*Expert:* You want seatbelts to stretch some to soften the blow. In general they are not particularly resilient but this could be a problem during an accident with several impacts. In such a case, the first impact is usually the worst and a lack of resiliency is not a major factor.

*Interviewer:* So what is ideal for a seatbelt?

*Expert:* You want a seat belt to stop the person from striking the car's interior. The properties we are most interested in are:

- *Geometry:* It must fit the person and be wide enough to spread the blow
- *Stretch:* Enough to cushion the blow
- *Resiliency:* Enough to protect in a multiple impact accident
- *Appearance:* Color, look and feel are important too

*Interviewer:* Thanks!