

## Project 2: Automotive headlight lens



### Background:

The lens of an automobile headlamp protects the bulb and reflector and focuses the light where it is most needed. The project is to use CES to select materials for the lens.

### Objective:

To select materials that meets the requirements for the lens.

### Requirements:

- Must be transparent with optical quality.
- Must be able to be molded
- Must have good or very good resistance to fresh and salt water
- Must have very good resistance to UV light
- Good abrasion resistance, meaning a high hardness
- Minimum cost

The project will require the use of Level 1+2 of CES. Set the selection to Level 2, Materials. Use a *Limit stage* to apply the first 4 requirement, selecting *Optical properties* to apply the first, *Processability* to apply the second, and *Environmental properties* to apply the third and the fourth (select both “good” and “very good” to avoid eliminating too many materials). Then make a graph stage with Price on the X-axis and Hardness on the Y-axis to find the ones that are cheap and have high hardness. Remember you can “grey-out” materials on the graph that do not meet the limit stage criteria by clicking the little icon like two intersecting circles in the row of icons along the top of the graph.