



## Crash friendly columns

Have you ever thought of the impact of a car crashing into a tree? Even with low speeds, a tree crash can be fatal. This is not the case with aluminium lighting columns from Sapa.

Frontal impact



**Crash tests**

Since the 1970's, Sapa Pole Products has been conducting crash tests, to investigate the safest constructions for your roads. This long history of building up knowledge on this topic, has resulted in a range of safe, secure and sustainable aluminium solutions, for all of your lighting needs. We give you the opportunity to design and create safe roads with Fully Certified (and endorsed by a Notified Body) passively safe columns in all shapes and sizes.

The use of crash friendly, also referred to as passively safe lighting columns, traffic signals and sign posts, are becoming increasingly important on both highways and rural roads. The European standard EN 12767 specifies performance requirements for passively safe support structures for permanent road equipment. It both defines and limits the levels of occupant injury severity when impacting these structures.



**Available family classifications**

Occupant Safety Level	Energy level			
	70NE3	100NE3		
70NE2	100NE2	100LE3		
	100NE1	100LE2	100HE2	
		100LE1		

Note: The 3 behind NE is much better for the occupant safety than the 3 behind LE or HE.

**Explanation on classifications**

**Impact speed** The 100 (for highways) and 70 (for rural roads) numbers in the family certifications indicate the impact speed of the vehicle.

**Performance Level** There are three categories of passive safety support structures:

- High energy absorbing (HE): slow the vehicle considerably on impact. The risk of secondary collisions with trees, pedestrians and other road users is reduced, however the severity of the impact for vehicle occupants can be high.
- Low energy absorbing (LE): are generally designed to bend in front of and under the impacting vehicle, before shearing or detaching towards the end of the impact.
- Non-energy absorbing (NE): permits the vehicle to continue after the impact with a limited reduction in speed. They may therefore provide a lower primary injury risk than energy absorbing support structures, but a higher secondary injury risk if other hazards exist behind the support structure.

**Occupant safety level** The occupant safety level is based on the results of ASI (Acceleration Severity Index) and THIV (Theoretical Head Impact Velocity). The levels of 1, 2 and 3 provide increasing levels of safety, in that order, by reducing impact severity.

**Non-energy absorbing (NE) lighting columns**

NE3 is the safest passive safe classification for medium and high speed roads. The impact speed of non-energy absorption (NE), combined with the 3rd occupant safety level, demand special requirements of a column. Sapa Pole Products has developed a special shear-off solution. This in-built solution is unique, as it will shear-off in the event of an impact, and is unaffected by the direction of the impact. The solution is based just above the ground level of the column.



**High energy absorbing (HE) lighting columns**

In urban areas where risk of a secondary impact is high, lighting columns require a high energy absorbing classification. The best high energy absorbing classification for the occupants is HE3. To obtain the HE3 classification, a patented 'catch-up' construction is integrated into the column. The construction ensures that during an impact, the speed of the vehicle is heavily reduced, whilst at the same time, guaranteeing maximum occupant safety.