



## Changes to Passive Safety Norm EN12767

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### **Importance of Passive Safety**

- History of Passive Safety in the UK
- European Norms and Testing
- Performance Classes
- Perception of Risk
- Future of EN12767
- Sources of Information

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### History of Passive Safety

- Passive safety was a Scandinavian development in the 1980's and 1990's.
- Norway developed the first aluminium signposts.
- Finland pioneered passively safe lighting columns.
- European Standard EN12767 first published in 2000.
- Passively safe signposts were first installed on a new UK trunk road scheme, the A43 Silverstone Bypass in 2002.
- This was the first major use of a passively safe product in the UK.

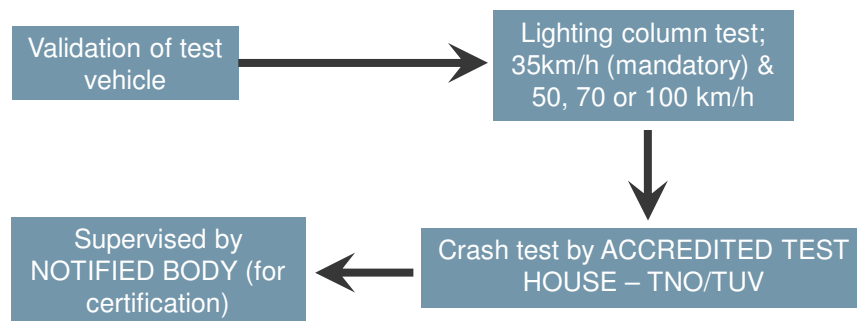


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### European Norm and Testing EN - 12767

Test method according to EN-12767 introduced in 2000 to provide a means of testing & assessing levels of passive safety



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### European Norms and Testing



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### Non Passive Safe Structures



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### Performance Level

**High Energy Absorbing (HE):** slow the vehicle considerably on impact.

The risks of secondary collisions with trees, pedestrians and other road users is reduced, however the severity of the impact for vehicle occupants can be high.



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### Performance Level

**Low Energy Absorbing (LE):** generally designed to bend in front of and under the impacting vehicle, before shearing or detaching.

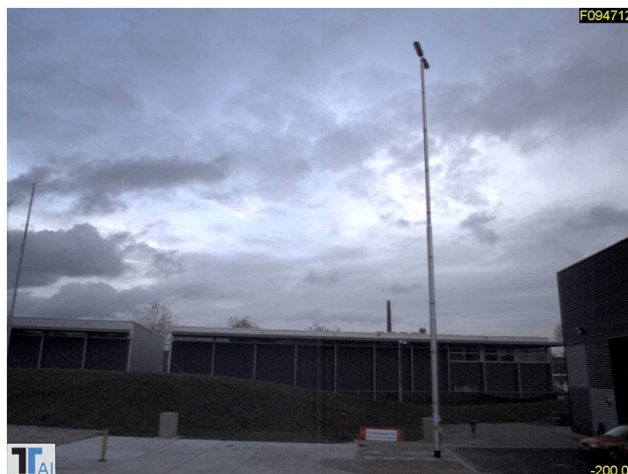


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### Performance Level

**Non Energy Absorbing (NE):** permit 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.



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### Performance Class Recommendations

Situation	Location	Type of support structure		
		Lighting column Classifications listed (a), (b), (c) etc are in order of preference <sup>(2)</sup>	Sign or signal support <sup>(1)</sup> Classifications listed (a), (b), (c) etc are in order of preference <sup>(2)</sup>	Non-harmful support structures
Non-built up all-purpose roads and motorways with speed limits > 40mph	Generally in verges of motorways, dual carriageways and single carriageway roads	100:NE:1-3	100:NE:1-3	100:NE:4
	With significant volume of NMUs <sup>(3)</sup> at the times when impact events occur	100:HE:1-3	(a) 100:HE:1-3 <sup>(4)</sup> (b) 100:LE:1-3 <sup>(4)</sup> (c) 100:NE:1-3 <sup>(4)</sup>	100:NE:4
	Where major risk of items falling on other carriageways. Below ( e.g. at grade separated interchanges)	100:HE:1-3	(a) 100:HE:1-3 <sup>(4)</sup> (b) 100:LE:1-3 <sup>(4)</sup> (c) 100:NE:1-3 <sup>(4)</sup>	100:NE:4 or 70:NE:4
Built up roads and other roads with speed limits 40mph or less	All locations	(a) 70:HE:1-3 (b) 100:HE:1-3 (c) 70:LE:1-3 (d) 100:LE:1-3	(a) 70:HE:1-3 <sup>(4)</sup> (b) 100:HE:1-3 <sup>(4)</sup> (c) 70:LE:1-3 <sup>(4)</sup> (d) 100:LE:1-3 <sup>(4)</sup> (e) 70:NE:1-3 <sup>(4)</sup> (f) 100:NE:1-3 <sup>(4)</sup>	100:NE:4 or 70:NE:4

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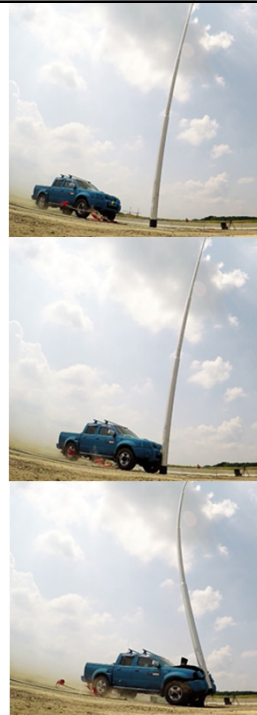
## Perception of Risk

- EN 12767 contains general requirements pertaining to occupant safety:
  - ✓ The test item shall perform in a manner predicted by the manufacturer
  - ✓ The test item or detached elements, fragments or other major debris from the test item shall not penetrate the occupant compartment or present an un-necessary hazard to pedestrians or workforce
  - ✓ The vehicle shall remain upright for no less than 12m beyond the impact point with a roll angle less than 45° and a pitch angle less than 45°
  - ✓ Future recommendation for roof deformation measurements / test data to be documented within the crash test report
- UK National Annex goes further:
  - ✓ Advising against the use of passive structures that during test cause roof deformation exceeding 150mm

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## Future of EN12767

- The current norm is under constant review
- Adjustments are made every 5-10 years
- Logical for new regulations to be added for "Long Term Performance"
- New Norm expecting in 2<sup>nd</sup> half of 2017 including changes for;
  - Backfill Type
  - Collapse Mode
  - Directional Sensitivity
- For Example:
  - 100HE3 will become: 100 HE C S SE MD





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## Future of EN12767

### Occupant safety class

The occupant safety classes will change from 1-4 to A-D.

### Backfill type

Backfill is very important for the performance. Types S, R or X are added to the performance class.

### Collapse mode

The new norm will include two collapse modes: SE (Separation) and NS (No Separation).

### Direction sensitivity

The angle at which a passive safe pole is hit is important to take into account when installing such a product. In the new norm 3 different options are described:

- SD (Single Directional);
- BD (Bi Directional);
- MD (Multi Directional).



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## Our Advice

When the use of passive safe poles is considered, convince yourself that all criteria are met by checking:

- The product has a valid certificate that specifies the safety classification and states whether it is based on the most recent EN 12767.
- The certificate has been signed by a Notified body.
- All applicable test reports are available (35kph test normally most critical).
- The collision movies of the official crash tests are available.
- The exit speeds and movies are available so that you can compare vehicle damage.



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## Future of EN12767

Also think about the following when the use of passive safe poles is considered:

- Compare the local foundation situation with the test foundation.
- Make sure that the poles are installed carefully to the correct planting depth.
- Follow any supplier maintenance recommendations.
- Choose the pole type that best suits the relevant road or road situation.



When making a well-considered choice for passive safe poles by taking the above recommendations into consideration, the poles will increase road safety without becoming an obstacle.

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## Resources

- EN12767
- Institution of Lighting Professionals – FREE download – “The use of Passively Safe Sign Posts and Lighting Columns”  
<https://www.theilp.org.uk/documents/css-sl4-passive-safety/>
- Sapa Pole Products – FREE download – Whitepaper on Passive Safety  
<http://www.sapagroup.com/en/sapa-pole-products/passive-safe/download-the-whitepaper-of-passively-safe-lighting-columns-/>
- UK Roads - <http://www.ukroads.org/passivesafety/>

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Passive safe  
light poles and  
support structures

They do not need to be an obstacle