

White retro-reflective material in rear lamps
(transmitted by the expert from the United Kingdom)

Problem

Recently the Department has become aware of rear lamp clusters that appeared to be correctly type approved to the relevant component Regulations, being mounted on vehicles in such a manner as to show white light to the rear and therefore cause a non-compliance with Regulation No. 48. The local law enforcement officers issued a ticket to the vehicle owner for a non-compliance with national regulations.

It is clear from Regulation No. 48, paragraph 5.10, that red light to the front and white light to the rear are not permitted where they give rise to confusion. In case of doubt the test procedure in 5.10.1, 5.10.2 and Annex 4 must be followed. This requirement covers light emitted from "lamps as defined in paragraph 2.7" and under paragraph 2.7, it states that "retro-reflectors are likewise to be regarded as lamps". Therefore the prohibition of white to the rear and red to the front applies equally to lamps and to retro-reflectors.

A problem occurs with aftermarket lamp clusters where the manufacturer has replaced the red retro-reflector in the rear lamp cluster by a white retro-reflector. At the same time some modifications have taken place to reduce the light transmittance so that this white retro-reflector does not comply with Regulation 3 and thus is deemed not to be present. However it cannot be denied that some white light is shown to the rear. And thus there is a non-compliance with Regulation No. 48.

A particular example of such a lamp was inspected in a laboratory. Although the amount of white light emitted was in general lower than would be expected from a Regulation No. 3 approved white retro-reflector, nevertheless for some measurements in some directions it was either above or only slightly below the Regulation No. 3 minimum values and thus very likely to cause confusion when viewed from certain directions.

There is some question about whether an approved lamp unit containing several grouped lamps can be rejected under Regulation No. 48 paragraph 5.10 if it contains, for example, retro-reflective material which is white and the lamp is intended for the rear of the vehicle.

The opinion of the UK is that during Regulation No. 48 approval, these lamps should be rejected.

However we recognise that the situation may not be clear and therefore we hope to discuss the situation at GRE and get the views of the experts about the best way forward. It may be necessary to amend the lighting component regulations to ensure that no lamp can be approved if it contains retro-reflective material of the incorrect colour.

The technical services may have to decide whether or not material is retro-reflective, but the properties of retro-reflective material are well documented in that it reflects light straight back to the light source rather than at the angle of incidence like a mirror. This is true even at quite acute angles. A piece of chrome is NOT a retro-reflector and although concern has been expressed about shiny surfaces in rear lamps, we do not wish to discuss that at the present time as it would confuse the issue, which is to ensure that R48 and lamp component regulations are compatible.