

### **Prevention of fire risk involving tyres**

Note: Upon the request of WP.15, the text reproduced below was considered by WP.29 as informal document No. WP.29-138-6. WP.29 agreed to incorporate in the GRRF programme of work a new item concerning the prevention of fire risk involving tyres. In addition, WP.29 requested GRSG to consider the increasing fire risk on heavy-duty vehicles (see ECE/TRANS/WP.29/1050, para. 18).

~~Informal document No. WP.29-138-6~~  
(138th WP.29, 7-10 March 2006,  
agenda item 2.2.)

### **PREVENTION OF FIRE RISKS INVOLVING TYRES**

The Working Party on the Transport of Dangerous Goods (WP.15) considered at its seventy-ninth session (7-11 November 2005) a proposal to introduce new requirements for vehicles transporting dangerous goods approved as EX/III, FL, AT and OX vehicles (vehicle designation according to Chapter 9.1 of Annex B to the ADR). The proposal aimed to install tyre pressure monitoring systems on these vehicles as a mean of preventing fire risks involving tyres (see the attached document TRANS/WP.15/2005/16).

WP.15 considered the above-mentioned document and invited WP.29 to:

- (i) give general consideration to the question of preventing tyre fire,
- (ii) give its opinion on the impact of inadequate tyre pressure on the risk of fire, and
- (iii) consider the possibilities of standardizing tyre pressure detection systems for heavy vehicles.

For an easy reference, the excerpt of the WP.15 report (TRANS/WP.15/185) is reproduced below: "....."

#### **Prevention of fire risks involving tyres**

Document: TRANS/WP.15/2005/16 (Norway)

46. The Working Party took note of the proposal by Norway to require a system to monitor tyre pressures, in order to prevent risks of fire in tyres.

47. Several delegations were not convinced that all fires in tyres were caused by too low a pressure; in their opinion fires were more likely to be related to the brakes seizing up and causing the brake disks or drums to overheat, or to a defect of the bearings.

48. It was noted that no standard regulations currently existed for equipping heavy vehicles with pressure detectors and that the absence of standardization could lead to problems of compatibility of detection in combinations of drawing vehicles with a trailer or semi-trailer.

49. Since this issue did not only concern vehicles carrying dangerous goods, it was decided to invite the World Forum for Harmonization of Vehicle Regulations (WP.29) to give general consideration to the question of preventing tyre fires, to give its opinion on the impact of inadequate tyre pressure on the risk of fire and to consider the possibilities of standardizing tyre pressure detection systems for heavy vehicles..... "

In order to follow the WP.15 invitation, WP.29 should consider the insertion of this issue in the GRRF programme of work.



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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods  
(Seventy-ninth session,  
Geneva, 7-11 November 2005)

**PART 9 OF ADR**

**Introduction of a new requirement under 9.2.4 Prevention of fire risks**

**Transmitted by the Government of Norway**

**SUMMARY**

Executive Summary:	Fire on vehicles transporting dangerous goods may lead to major accidents. One of the most frequent types of fire, and also the most difficult to tackle, is fire in tyres.
Action to be taken:	Introduce new requirements to install tyre pressure monitoring systems on vehicles approved as EX/III, FL, AT and OX.
Related documents:	Documents TRANS/WP.15/2002/3 and INF.6 to the seventy-second session, May 2002.

**Introduction**

Fire on vehicles transporting dangerous goods may lead to major accidents, particularly if transporting goods of Class 1. One of the most frequent types of fire, and also the most difficult to tackle, is fire in tyres.

The reasons for such fires are normally either incorrectly inflated tyres, or heat generated by hanging brakes or broken bearings.

Norway is of the opinion that modern technology to avoid the development of fires on dangerous goods vehicles should be implemented into the ADR, as soon as such equipment is readily available.

## **Proposals**

1. Introduce requirements for tyre pressure monitoring systems in 9.2.4 as follows:

“9.2.4.8 Tyre pressure monitoring system

Motor vehicles and trailers shall be equipped with an effective tyre pressure monitoring system on all wheels that gives the driver a warning when the tyre pressure is 25 % or more below the placard pressure for any tyre.”

2. Add a new row for 9.2.4.8 in the table of 9.2.1, with “X” in the columns under EX/III, AT, FL and OX vehicles.

3. In the “Comments”- column for the new row, add:

“Applicable to motor vehicles and trailers first registered as from 1 January [2008].”

## **Justification**

According to our national statistics on accidents and incidents involving vehicles carrying dangerous goods, there have been 36 reports in Norway of fires on such vehicles since 1990. Ten of these (27,8 %) have been reported to be fire in tyres.

Tyre fires are often extremely difficult to extinguish if they have been allowed to develop.

Even though it was demonstrated in the tests described in our INF.6 to the seventy-second session in May 2002 that two 6 kg dry powder fire extinguishers in many instances would be sufficient to deal with tyre fires, practice has shown that this may be difficult when performed by a driver on the road.

Paragraph 16 of the report from the informal working group on EX-type vehicles, which met in Tønsberg, Norway, December 2001, reads:

“Tyres are a well-known source of fires and other accidents on vehicles. According to OICA and CLCCR there are systems for monitoring the tyre pressure commercially available today, and they are already being installed on vehicles for reasons of tyre economy. The working group invites the Working Party to request the secretariat to raise the question with the secretariat of WP.29 in order to establish a regulation to implement this as standard equipment, at least on dangerous goods vehicles.”

Unfortunately, nothing much has happened since then and Norway finds that the technical development of such equipment, as well as the fact that the United States of America have introduced a requirement to install such equipment on all passenger cars, multipurpose passenger vehicles trucks and busses that have a Gross Vehicle Weight Rating of 10,000 pounds, now speaks in favour of WP.15 introducing such requirements for vehicles transporting dangerous goods.

The working group also concluded, regarding fires caused by binding brakes, in paragraph 15 of its report that:

“The working group agreed that this was an area where special provisions should be established. It is known from accident reporting that binding brakes have been the cause of fires on vehicles carrying explosives. The working group was of the opinion that this was a general problem for

all dangerous goods vehicles, and invites the Working Party to request the secretariat to raise the question with the secretariat of WP.29 for them to look into this and agree on a system for surveillance of temperatures on brake drums/discs in order to detect binding brakes.”

Norway does not have conclusive evidence that such equipment are readily available and in general use, and will therefore not propose to include such equipment at this stage. Furthermore, it has also been argued that tyre pressure monitoring systems may also be able to pick up changes in tyre pressures due to heating from outside sources. Nevertheless, the working groups request for WP.29 to adopt a system for surveillance of temperatures on brake drums/discs in order to detect binding brakes is still valid.

### **Safety implications**

The proposal will increase the safety level of transporting dangerous goods by reducing the risk of tyre fires on vehicles due to low tyre pressure, hanging brakes or broken bearings.

### **Feasibility**

The proposal will not lead to major cost implications for the transport industry. Such equipment is now being installed all over the world for reasons of economy, and the requirement will only apply to new vehicles. There is evidence that the installation of such equipment will earn its cost due to better fuel economy and less tyre wear in a very short time.

### **Enforceability**

No problems in enforceability are foreseen, since this equipment will be part of the standard equipment on approved vehicles.

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