



SAFETY BULLETIN

Safe use of flameproof headlights

BACKGROUND

NSW DPI has been provided with information about the potential for flameproof headlights to exceed a surface temperature of 150^o Celsius. Variation in the voltage applied to the headlight, angle of inclination of the headlight, the type of lamp within the headlight and the ventilation around the headlight can all impact on the surface temperature of the headlight.

Other matters that NSW DPI is aware of are:

- Headlight failures due to impact and excessive internal heat generation leading to premature failure of internal components and wiring
- The possibility of 12 volt-rated lamps being supplied at a voltage of 13.8 volts.

The requirements for thermal tests on explosion-protected equipment are contained in AS/NZS 60079.0:2005 *Electrical apparatus for explosive gas atmospheres - Part 0: General requirements*, and IEC 60079-0, Ed.4.0 (2004) (Incorporating Amendment No. 1) *Electrical equipment for explosive gas atmospheres – Part 0: General requirements*.

Section 26.5 relates to thermal tests and contains the following information:

“For electrical apparatus which can normally be used in different positions, the temperature in each position shall be determined and the highest temperature shall be considered. When the temperature is determined for certain positions only, the electrical apparatus shall be marked with the symbol ‘X’ to indicate this special condition of use ...”

Further, Section 29.2 Marking, paragraph (i) states:

“If it is necessary to indicate special conditions for safe use, the symbol ‘X’ shall be placed after the certificate reference. A warning marking may be marked on the apparatus as an alternative to the requirement for the ‘X’ marking;

NOTE 4: The manufacturer should ensure that the requirements of the special conditions for safe use are passed to the purchaser together with any other relevant information.

Similar requirements were contained in the previous version of the standard.

RECOMMENDATIONS

All coal operations should:

- Review any information supplied with the flameproof headlight for compliance with the *Occupational Health and Safety Regulation 2001*, Clause 105 **Manufacturer to provide information**

- Review the use of the headlights against the requirements of the *Coal Mine Health and Safety Regulation 2006*, Clause 4 – **Obligations to control risk**. Note: The risk from excessive surface temperatures can be eliminated by design and verified by thermal tests with the headlight in the worst-case condition
- Headlights must not be operated at a voltage greater than that specified in the certificate of conformity, or where the voltage is not specified in the certificate of conformity, greater than the nominal voltage of the lamp
- Headlights must only use the type (model and rating) of lamp specified in the certificate of conformity, or where not specified, the same model and rating as that used in the testing conducted for certification purposes
- Headlights must not be inclined or operated in conditions that may cause the headlight to exceed a surface temperature of 150^o Celsius
- Where headlights have not been tested and certified in the ‘worst-case’ position, inspection and maintenance programs shall include the measurement and recording of surface temperatures of the headlight. The ambient temperature shall also be recorded. The inspection and maintenance program shall include checks at regular intervals to ensure the headlight is used in accordance with its conditions of certification. Where headlights are found not to be used in accordance with the certified conditions, this is considered to be a failure of the explosion-protected characteristics as per Clause 56 (1) (m) of the *Coal Mine Health and Safety Regulation 2006*
- Where temperature measurements adjusted for an ambient temperature of 40^o Celsius exceed 150^o Celsius the headlight must be removed from service.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Bulletin, and are informed of its content and recommendations. This Safety Bulletin should be processed in a systematic manner through the mine’s information and communication process. It should also be placed on the mine’s notice board.

Signed



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