ExNB	Co-ordination of Notified Bodies Directive 2014/34/EU of the European Parliament and of the Council (ATEX) *Equipment and protective systems intended for use in potentially explosive atmosphere*	Clarification Sheet ExNB/CS/021

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Step refers to ExNB Rules

Information on the testing and use of flame arresters intended for gasoline-ethanol mixtures

Authorised by Chairman:		**Date:**	**2009-02-28**
Confirmed by Chairman: (Step*5.2.5)	**Dr. Thedens**	**Date:**	**2015-01-16**
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		Signature:	
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In facilities where mixtures of gasoline (according to EN 228) and ethanol (maximum 90 vol. %) are handled, flame arresters shall comply with the following requirements:

1. In-line flame arrester without qualification for short time burning

   For the above mentioned gasoline-ethanol mixtures deflagration flame arresters and detonation flame arresters suited for explosion group IIA shall be used. For testing of the flame arresters mixtures as specified in EN ISO 16852 shall be used.

2. In-line flame arrester with qualification for short time burning

   Arresters with short time burning qualification for gasoline containing ethanol shall be suited for explosion group IIA. For testing of the flame arresters the mixtures according to EN ISO 16852 shall be used.

3. Endurance burning flame arresters

   For endurance burning flame arresters the suitability for gasoline-ethanol mixtures shall be proved and certified in dependence on the intended application (EN ISO 16852, 7.3.5 and 11.1). The following applications are to be discerned:

   a) Underground tanks at gasoline stations (for example according to TRbF 40) and tanks for transport on vehicles.

Subject:	**Directive, 2014/34/EU Article No.**	
	Directive, ESR No.	
	Directive, Module Annex No.	
	Standard, No.	EN ISO 16852

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For such use the endurance burning safety shall be tested by a stoichiometric fuel/air mixture, where the fuel - after total evaporation of the liquid phase - produces a vapour phase containing 50 vol. % - 53 vol. % ethanol and 47 vol. % - 50 vol. % hexane. In the liquid phase, this corresponds to 31 vol. % - 33 vol. % ethanol and 67 vol. % - 69 vol. % hexane. Condensation has to be avoided. The vapour content in air for a stoichiometric mixture is (3,3 ± 0,1) vol. %. The MESG of that mixture at 50 °C is in the range 0,88 mm – 0,89 mm. The accordingly tested endurance burning flame arresters are to be certified (EC type approval/ special conditions for use and instruction for use) with the limitation in use on such ethanol-containing gasoline and the specification of the tank to be protected (underground tank on gasoline station, tank for transport).

b) Above-ground storage tanks

These tanks pose a higher risk and they usually are not explosion pressure shock resistant. Therefore, they shall be equipped with flame arresters where the endurance burning qualification is approved for ethanol.

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