

Flammable Gas Classification Changes under ISO 10156: 2010.

Background

When filling compressed gases, manufacturing companies are required to follow national and international standards to determine the proper product classification and identification. A gas classified as non-flammable will have a different transport label than a flammable gas. And in some countries, regulations regarding the cylinder valve connection, as well as cylinder colour coding are also used to differentiate a flammable gas from a non flammable.



ISO 10156: 2010

ISO 10156 defines a standardised method for determining the flammable or oxidising ability of a gas or gas mixture. This is the international standard followed by Linde. The current version is ISO 10156: 1996. A new revision of this standard - ISO 10156: 2010 will shortly be published. While there will be no changes to the classification of pure gases under this revision, there are changes which may effect the classifications of various mixtures currently be produced at various Linde facilities.

New Tci Values

Tci is defined as the maximum content of a flammable gas which, when mixed with Nitrogen, is not flammable in air. Tci is also used as a reference parameter in any kind of mixture that contains a flammable component. The new standard includes changes to these values for a number of gases. Under the revision, new Tci values will be assigned to a variety of existing mixtures. Depending on the mixture the level may be higher (less restrictive situation) or lower (more restrictive situation) than as defined in the previous edition of the standard.

Direct implications

Once this revision comes into effect, products that have been affected will see changes in the following areas.

- A new transportation identification label may be required to show indicated changes
- In some countries, a new cylinder shoulder colour may be required to indicate the change from either a non flammable to a flammable mixture, or from a flammable to a non flammable mixture.
- The Safety Data Sheet (SDS) will need to be updated to include the updated changes for cylinder safety and transportation.
- In some countries, a different cylinder valve outlet may be required.

Indirect implications for the user

- Storage conditions may need to be reviewed (including permits for storage of dangerous substances).
- Transport conditions will need to be reviewed.
- Risk assessment to be reviewed, with operational procedures updated according to the new risk assessment outcome.
- Gas control equipment and supply system compatibility may need to be checked, as changes may be required for both cylinder connections and supply line labelling.

Some examples

Gas	T _{ci}	T _{ci}
	ISO 10156: 1996	ISO 10156: 2010*
Hydrogen (H ₂)	5.7	5.5
Methane (CH ₄)	14.3	8.7
Ethylene (C ₂ H ₄)	6.0	4.1
Ethylene Oxide (C ₂ H ₄ O)	3.1	4.8
R152a	4.6	8.7

A mixture with 10% Methane in Nitrogen is currently classified as non flammable according to ISO 10156:1996, but will become flammable according to the new revision of the standard. This will require a different transportation label – from UN1956 to UN1954 – and where legislated, the shoulder colour will change from green to red. As noted, a new cylinder valve designation may also be required.

A mixture with 4% Ethylene Oxide in Nitrogen is currently classified as flammable according to ISO 10156:1996, it will become non flammable according to the new revision of the standard. This will require a different transportation label – from UN1954 to UN1956 – and where legislated, the shoulder colour will change from red to green. And as noted, a new cylinder valve designation may also be required.

In both cases there will be changes required to the Safety Data Sheet currently provided.

HiQ® Equipment

If notified that new gas regulating equipment is required, HiQ BASELINE®, or REDLINE® cylinder regulators are available to meet your requirements. For more information on our HiQ Specialty Gases Equipment offer, visit us at <http://hiq.linde-gas.com>, or contact your local Linde Specialty Gases office.

* Value examples shown are based on the current ISO 10156:2010 draft currently in committee, and are subject to change until final documentation is published by ISO.

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