SLOVENSKI STANDARD
SIST EN 16657:2016

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Nadomešča:
SIST EN 13616:2004
SIST EN 13616:2004/AC:2006

Cisterne za prevoz nevarnega blaga - Oprema cistern za preprečitev prepolnitve za nepremične rezervoarje

Tanks for the transport of dangerous goods - Transport tank equipment for overfill prevention devices for static tanks

Tanks für die Beförderung gefährlicher Güter - Transporttankausrüstung für Überfüllsicherungen für ortsfeste Tanks

Citernes destinées au transport de matières dangereuses - Dispositifs limiteurs de remplissage pour réservoirs statiques à bord de véhicules-citernes

Ta slovenski standard je istoveten z: **EN 16657:2016**

ICS:

13.300	Varstvo pred nevarnimi izdelki	Protection against dangerous goods
23.020.20	Posode in vsebniki, montirani na vozila	Vessels and containers mounted on vehicles

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EUROPEAN STANDARD
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ICS 13.300; 23.020.20

Supersedes EN 13616:2004

English Version

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 16657:2016) has been prepared by Technical Committee CEN/TC 296 “Tanks for the transport of dangerous goods”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2016 and conflicting national standards shall be withdrawn at the latest by 2017-07-11.

This document, together with EN 13616-1 and EN 13616-2, supersedes EN 13616:2004.

With reference to EN 13616:2004, the following significant changes have been made:

— splitting of EN 13616:2004; the new EN 13616, under the general title *Overfill prevention devices for static tanks for liquid fuels — Requirements and test/assessment methods*, will consist of the following parts:

  — *Part 1: Overfill prevention devices with closure device;*

  — *Part 2: Overfill prevention devices without closure device.*

— reference to EN 14116;

— explosion-technical parameters updated;

— the requirements for the equipment of the overfill prevention devices without closure device on the static tank are fixed in EN 13616-2;

— the requirements for the equipment of the overfill prevention devices without closure device on the tank vehicle are fixed in EN 16657.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning hose communication methods given in 5.4.6.

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1 Scope

This European Standard specifies the minimum performance and construction requirements for overfill prevention controllers located on the tank vehicle.

This European Standard applies to overfill prevention controllers for liquid fuels, having a flash point up to but not exceeding 100 °C.

The requirements apply to overfill prevention controllers suitable for use at ambient temperatures in the range from -25 °C to +60 °C, and subject to normal operational pressure variations.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13616-2:2016, *Overfill prevention devices for static tanks for liquid fuels — Part 2: Overfill prevention devices without a closure device*

EN 14116, *Tanks for transport of dangerous goods — Digital interface for the product recognition devices for liquid fuels*

EN 60079-0, *Explosive atmospheres — Part 0: Equipment — General requirements (IEC 60079-0, modified)*

EN 60079-11, *Explosive atmospheres — Part 11: Equipment protection by intrinsic safety "i" (IEC 60079-11)*

EN 61000-6-1, *Electromagnetic compatibility (EMC) — Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments (IEC 61000-6-1)*

EN 61000-6-3, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3)*

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design (ISO 13849-1)*

ISO 7637-2, *Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical transient conduction along supply lines only*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms given in EN 13616-2 and the following apply.

3.1 Terms and definitions

3.1.1
overfill prevention controller
controller
installed on the tank vehicle, connects to sensors mounted in or on the tank, and provides an output

3.2 Abbreviated terms

PRD Product Recognition Device

4 Requirements

4.1 Effectiveness

The filling process shall not start or shall automatically stop in the event of failure of the power supply.

Detection of a sensor´s signal "non-permissive" shall result in a shut-down of the product flow by the controller.

Stopping the product flow shall not generate pressure in excess of the designed criteria for the whole system.

4.2 Construction

The design shall be compatible with the ambient temperature range of -25 °C to +60 °C. The manufacturer shall confirm the compatibility of materials, which may be in contact with the liquid and/or its vapour phase.

If the controller forms part of an earth continuity path, then the conductivity of the path shall be $< 10^6$ Ω.

The controller shall be of a durable construction.

The selection of materials and manufacturing processes shall consider environmental aspects.

5 Overfill prevention device

5.1 Equipment on the tank

A sensor with mechanical interface shall be according to EN 13616-2.

5.2 Equipment on the tank vehicle

The following equipment shall be on the tank-vehicle:

— one or more controllers;

  The controller shall provide:

  — interface up to the maximum specified number of sensors;

  — permissive/non-permissive output states.

— product supply system;

— appropriate devices for stopping the product flow;

— a connection between the controller and the sensor fitted with a socket according to Figure 1.

5.3 EMC requirements

The controller shall comply with:

— EN 61000-6-3 for emission;

— EN 61000-6-1 for immunity.

Furthermore, the controller shall be suitable for safe operation at the power supply of the tank vehicle. Disturbances according to ISO 7637-2 (pulse 2a, 2b, 3a, 3b and 4) shall not lead to malfunction.

5.4 Working characteristics

5.4.1 General

Upon the detection of a sensor´s signal "non-permissive", the controller shall provide a signal which causes the appropriate devices to stop the product flow, to prevent an overfill. A device shall be provided to indicate that the maximum filling level has been reached.

The overfill prevention device shall include an interface to ensure the safe working function and self-checking.

Power supply interruption or short circuit may be indicated.

5.4.2 Response time

— Sensor detection of the liquid to controller output as summary of two reaction times from status permissive to status non-permissive: maximum 2,5 s;

  — reaction time of the sensor (Δt_R) from status permissive to status non-permissive: maximum 1,5 s according to EN 13616-2;

  — controller reaction time from permissive to non-permissive: maximum 1 s;

— controller output to the ceasing of product flow: maximum 3 s.

The maximum time from the detection of the liquid to the ceasing of product flow shall be 5,5 s.

5.4.3 Current interface

5.4.3.1 Socket

The socket of the plug/socket connection between the controller and the sensor shall be according to Figure 1.

Both socket types can be connected to plug type 907, type AS 907, type 904 or type 905 according to EN 13616-2. However, the types AS of sockets and plugs provide listener and grounding connection.