



UL 80079-36

STANDARD FOR SAFETY

Explosive Atmospheres – Part 36: Non-Electrical Equipment for Explosive Atmospheres – Basic Method and Requirements

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UL Standard for Safety for Explosive Atmospheres – Part 36: Non-Electrical Equipment for Explosive Atmospheres – Basic Method and Requirements, UL 80079-36

First Edition, Dated June 2, 2021

Summary of Topics

This editorial revision of ANSI/UL 80079-36 dated June 23, 2021 corrects Clause [5.1DV](#) to add a Special Note to denote the legislative markup in paragraphs 5, 6, and 7 are part of the ISO standard formatting; Clause [6.4.2.1 DV.1](#) to replace “Group 1” with “Group I”; and Clause [11.5DV](#) Example to add Zone reference.

UL 80079-36 is an adoption of ISO/IEC 80079-36, First Edition, issued by ISO/IEC February 2016 and Corrigendum 1 issued October 2019. Please note that the National Difference document incorporates all of the U.S. national differences for UL 80079-36.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

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UL 80079-36

**Standard for Explosive Atmospheres – Part 36: Non-Electrical Equipment
for Explosive Atmospheres – Basic Method and Requirements**

First Edition

June 2, 2021

This ANSI/UL Standard for Safety consists of the First Edition including revisions through June 23, 2021.

The most recent designation of ANSI/UL 80079-36 as an American National Standard (ANSI) occurred on June 2, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or Preface. The National Difference Page and IEC Foreword are also excluded from the ANSI approval of IEC-based standards.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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Preface (UL)

This UL Standard is based on ISO/IEC Publication 80079-36: First edition, Explosive Atmospheres – Part 36: Non-Electrical Equipment for Explosive Atmospheres – Basic Method and Requirements. ISO/IEC publication 80079-36 is copyrighted by the IEC.

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Note – Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES – Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard ISO 80079-36 has been prepared by IEC sub-committee 31M: Non-electrical equipment and protective systems for explosive atmospheres, of IEC 31: Equipment for explosive atmospheres.

The text of this standard is based on the following documents of the IEC:

FDIS	Report on voting
31M/103/FDIS	31M/109/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table. In ISO, the standard has been approved by 15 P members out of 22 having cast a vote.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

"A list of all parts in the IEC 60079 series, under the general title *Explosive atmospheres*, as well as the International Standard 80079 series, can be found on the IEC website."

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This part of ISO/IEC 80079 addresses for the first time basic requirements and protection concepts for mechanical explosion protected equipment on an international level. Up to now, with some exceptions, only the design, manufacture, installation and operation of electrical equipment in explosive atmospheres have been addressed in ISO and IEC standards. Examples of non-electrical equipment are: couplings, pumps, gearboxes, brakes, hydraulic and pneumatic motors and any combination of devices to realise a machine, fan, engine, compressor, assemblies, etc.

Although many but not all of such machines use an explosion protected electric motor for motive power the measures needed to reduce the risk of ignition in mechanical equipment as part of the machine may be different to those applied to electrical equipment.

DE Whereas non-explosion protected electrical equipment working within design parameters often contains effective ignition sources such as sparking parts, this is not necessarily true for mechanical equipment which is designed to operate without breakdown between predetermined maintenance operations.

DE Where malfunctions have to be considered, mechanical equipment can often meet the requirements for EPL Gb or Db equipment by a proper choice of well-tried constructional measures that would reduce failures causing ignition sources to an acceptably low level. Generally there are two mechanical ignition scenarios that need to be considered. These are, ignition resulting from a failure in the machine such as a bearing over-heating or ignition created by the normal functioning of the machine such as a hot brake surface.

DE Experience has shown that it is essential to perform a comprehensive ignition hazard assessment on the complete mechanical equipment to identify all potential ignition sources and determine if they can become effective ignition sources during the expected lifetime of the mechanical equipment. Once these ignition risks are understood and documented it is then possible to assign protective measures, depending on the required Equipment Protection Level (EPL), to minimise the probability that these ignition sources will become effective. This is the fundamental difference to standards for electrical equipment.

This standard addresses mechanical equipment and assemblies intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition.

Potential ignition sources are not limited to those created by the equipment but include any ignition sources created by the operation of the equipment; for example hot surfaces when pumping hot fluids or electrostatic charging when handling plastics.

If the only source of ignition of an item comes from the external process such items are not considered to have their own source of ignition, and they are not in the scope of this part of ISO/IEC 80079.

DE This document addresses for the first time basic requirements and protection concepts for mechanical explosion protected equipment from ISO 80079-36, which was based on the European EN13463 series of standards.

NOTE Examples are items made from plastics (polymers) like plastic pipes and containers that can become charged due to an external process (and not by the operation of the equipment), or items that can become hot due to an external process (like a pipe). These are not considered to be "non-electrical equipment" on their own. If on the other hand such items are incorporated into non-electrical equipment, and could become an ignition source by the intended operation of the equipment, they need to be assessed

together with the equipment under consideration (for example a plastic pipe as part of a petrol dispenser could become charged due to the operation of this dispenser).

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