Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Zone 0, Zone 1, and Zone 2

API RECOMMENDED PRACTICE 505
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Introduction

This recommended practice (RP) is under the joint jurisdiction of the API Exploration and Production (E&P) Department Committee on Production Equipment Standards, the API Manufacturing Distribution Marketing (MDM) Department, Committee on Refinery Equipment, and the Pipeline Operations Technical Committee. It is based upon a level of knowledge gained through experience and through the successful application of this practice in refining; drilling, and producing, and pipeline segments of the petroleum industry.

The first edition of RP 505 was prepared as a supplement to the 1996 edition of the National Electrical Code (NEC), Article 505, with a scope limited to those petroleum facility locations classified as Class I, Zone 0, Zone 1, and Zone 2. It was issued in November 1997, reaffirmed in November 2013, and has been referenced in all issues of the NEC since the 1999 edition.

The second edition of RP 505 was published in April 2018.

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1 Scope

1.1 Purpose

1.1.1 The purpose of this recommended practice (RP) is to provide guidelines for classifying locations Zone 0, Zone 1, and Zone 2 at petroleum facilities for the selection and installation of electrical equipment. Basic definitions given in the 2023 edition of NFPA 70, the *National Electrical Code* (*NEC*), have been followed in developing this RP. This publication is only a guide and requires the application of sound engineering judgment.

NOTE Recommendations for determining the degree and extent of classified locations Class I, Division 1, and Division 2 are addressed in API 500, *Recommended Practice for Classification of Electrical Installations at Petroleum Facilities Classified as Class I, Division 1, and Division 2*.

1.1.2 Electrical installations in areas where flammable liquids, gases, or vapors are produced, processed, stored, or otherwise handled can be suitably designed if the locations of potential sources of release and accumulation are clearly defined. Once a location has been classified, requirements for electrical equipment and associated wiring shall utilize applicable publications that apply this document, such as NFPA 70 (*NEC*), CSA C22.1 (*Canadian Electrical Code*), or API 14FZ.

NOTE 1 There are other publications that establish area classification criteria that may differ from those in this document. Refer to those documents for installation requirements, protection techniques, and wiring methods that align with the area classification criteria applied.

NOTE 2 Recommendations for electrical installations for locations classified Class I, Division 1, and Division 2 are addressed in API 14F, *Recommended Practice for Design, Installation, and Maintenance of Electrical Systems for Fixed and Floating Offshore Petroleum Facilities for Unclassified and Class I, Division 1, and Division 2 Locations*.

1.2 Application

1.2.1 This RP applies to the classification of locations for both temporarily and permanently installed electrical equipment. It is intended to be applied where there may be a risk of ignition due to the presence of flammable gases, flammable liquid produced vapors, or combustible liquid produced vapors mixed with air under normal atmospheric conditions. Normal atmospheric conditions are defined as conditions that vary above and below reference levels of 101.3 kPa (14.7 psia) and 20 °C (68 °F), provided that the variations have a negligible effect on the explosion properties of the flammable materials.

The following items are beyond the scope of this document:

a) piping systems used for odorized natural gas that is used as fuel for cooking, heating, air conditioning, laundry, and similar appliances;

b) catastrophes such as well blowouts or process vessel ruptures—such extreme events are not predictable and require emergency measures at the time of occurrence;

c) the suitability of locations for the placement of non-electrical incendiary equipment;

d) classification for locations containing combustible dust, ignitable fibers, or flyings;

e) installations underground in mines;