

zero INDUSTRIES

PRACTICE NOTE

EDITION 3 OF THE DUST CLASSIFICATION STANDARD.

What IEC 60079-10-2:2026 changes, and how it applies to Australian plants while AS/NZS 60079.10.2:2016 remains in force

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STANDARDS COMPARED IEC 60079-10-2:2026 and AS/NZS 60079.10.2:2016

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ABSTRACT.

In June 2026 the International Electrotechnical Commission (IEC) published the third edition of IEC 60079-10-2, the international standard for classifying areas where explosive dust atmospheres can occur. In Australia, AS/NZS 60079.10.2:2016, an identical adoption of the 2015 second edition, remains the standard called up through AS/NZS 3000 and is the applicable edition until Standards Australia adopts the new text. We compared the two editions clause by clause. The IEC classes each of the 29 changes it lists as minor and editorial or as an extension. None is a major technical change, so no classification that conforms to the 2016 standard is invalidated. The changes still matter in practice. Edition 3 adds minimum ignition energy, minimum explosible concentration and limiting oxygen concentration to the material data that must be considered, treats all metal dusts as Group IIIC, redefines combustible flyings, recommends a review interval of no more than three years where housekeeping or dust capture is relied on, gives a visual test for adequate housekeeping, moves the containment analysis into the classification study, and introduces three routes to leaving an area or equipment interior unclassified. It also softens three requirements from shall to should. This paper sets out the changes, what each means for an operating plant, and how Zero Industries applies the two editions together.

KEYWORDS: COMBUSTIBLE DUST; HAZARDOUS AREA CLASSIFICATION; IEC 60079-10-2; AS/NZS 60079.10.2; ZONES; HOUSEKEEPING; DUST GROUP

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01 INTRODUCTION.

Dust hazardous area classification in Australia follows AS/NZS 60079.10.2. AS/NZS 3000:2018 Clause 7.7.2.1 places responsibility for classifying a hazardous area on the persons or parties in control of the installation, and names AS/NZS 60079.10.2 as the standard for combustible dust. The current Australian edition, published in 2016, is identical with IEC 60079-10-2 Edition 2.0 (2015) (AS/NZS 60079.10.2:2016, Preface).

In June 2026 the IEC published Edition 3.0. It cancels and replaces the 2015 edition and is described as a technical revision (IEC 60079-10-2:2026, Foreword). Plant owners, designers and contractors will meet the new edition in overseas specifications, in equipment documentation and in consultants' reports before any Australian adoption.

This paper sets out what changed, which changes affect existing classifications, and how we apply the new edition alongside the one that remains in force here. We read both texts in full and compared them clause by clause. Quotations are from the editions named.

02 STATUS OF THE TWO EDITIONS.

Until Standards Australia publishes an adoption of Edition 3, AS/NZS 60079.10.2:2016 is the applicable edition in Australia. An Australian adoption may carry national content, as the 2016 adoption does. Its preface excludes domestic installations and small, manual, non-continuous commercial operations such as in-store bakeries, and names AS/NZS 4761 as one way to support the competence of the people doing the classification (AS/NZS 60079.10.2:2016, Preface).

The foreword to the 2026 edition lists 29 significant changes and classes each one as a minor and editorial change, an extension, or a major technical change. Extensions add technical options without raising the requirements for a classification that already conforms to the previous edition, so "these will not have to be considered for existing area classifications in conformity with the preceding edition" (IEC 60079-10-2:2026, Foreword).

Major technical changes are those that an existing classification may not meet. None of the 29 changes is classed as major. On the IEC's own terms, a classification that conforms to AS/NZS 60079.10.2:2016 is not made non-conforming by Edition 3.

The new edition also draws more openly on North American practice. Its definition of minimum explosible concentration is taken from NFPA 660:2025 (3.2.1), its note on fine dust density comes from NFPA 499 (4.1.1 Note 1), and it names NFPA 499 and NFPA 660 among the published sources of dust data (4.9 Note 1).

03 WHAT CHANGED.

Table 1 sets out the principal changes, with the clause in each edition.

TABLE 1. PRINCIPAL CHANGES FROM AS/NZS 60079.10.2:2016 (IDENTICAL WITH IEC 60079-10-2:2015) TO IEC 60079-10-2:2026

TOPIC	AS/NZS 60079.10.2:2016	IEC 60079-10-2:2026	EFFECT
Scope	Standard atmospheric conditions. Excludes underground mines, explosives dusts, catastrophic failures and toxic gas from dust (Cl 1)	Adds that air is assumed to hold about 21 % oxygen by volume. Also excludes rooms for medical purposes and domestic premises (Cl 1)	Clarification
Combustible flyings	Particles greater than 500 µm in nominal size (3.8)	Particles where one dimension is greater than 500 µm (3.1.2)	Can move flake-shaped material into Group IIIA, the less onerous group
Metal dusts	Grouped by measured electrical resistivity (3.6)	Treated as conductive, Group IIIC, whatever the measured resistivity (3.1.5 Note 2)	More onerous for some metal powders
Material data	Particle size, moisture, cloud and layer ignition temperatures, resistivity and dust group shall be considered (4.2 a)). MIE and explosive limits listed among properties that should be recorded (8.1)	MIE and MEC join the shall list, with LOC when needed (4.9 a)). Published data to be chosen for a conservative outcome where validated tests are absent (4.9)	More data, more rigour
Small quantities	National note in the AS/NZS preface (in-store bakeries)	Six factors for deciding not to classify (4.1.2)	New option
Zone NE	No equivalent	Zone of negligible extent, treated as non-hazardous on criteria based on four factors (3.10.4, 4.1.3)	New relief
Inerting	No equivalent	Dust made inert by mixing with non-combustible dust, or oxygen replaced by inert gas. With inert gas, the equipment interior should be a less onerous zone or non-hazardous (4.1.4)	New relief
Equipment interiors	Addressed only in definitions and examples	Commonly hazardous. Controls relied on to be noted in the documents, for example on the drawings (4.4)	New guidance

TOPIC	AS/NZS 60079.10.2:2016	IEC 60079-10-2:2026	EFFECT
Coincidence of dust and ignition	Measures shall be taken (4.1)	Likelihood should be controlled (4.2)	Softer wording
Review	After process or material changes, after commissioning, then periodically (4.2)	Management of change shall identify changes. Review interval should not exceed three years where housekeeping or capture is relied on, or for batch plants (4.5)	Adds a number and an alternative
Competence	Should (4.3)	Shall (4.8)	Stricter
Containment analysis	Shall be studied. Results in the verification dossier. Cloud and layer (5.2)	Shall be analysed. Results in the classification study. Cloud or layer (5.2)	Moves the record. Softer on “and”
Zone 21 and 22 extents	Layer-extension guidance in notes. Extent depends on dust amounts, flow rate, particle size and moisture (6.2.3, 6.2.4)	Made normative. MEC and release rate named among the parameters (6.2.3, 6.2.4)	Stricter
Indicative Zone 22 extent	About 3 m around the source (Annex A.1.4, informative)	About 1 m to 3 m around a secondary source (Annex B.1.4, informative)	Lower bound reduced
Housekeeping	Good, fair and poor levels. Conditions that can raise a cloud shall be considered (Annex B.2)	Same three levels. Adds a field test: layers under 3 mm with the surface colour visible. Conditions should be considered (Annex C.1, C.2)	Adds a test. Softer wording
Hot surfaces under layers	Named as a hazard (Annex B.1)	Adds control by limiting surface temperature, and notes the hazard can arise in non-hazardous areas too (Annex C.3)	More guidance
Hybrid mixtures	Explosive if the gas exceeds 25 % of its LEL (Annex C.3)	Explosive if the gas exceeds 25 % of its LFL and the dust exceeds 25 % of its MEC (Annex D.3)	Fewer mixtures treated as explosive
Documentation	Six listed items including housekeeping and EPLs (8.1). Drawings show zones, layers and ignition temperatures (8.2.1)	Eleven items, adding process conditions, layer thickness, permitted group and maximum surface temperature (8.1). Drawings add equipment group. Data sheet formats (8.2, Annex A)	More content
Annexes	Worked examples in Annex A	Worked examples in Annex B. Annex A holds symbols and data sheets	Citation change

Abbreviations: MIE, minimum ignition energy; MEC, minimum explosible concentration; LOC, limiting oxygen concentration; LEL and LFL, lower explosive and lower flammable limit; EPL, equipment protection level.

04 WHAT THE CHANGES MEAN FOR AN OPERATING PLANT.

4.1 MATERIAL DATA WAS ALREADY REQUIRED

The most useful thing Edition 3 does for Australian plants is draw attention to a requirement that already applies. AS/NZS 60079.10.2:2016 Clause 4.2 a) requires particle size, moisture content, cloud and layer minimum ignition temperatures and electrical resistivity to be considered, and the dust group to be identified. Its Clause 8.1 adds minimum ignition energy and explosive limits to the properties that should be recorded.

The 2026 edition moves minimum ignition energy and minimum explosible concentration into the list that shall be considered, adds limiting oxygen concentration where it is needed (4.9 a)), and asks that published values be chosen for a conservative outcome where there is no validated test for the material (4.9). It names published sources, including the GESTIS-DUST-EX database, NFPA 499, NFPA 660 and the Marquette University Combustible Dust Performance-Based Design Center (4.9 Note 1).

A classification that states zones without the material data behind them does not meet the 2016 edition, let alone the new one. Where a value is taken from a published source, the report should say which source and why the value chosen is conservative for the material on site. Both editions point to ISO/IEC 80079-20-2 for test methods.

4.2 THE DUST GROUP: METAL DUSTS AND FLYINGS

Two definitions that decide the dust group, and so the equipment, have changed. Metal dust is now treated as conductive, Group IIIC, because surface oxidation cannot be depended on to keep its resistivity above 1 kΩ·m (3.1.5 Note 2). The 2016 edition groups by measured resistivity alone (3.6).

For plants that handle metal powders, the new definition is the more onerous position. The 2016 text does not prevent a classifier choosing the more onerous group, so we adopt Group IIIC for all metal dusts now and state the basis in each report.

The definition of combustible flyings moves the other way. The 2016 edition defines flyings as solid particles greater than 500 µm in nominal size (3.8). The 2026 edition defines them as solid particles where one dimension is greater than 500 µm (3.1.2).

Flake-shaped and fibrous material, such as the skins, husks and chaff of food processing, can pass a 500 µm sieve while one of its dimensions exceeds 500 µm. The two editions can therefore place the same material in different groups: Group IIIA as flyings under Edition 3, and Group IIIB as non-conductive dust under 2016. Because Group IIIA is the less onerous group, we keep the 2016 test unless the particle size and shape of the actual material give a specific reason to do otherwise, and the report states it.

4.3 NEW ROUTES TO LEAVING AN AREA UNCLASSIFIED

The new edition adds three routes to treating an area or an equipment interior as non-hazardous. None has a counterpart in the body of the 2016 edition.

Small quantities (4.1.2) lists six factors, from cleanliness and industry practice to ventilation and exposure controls, for deciding that a small quantity of dust does not warrant classification. Australian readers will recognise its example, the small bakery, from the AS/NZS 2016 preface.

Zone NE (3.10.4, 4.1.3) allows a zone of negligible extent to be treated as non-hazardous, with the criteria based on four factors: whether ignition would produce harmful pressure or flying debris, whether it would produce harmful heat or a fire in surrounding material, whether the release deposits a significant layer (indicated by a discernible colour difference), and the potential for ignition of the release to raise a larger cloud from layers nearby.

Inerting (4.1.4) covers dust made non-combustible by mixing it with a non-combustible dust, confirmed by testing unless data exists for the mixture, and equipment in which the oxygen is replaced by an inert gas. With inert gas, the interior of the equipment should be classified as a less onerous zone or as non-hazardous, and the reliability of the controls should be commensurate with the reduction (4.1.4.2). A safety integrity level assessment to IEC 61511 is given as one way to show that reliability (4.4).

Each is a legitimate engineering tool, and each reduces a classification, so we use them only as Section 5 sets out. The same applies to the informative Zone 22 extent. The 2016 annex suggests about 3 m around the source of release (A.1.4), and Edition 3 suggests about 1 m to 3 m around a secondary source (B.1.4). We start from about 3 m and go below it only where a smaller extent is justified for that source and the basis is stated.

4.4 REVIEW AND MANAGEMENT OF CHANGE

The 2016 edition already requires a classification to be reviewed after changes to the process or the materials, if dust emission becomes more common as the plant deteriorates, after commissioning, and periodically after that (4.2). The new edition makes management of change explicit and adds a number.

Management-of-change procedures shall identify any change that could affect the classification, and the classification shall then be reviewed (4.5). Where housekeeping or fugitive capture is used to reduce the classification, or where a plant makes varied products in batches, periodic review is advisable at intervals of no more than three years (4.5). The review is an audit of the facility against its classification documents (4.5 Note 1). Where housekeeping or capture has deteriorated, the advice is to fix the controls and keep the classification (4.5 Note 2).

Clause 4.5 also describes the alternative. A plant with limited housekeeping and a conservative classification, with zones extended to the walls as in its example of a grain transfer facility, might not need periodic review (4.5). For a plant owner this is a real choice, and Table 2 sets it out.

TABLE 2. TWO ROUTES UNDER IEC 60079-10-2:2026 CLAUSE 4.5

	CREDIT HOUSEKEEPING OR DUST CAPTURE	CLASSIFY CONSERVATIVELY
Zone extent	Smaller, and dependent on the controls being maintained	Larger, for example to the walls of the room
Ex equipment	Needed in a smaller area	Needed across a larger area
Ongoing obligation	Keep housekeeping and capture at the standard credited. Review at intervals of no more than three years	Periodic review might not be necessary. Review after any change still applies
If the controls slip	Restore the controls (4.5 Note 2)	The classification already assumes limited housekeeping
Typically suits	Steady processes with reliable, recorded housekeeping	Areas where housekeeping is hard to sustain, or where Ex equipment throughout is practical

Source: IEC 60079-10-2:2026 Cl 4.5 and its notes.

4.5 HOUSEKEEPING THAT CAN BE SEEN

Both editions describe three levels of housekeeping (good, fair and poor) in the same terms, and both note that cleaning frequency alone does not show whether a layer is a hazard (2016 Annex B.2, 2026 Annex C.2). The 2026 edition adds a field test.

Dust layers less than 3 mm thick, with the colour of the surface beneath still discernible, indicate that housekeeping and containment are working. Thicker layers found routinely should be considered in the classification, or in maintenance and housekeeping reviews (C.1). An operator can apply the test on a walk around the plant, and it gives a housekeeping standard a target that can be checked. It also cautions that dust capture by water or mist can let moisture and dust into equipment, which can defeat its explosion protection, and can change the resistivity of the material (C.1 Note 1).

4.6 THE CONTAINMENT ANALYSIS AND THE DRAWINGS

Both editions require the inside of dust containment to be assessed for normal operation, abnormal operation, start-up and shut-down, so that the presence of clouds and layers is identified (5.2). The 2016 edition sends the results to the verification dossier, an installation record that may not exist when the classification is done. The 2026 edition sends them to the hazardous area classification study (5.2), with the zones that depend on them. We put the containment analysis in the classification report under either edition.

The documents are also asked to show more. Clause 8.1 lists eleven kinds of information to be recorded, adding the process and operating conditions, the maximum dust layer thickness, the material properties from 4.9 a), the permitted equipment group and the permitted maximum surface temperature to the 2016 list. Clause 8.2 asks for drawings showing zone type and extent, permitted layer thickness, equipment group and the cloud and layer ignition temperatures, with a symbol key on each drawing, and Annex A offers data sheet formats.

Where specific controls such as inerting are relied on to achieve a classification, they should be noted in the documentation, for example on the drawings (4.4). Most of this is good practice under the 2016 edition already. Under the 2026 edition it becomes the expected content.

4.7 WHERE EDITION 3 IS SOFTER

In three places Edition 3 relaxes wording that is mandatory in the 2016 edition. Where an ignition source cannot be avoided, the 2016 edition says measures shall be taken to make the coincidence of dust and ignition source unlikely enough that the risk is negligible (4.1). The 2026 text says one or the other should be controlled (4.2).

Under the 2016 edition, any condition that can raise a cloud from a layer, such as someone entering the room, shall be considered in the classification (Annex B.2). The 2026 text says it should be considered (C.2). And the 2016 containment analysis identifies the incidence of cloud and layer presence, where Edition 3 says cloud or layer (5.2).

The hybrid mixture criterion changes too. Under the 2016 edition a gas and dust mixture is treated as explosive when the gas exceeds 25 % of its lower explosive limit (Annex C.3). The 2026 edition adds a second condition, that the dust also exceed 25 % of its minimum explosible concentration (D.3), so fewer mixtures meet it.

Any mixture that meets the 2026 criterion also meets the 2016 one. In each of these cases the 2016 wording stands (Section 5), and for hybrid mixtures we apply the 2016 criterion.

05 HOW ZERO INDUSTRIES APPLIES THE TWO EDITIONS.

Our practice depends on one distinction: which text sets the requirement, and which text is the better method.

AS/NZS 60079.10.2:2016 sets the requirement. It is the edition Australian law points to through AS/NZS 3000, and every classification we issue conforms to it.

The 2026 edition is our method wherever it adds rigour, as Section 4 describes topic by topic. Where it offers a relief that would make a zone smaller or a group less onerous, we use it only with a specific basis for that plant, stated in the report. Where it softens a 2016 requirement, the 2016 requirement stands.

When Standards Australia adopts Edition 3, with whatever national content the adoption includes, we will review this practice against the adopted text.

06 CONCLUSIONS.

Edition 3 of IEC 60079-10-2 is a careful revision of an established method. Zones, grades of release and the relationship between them are unchanged. Its weight falls on the record: what a classification has to show, what it relies on, and when it must be looked at again. An Australian plant can check its existing classification against that record now, while the 2016 edition still sets the requirement.

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