frequently because of repair or maintenance operations or because of leakage.

(3) Equipment is operated or processes are carried on of such a nature that equipment breakdown or faulty operations could result in the release of ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings and also cause simultaneous failure of electrical equipment in a mode to cause the electrical equipment to become a source of ignition.

(4) The location is adjacent to a Zone 20 location from which ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings could be communicated.

Exception: When communication from an adjacent Zone 20 location is minimized by adequate positive pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

(5) Group IIIC combustible dusts are present in hazardous quantities occasionally, under normal or abnormal operating conditions, or frequently because of repair or maintenance operations or because of leakage.

Informational Note No. 1: See ANSI/ISA 60079-10-2 (12.10.05), *Explosive Atmospheres — Part 10-2: Classification of Areas — Combustible Dust Atmospheres*, regarding the classification of Zone 21 locations.

Informational Note No. 2: This classification usually includes the following:

(1) Locations outside dust containment and in the immediate vicinity of access doors subject to frequent removal or opening for operation purposes when internal combustible mixtures are present

(2) Locations outside dust containment in the proximity of filling and emptying points, feed belts, sampling points, truck dump stations, belt dump over points, and so on, where no measures are employed to prevent the formation of combustible mixtures

(3) Locations outside dust containment where dust accumulates and where, due to process operations, the dust layer is likely to be disturbed and form combustible mixtures

(4) Locations inside dust containment where explosible dust clouds are likely to occur (but neither continuously, nor for long periods, nor frequently), for example, silos (if filled and/or emptied only occasionally) and the dirty side of filters if large self-cleaning intervals are occurring

Δ **(3) Zone 22.** A Zone 22 location is a location where one of the following apply:

(1) Ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings are not likely to occur in normal operation and, if they do occur, will only persist for a short period.

(2) Combustible dust, combustible fibers/flyings, or ignitible fibers/flyings are handled, processed, or used, but the dust or fibers/flyings are normally confined within closed containers of closed systems from which they can escape only as a result of the abnormal operation of the equipment with which the dust or fibers/flyings are handled, processed, or used.

(3) The location is adjacent to a Zone 21 location, from which ignitible concentrations of combustible dust, combustible fibers/flyings, or ignitible fibers/flyings could be communicated.

Exception No. 1: When communication from an adjacent Zone 21 location is minimized by adequate positive pressure ventilation from a source of clean air, and effective safeguards against ventilation failure are provided.

Exception No. 2: For Group IIIC combustible dusts or metal combustible fibers/flyings, there shall only be Zone 20 or 21 locations.

Informational Note No. 1: See ANSI/ISA 60079-10-2 (12.10.05), *Explosive Atmospheres — Part 10-2: Classification of Areas — Combustible Dust Atmospheres*, regarding the classification of Zone 22 locations.

Informational Note No. 2: Zone 22 locations usually include the following:

(1) Outlets from bag filter vents (in the event of a malfunction, there can be emission of combustible mixtures)

(2) Locations near equipment that has to be opened at infrequent intervals or equipment that from experience can easily form leaks where, due to pressure above atmospheric, dust will blow out

(3) Pneumatic equipment or flexible connections that can become damaged

(4) Storage locations for bags containing dusty product (failure of bags can occur during handling, causing dust leakage)

(5) Locations where controllable dust layers are formed that are likely to be raised into explosible dust–air mixtures

Only if the layer is removed by cleaning before hazardous dust–air mixtures can be formed is the area designated unclassified.

Informational Note No. 3: Protective measures to reduce the formation of explosible dust–air mixtures can often result in a Zone 21 location being classified as a Zone 22 location, or possibly unclassified. Such measures include local exhaust ventilation.

Δ **506.6 Material Groups.** For the purposes of testing, approval, and area classification, various air mixtures (not oxygen enriched) shall be grouped as follows:

(1) Group IIIC: Combustible metal dust, including combustible metal fibers/flyings. [**499:**3.3.8.2.1]

(2) Group IIIB: Combustible dust other than combustible metal dust. [**499:**3.3.8.2.2]

(3) Group IIIA: Combustible fibers/flyings or ignitible fibers/flyings other than metal. [**499:**3.3.8.2.3]