

(M) Optical System with Interlock “op sh”. This protection technique shall be permitted for equipment in Zone 20, 21, or 22 locations for which the equipment is identified.

(N) Protection by Skin Effect Trace Heating “IEEE 844.1”. This protection technique shall be permitted for skin effect trace heating equipment in Zone 21 or Zone 22 for which it is listed.

N (O) Pressurized Room “p”. This protection technique shall be permitted in Zone 21 and Zone 22 locations for which it is identified.

N (P) Special Protection “s”. This protection technique shall be permitted for equipment in Zone 20, Zone 21, or Zone 22 locations for which they are listed.

506.9 Equipment Requirements.

(A) Suitability. Suitability of identified equipment shall be determined by one of the following:

- (1) Equipment listing or labeling
- (2) Evidence of equipment evaluation from a qualified testing laboratory or inspection agency concerned with product evaluation
- (3) Evidence acceptable to the authority having jurisdiction such as a manufacturer’s self-evaluation or an owner’s engineering judgment

Informational Note: Additional documentation for equipment might include certificates demonstrating compliance with applicable equipment standards, indicating special conditions of use, and other pertinent information.

(B) Listing. Equipment that is listed for Zone 20 shall be permitted in a Zone 21 or Zone 22 location of the same combustible dust, combustible fiber/flyings, or ignitable fiber/flyings. Equipment that is listed for Zone 21 shall be permitted in a Zone 22 location of the same combustible dust, combustible fiber/flyings, or ignitable fiber/flyings.

(C) Marking.

(1) Division Equipment. Equipment identified for Class II, Division 1, Class II, Division 2, Class III, Division 1, or Class III, Division 2 shall, in addition to being marked in accordance with 500.8(C), be permitted to be marked with all of the following:

- (1) Zone 20, 21, or 22 (as applicable)
- (2) Material group in accordance with 506.6
- (3) Maximum surface temperature in accordance with 506.9(D), marked as a temperature value in degrees C, preceded by “T” and followed by the symbol “°C”

Δ (2) Zone Equipment. Equipment meeting one or more of the protection techniques described in 506.8 shall be marked with the following in the order shown:

- (1) Zone in accordance with Chapter 9, Table 13
- (2) Symbol “AEx”

The symbol AEx identifies the equipment as meeting American national standards. In European Union countries, the symbol EEx was used historically but no longer appears in current European standards. Only equipment marked AEx has been evaluated for use in electrical systems and hazardous locations covered by the NEC®.

- (3) Protection technique(s) in accordance with Chapter 9, Table 13
- (4) Material group in accordance with 506.6
- (5) Maximum surface temperature in accordance with 506.9(D), marked as a temperature value in degrees Celsius, preceded by “T” and followed by the symbol “°C”
- (6) Ambient temperature marking in accordance with 506.9(D)
- (7) Equipment protection level (EPL)

Informational Note: EPLs are designated as G for gas, or D for dust, and are then followed by a letter (a, b, or c) to give the user a better understanding as to whether the equipment provides (a) a “very high,” (b) a “high,” or (c) an “enhanced” level of protection against ignition of an explosive atmosphere. For example, a Zone 21 AEx pb IIIB T165°C Db motor is marked with an EPL of “Db”.

Exception: Associated apparatus NOT suitable for installation in a hazardous (classified) location shall be required to be marked only with 506.9(C)(2)(2) and (C)(2)(3), and where applicable (C)(2)(4), but BOTH the symbol AEx in 506.9(C)(2)(2) and the symbol for the type of protection in 506.9(C)(2)(3) shall be enclosed within the same square brackets; for example, [AEx ia] IIIC.

(D) Temperature Classifications. Equipment shall be marked to show the maximum surface temperature referenced to a 40°C ambient, or at the higher marked ambient temperature if the equipment is rated and marked for an ambient temperature of greater than 40°C. For equipment installed in a Zone 20 or Zone 21 location, the operating temperature shall be based on operation of the equipment when blanketed with the maximum amount of dust (or with dust-simulating fibers/flyings) that can accumulate on the equipment. Electrical equipment designed for use in the ambient temperature range between –20°C and +40°C shall require no additional ambient temperature marking. Electrical equipment that is designed for use in a range of ambient temperatures other than –20°C and +40°C is considered to be special, and the ambient temperature range shall then be marked on the equipment, including either the symbol “Ta” or “Tamb” together with the special range of ambient temperatures.

Informational Note: As an example, such a marking might be “–30°C ≤ Ta ≤ +40°C.”

Exception No. 1: Equipment of the non-heat-producing type, such as conduit fittings, shall not be required to have a marked operating temperature.

Exception No. 2: Equipment identified for Class II, Division 1 or Class II, Division 2 locations as permitted by 506.20(B)