3-Phase Motor 2016 Final IHP (Integral HP) Rule

NEMA Premium

- Replaces Energy Independence and Security Act of 2007
- Takes effect June 1, 2016
- Almost all motors will be covered at Premium Efficiency levels NEMA MG1, Table 12-12 or Part 20, Table B (IE3)
- EISA 2007 Subtype 1 and II, 1-200 HP must now meet Table 12-12-NEMA Premium Efficient
- 56 Frame 3-phase Enclosed motors must now meet Table 12-12-NEMA Premium Efficient
- Custom 3-Phase motors must now meet Table 12-12-NEMA Premium Efficient

3-PHASE MOTORS COVERED UNDER IHP FINAL RULE

- Is a single speed induction motor
- Is rated for continuous duty (MG 1) operation or for duty type S1 (IEC)
- Contains a squirrel-cage (MG 1) or cage (IEC) rotor
- Operated on polyphase alternating current (AC) 60Hz sinusoidal line power
- Has 2-, 4-, 6-, or 8-pole configuration
- Is rated 600V or less
- Have a 3 or 4 digit NEMA frame size (or IEC metric equivalent), including: designs between 2 consecutive NEMA frame sizes (or IEC metric equivalent), or enclosed 56 NEMA frame size (or IEC metric equivalent)
- 2-digit frame size TENV and TEFC motors that are 1.0 HP and larger must also be in compliance.
- Between 1 and 500 HP (or kilowatt equivalent)
- Meets all performance requirements of NEMA design A, B, or C or IEC design N or H electric motor

NEMA Premium Nominal Full-Load Efficiency

Motor HP	Open Motors RPM			Enclosed Motors RPM		
	1200	1800	3600	1200	1800	3600
1	82.5	85.5	77.0	82.5	85.5	77.0
1½	86.5	86.5	84.0	87.5	86.5	84.0
2	87.5	86.5	85.5	88.5	86.5	85.5
3	88.5	89.5	85.5	89.5	89.5	86.5
5	89.5	89.5	86.5	89.5	89.5	88.5
7½	90.2	91.0	88.5	91.0	91.7	89.5
10	91.7	91.7	89.5	91.0	91.7	90.2
15	91.7	93.0	90.2	91.7	92.4	91.0
20	92.4	93.0	91.0	91.7	93.0	91.0
25	93.0	93.6	91.7	93.0	93.6	91.7
30	93.6	94.1	91.7	93.0	93.6	91.7
40	94.1	94.1	92.4	94.1	94.1	92.4
50	94.1	94.5	93.0	94.1	94.5	93.0
60	94.5	95.0	93.6	94.5	95.0	93.6
75	94.5	95.0	93.6	94.5	95.4	93.6
100	95.0	95.4	93.6	95.0	95.4	94.1
125	95.0	95.4	94.1	95.0	95.4	95.0
150	95.4	95.8	94.1	95.8	95.8	95.0
200	95.4	95.8	95.0	95.8	96.2	95.4
250	95.8	95.8	95.0	95.8	96.2	95.8
300	95.8	95.8	95.4	95.8	96.2	95.8
350	95.8	95.8	95.4	95.8	96.2	95.8
400	—	95.8	95.8	95.8	96.2	95.8
450	—	96.2	96.2	95.8	96.2	95.8
500	—	96.2	96.2	95.8	96.2	95.8

Motor Compliance Certification (CC) Numbers

The Department of Energy (DOE) has mandated energy efficiency levels for certain classes of 1- and 3-phase electric motors. For certain categories within these groups of energy efficient motors, a Compliance Certification (CC) number that is unique to a specific motor manufacturer, assigned by the DOE, must appear on the motor's nameplate. The CC number is listed in the Tech Spec section on Grainger.com® for affected motors.

Motor Compliance Certification (CC) Numbers

Dayton Brand	National Brand	
CC005A	CC001A	CC029A
CC029A	CC003A	—
CC030A	CC004A	—
CC060A	CC005A	—

Hazardous Location Motor Temperature Codes

In addition to identifying the Class, Group, and Division of the hazardous location motor, you must also obtain the temperature code or maximum surface temperature for the motor. This code or temperature indicates the maximum surface temperature for all conditions including burnout, overload, single phasing, and locked rotor. The maximum surface temperature or T-Code must be identified on the nameplate.

TEMPERATURE IDENTIFICATION NUMBERS

"T" Number (T-Code On Nameplate)	Max. Temp. (For All Conditions)		"T" Number (T-Code On Nameplate)	Max. Temp. (For All Conditions)	
T1	450°C	842°F	T3A	180°C	356°F
T2	300°C	572°F	T3B	165°C	329°F
T2A	280°C	536°F	T3C	160°C	320°F
T2B	260°C	500°F	T4	135°C	275°F
T2C	230°C	446°F	T4A	120°C	248°F
T2D	215°C	419°F	T5	100°C	212°F
T3	200°C	392°F	T6	85°C	185°F

National Electrical Code Explosive Atmosphere Classifications

Certain locations are hazardous because the atmosphere may contain gas, vapor, or dust in explosive quantities. The National Electrical Code (NEC) divides these locations into Classes and Groups according to the type of explosive agent which may be present. Listed are some of the agents in each classification. For a complete list, see NFPA (National Fire Protection Association) publication 497M.

Underwriters Laboratories tests motors and other devices for safety in explosive atmospheres, and publishes a list of those products that meet its standards for each Class and Group.

Use of UL Listed devices does not necessarily make an installation conform to the NEC or local codes. Consult Chapter 5 of the NEC, local building codes, OSHA requirements, and insurance inspectors for detailed data as to proper procedures. This catalog does not contain any motors designed for Class I, Groups A or B atmospheres.

CLASS I

Group A: Acetylene

Group B: Butadiene, ethylene oxide, hydrogen, propylene oxide, manufactured gases containing more than 30% hydrogen by volume

Group C: Acetaldehyde, cyclopropane, diethyl ether, ethylene

Group D: Acetone, acrylonitrile, ammonia, benzene, butane, ethanol, ethylene dichloride, gasoline, hexane, isoprene, methane (natural gas), methanol, naphtha, propane, propylene, styrene, toluene, vinyl chloride, xylene

CLASS II

Group E: Aluminum, magnesium, and other metal dusts with similar characteristics

Group F: Carbon black, coke, or coal dust

Group G: Flour, starch, or grain dust

CLASS III

Easily ignitable fibers, such as rayon, cotton, sisal, hemp, cocoa fiber, oakum, excelsior, and other materials of similar nature