



Insulation Classes

Insulation systems are established by standard NEMA (National Electrical Manufacturers Association) based on an average 20,000 hour motor lifetime. This system classified maximum allowable operating temperatures for motors and it has been shown as below.

Temperature Tolerance Class	Maximum Operation Temperature Allowed		Allowable Temperature Rise at full load 1.0 service factor motor	Allowable Temperature Rise 1.15 service factor motor
	°C	°C	°F	°C
A	105	221	60	70
B	130	266	80	90
F	155	311	105	115
H	180	356	125	-

The maximum operation temperature is sum of reference temperature, allowable temperature rise and allowance for "hot spot" winding.

Moreover, heat is one of important factor that reduce life time of fan motor. The classification of motor insulation is indicated maximum operating temperature. If motor is operating above maximum operating temperatures, life time of fan motor decreases rapidly Each 10°C rise above the rating may reduce the motor lifetime by one half. It is important to be aware that insulation classes are directly related to motor life.

For example: A motor operating at 180 Degrees C will have an estimated life of only 300 hours with a Class A insulation system. If Class B insulation is used, estimated life is increased to 1,800 hours. If Class F insulation is used, 8,500 hours of life can be expected from the motor and with Class H insulation motor life will increase to tens of thousands of hours.