

**SPECIAL SPECIFICATION**

**SECTION 16276S**

**DRY TYPE TRANSFORMERS**

	<u>Page</u>
<b><u>PART 1 - GENERAL</u></b>	
1.01 Description of Work .....	2
1.02 References.....	2
1.03 Submittals .....	2
1.04 Delivery, Storage, and Handling.....	2
1.05 Warranty .....	3
1.06 Service Conditions .....	3
<b><u>PART 2 - PRODUCTS</u></b>	
2.01 Manufacturers.....	3
2.02 Dry Type Two-Winding Transformers .....	3
2.03 General.....	4
<b><u>PART 3 - EXECUTION</u></b>	
3.01 Installation.....	5
3.02 Field Quality Control.....	5

**SPECIAL SPECIFICATION**  
**SECTION 16276S**  
**DRY TYPE TRANSFORMERS**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Dry-type two-winding transformers.

**1.02 REFERENCES**

- A. IEEE C57.12.91 - Dry-Type Distribution and Power Transformers.
- B. NEMA ST 20 - Dry-Type Transformers for General Applications.
- C. UL 1561 - Dry-Type General Purpose and Power Transformers.

**1.03 SUBMITTALS**

- A. Include outline and support point dimensions of enclosures and accessories, unit weight, voltage, KVA, and impedance ratings and characteristics, no load core loss, full load winding conductor loss, full load losses, efficiency at 25 percent, 50 percent, 75 percent and 100 percent rated loads, percent regulation with 80 percent and 100 percent power factor loads, sound level, tap configurations, insulation system type and rated temperature rise.
- B. Indicate K-factor where applicable.
- C. Base data for electrical characteristics on actual laboratory tests of typical transformers.
- D. Provide operation and maintenance manual.

**1.04 DELIVERY, STORAGE AND HANDLING**

- A. Store in a warm, dry location with uniform temperature. Cover ventilating openings to keep out dust.
- B. Handle transformers using only lifting eyes and brackets provided for that purpose. Protect units against entrance of rain, sleet, or snow if handled in inclement weather.

1.05 WARRANTY

- A. Warrant design, materials, and workmanship for 12 months after acceptance by Owner from Contractor.

1.06 SERVICE CONDITIONS

- A. Design For Indoor Use.
- B. Seismic Design per IBC 2000; Seismic Design Category D; use Group 3; site Class D.
- C. Altitude: 6000 feet above sea level.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Dry-Type Two-Winding Transformers:
  - 1. Powersmiths.
  - 2. General Electric.
  - 3. **Mirus**
  - 4. **Cutler-Hammer**
  - 5. **Hevi-Duty**
  - 6. **Sorgel**
  - 7. **Square D**

2.02 DRY-TYPE TWO-WINDING TRANSFORMERS

- A. Factory-assembled, air cooled dry type transformers; ratings as scheduled; capable of operating at 100 percent load continuously at an ambient temperature of 40 degrees C.
- B. Insulation system and average winding temperature rise for rated kVA as follows:

KVA Rating	Insulation Class	Temperature Rise degrees C
1-15	185	115

KVA Rating	Insulation Class	Temperature Rise degrees C
16-500	220	150

2.03 GENERAL

- A. Maximum Case Temperature: 50 degrees C rise above ambient at its warmest point.
- B. Winding Taps, Transformers Less than 15 kVA: Two 5 percent below rated voltage, full capacity taps on primary winding.
- C. Winding Taps, Transformers 15 kVA and Larger: Two 2-1/2 percent below and two 2-1/2 percent above rated voltage, full capacity taps on primary winding.
- D. Sound Levels: Maximum noise level as follows:

kVA Rating	Noise Level Decibels
0 - 9	40
10 - 50	45
51 - 150	50
151 - 300	55

- E. Basic Impulse Level: 10 kV for transformers less than 300 kVA; 30 kV for transformers 300 kVA and larger.
- F. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.
- G. Mounting: Provide transformers 75 kVA and below suitable for wall, floor or trapeze mounting; transformers larger than 75 kVA suitable for floor mounting.
- H. Coil Conductors: Continuous copper windings with terminations welded or brazed to ends of the windings.
- I. Core: High grade, non-aging silicon steel with high magnetic permeability.
- J. Isolate core and coil from enclosure using vibration absorbing mounts.
- K. Nameplate: Include transformer connection data.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Set transformer plumb and level. Mount enclosure on vibration isolators to minimize noise transmission from the enclosure to supporting structure. Set floor mounted transformers at 10-degree angle to wall on a neoprene pad on housekeeping pads.
- B. Install transformer so that enclosure does not make contact with wall surface.
- C. Use flexible conduit, 2-foot minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.
- D. Ground neutral connection to service ground per codes.

### 3.02 FIELD QUALITY CONTROL

- A. Check for damage and tight connections prior to energizing transformer.
- B. Measure primary and secondary voltages and make appropriate tap adjustments.

END OF SECTION