



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

CONSTRUCTION STANDARD
FOR
CABLING AND WIRING

NPCS-CS-EL-06

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SCOPE

This standard describes the general requirements for installation of electrical cables and wires in petrochemical plants.

STANDARDS AND CODES

IEC, NEMA and NEC standards shall be applied for cabling and cable installation. Where reference is made to any standard and code herein, it is understood that equivalent IEC standard is preferable.

GENERAL

- .1 Cables may be run underground or aboveground, but preference should be given to underground cabling for its inherent protection against fire hazards and mechanical damage.
- .2 Wires in conduits are allowed for indoor lighting installations in utility buildings in safe areas, such as offices, messes, toilets and locker rooms, etc. Cables in ducts are also allowed in those cases in large buildings.
- .3 The use of flexible cables in electrical installations of plants shall be strictly limited to cases otherwise unsolvable. Such cables shall be of the heavy-duty type.



4 UNDERGROUND CABLING

- 4.1 Generally cables for underground installations should be directly buried, or should be in cable trench as per relevant standard.
- 4.2 Main cable routes shall be logical, e.g. alongside the roads, off-plot of the plant area or inside plot of plant units, in either of the two directions formed by the main axis and preferably outside the routing of heavy transport.
- 4.3 Cables shall generally be laid directly in the ground surrounded by 75 mm (3") of clean sand or sifted-fill and covered with earthenware or concrete tiles.
- 4.4 If owing to plant lay-out and/or area paving or flooring, direct burial of the cables is impractical, such as for main trunk routes on process plants, cables shall generally be laid in excavated trenches, covered with weak concrete in low traffic areas and by reinforced concrete slabs in high traffic areas. Cables shall be covered with sand or sifted-fill to at least 75 mm (3") around all cables and back filled with sand. Protective cable tiles will be ins-balled where no paving at grade exists. Cables leaving such trenches for short runs to motor, etc., shall do so in cement-fibre, earthenware or Steel pipe.
- 4.5 Where cables cross, the upper cable must maintain a 100 mm bed of clean sand or riddled soil.
- 4.6 Cable trenches shall not have more than two layers of load carrying cables.
- 4.7 HV cables may be laid in the same trench with LV cables, but shall then be separated, e.g. by means of a continuous row of concrete tiles with 100 mm thick and 300 mm wide placed vertically between the two types of cable or by any other suitable barrier. (see NPCS-SD-EL-39 and NPCS-SD-EL-40).
- 4.8 Laying patterns shall be strictly adhered to, since cable sizing and current ratings are based on group rating factors applied specifically to those patterns and relevant environmental conditions.

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