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**NATIONAL IRANIAN OIL REFINING & DISTRIBUTION COMPANY
NATIONAL IRANIAN OIL ENGINEERING
& CONSTRUCTION COMPANY**

NIOEC SP

NIOEC SPECIFICATION FOR LOW VOLTAGE CABLES AND WIRES

FIRST EDITION

JULY, 2005

THIS SPECIFICATION IS THE PROPERTY OF NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY. IT IS CONFIDENTIAL AND ALL RIGHTS RESERVED TO THE OWNER. NEITHER WHOLE NOR ANY PART OF THIS DOCUMENT MAY BE DISCLOSED TO ANY THIRD PARTY, REPRODUCED, STORED IN ANY RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN CONSENT OF NATIONAL IRANIAN OIL ENGINEERING & CONSTRUCTION COMPANY.

IN THE NAME OF GOD**FOREWORD**

By their very nature, technical standard specifications are continuously subject to modifications and revisions. To strengthen their merit and usefulness, continuous improvements, addendum, deletion of disparate information and consequently provision of updated revisions are to be made in order to ascertain that such standard specifications meet the current requirements, inclusive of Iranian Petroleum Standards (IPS) and the recognized and acceptable national and international standards, as well as the optimal codes and practices based on the accumulated in-house know-how and plant knowledge and experiences.

However, in reality, due to several reasons, not to mention the complexity of the matter, the ultimate goal of continuous direct embedment of the required changes on the relevant standard specifications may be far reaching. Therefore, in the interim periods between the officially issued revisions, the required changes will appear in other documents related to the engineering and design work of the on going projects.

In response to the initiative of the Design Division of the Engineering and Construction Directorate, and considering that the task of the execution of several important and mega projects for the realization of the new oil refineries, pipelines and oil terminals as well as improvements of the existing facilities, has been assigned to NIOEC, it was decided to update the NIOEC Specifications and to issue new official revisions.

The Design Division of the Engineering and Construction Directorate was itself entrusted to carry out this important task, and as such by forming several special technical committees, working in close co-operation and cohesion and sharing their expertise and knowledge, the updated and revised NIOEC Specifications were successfully prepared and complied.

These Specifications are intended to be used for Oil Refineries, Distribution Depots, Oil Terminals, Pipelines and Pump Stations within NIOEC's projects, and have been proven to be of high value for such purposes. It must however be appreciated that these Specifications represent the minimum requirements and should in no way be interpreted as a restriction on the use of better procedures, engineering and design practices or materials.

We encourage and highly appreciate the users and other clear sighted and experts to send their comments on the Specifications to the Design Deputy of the Engineering and Construction Director of NIOEC for evaluation and consideration.

S. R. KASAEIZADEH


EXECUTIVE DIRECTOR

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NOTES:

- 1) THIS SHEET IS A RECORD OF ALL REVISIONS TO THIS SPECIFICATION.
- 2) REMARKS RELATED TO EACH REVISION SHOW A BRIEF DESCRIPTION. THESE REMARKS SHALL BE INTERPRETED IN CONJUNCTION WITH THE REVISED TEXT MARKED BY REVISION NUMBERS.
- 3) WHEN APPROVED EACH REVISION SHALL BE CONSIDERED AS A PART OF THE ORIGINAL DOCUMENT.
- 4) NUMBER OF PAGES EXCLUDES THIS SHEET AND THE COVER SHEET.

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1.0 SCOPE

- 1.1** This Specification covers the minimum requirements for the material, manufacture, inspection and testing of low voltage electrical cables and wires.
- 1.2** This Specification covers only the general requirements. The specific requirement of individual cases will be given in Request For Quotation and / or purchase order.

2.0 REFERENCES

Throughout this Specification the following dated or undated standards/codes are referred to. These referenced standards shall, to the extent specified herein, form a part of this Specification. For undated reference, the latest edition of referenced document (including any supplement or amendments) applies. For dated references, the edition cited applies. The applicability of changes in dated references that occur after the cited date, shall mutually be agreed upon by NIOEC and VENDOR/CONTRACTOR.

IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION)

BS 6346	600/1000V and 1900/3300V Armoured Electric Cables Having PVC Insulation
IEC 60227-1	Polyvinyl Chloride Insulated Cables of Rated Voltage up to and Including 450 / 750V part1: General Requirements
IEC 60227-3	Polyvinyl Chloride Insulated Cables of Rated Voltage up to and Including 450 / 750V part3: Non-Sheathed Cables for Fixed Wiring
IEC 60227-4	Polyvinyl Chloride Insulated Cables of Rated Voltage up to and Including 450 / 750V part3: Non-Sheathed Cables for Fixed Wiring
IEC 60228	Conductors of Insulated Cables
IEC 60332	Tests on Electric Cables Under Fire Conditions
IEC 60502-1	Power Cables with Extruded Insulation and Their Accessories for Rated Voltages from 1KV ($V_m = 1.2 \text{ KV}$) Up to 30KV ($V_m = 36\text{KV}$) : Part1 Cables for Rated Voltages from 1 KV ($V_m = 1.2 \text{ KV}$) and 3 KV ($V_m = 3.6\text{KV}$)
IEC 60702-1	Mineral Insulated Cables and Their Terminations with a Rated Voltage Not Exceeding 750V part1: Cables
IEC 60702-2	Mineral Insulated Cables and Their Terminations with a Rated Voltage Not Exceeding 750V part1: Terminations

NIOEC-SP (NIOEC SPECIFICATIONS)

[NIOEC-SP-00-10](#) NIOEC Specification for units