



Republic of the Philippines  
**DEPARTMENT OF ENERGY**

In line with the objectives of the Clean Air Act of 1999, the Department of Energy's Technical Committee on Petroleum Products and Additives (DOE/TCPPA) reviewed and revised the standard for *Emulsified Fuel Oil Specification (DPNS/DOE QS 010:2009)*.


This standard supersedes PNS 200:1989 and was made to update the quality specification and incorporate present technology of emulsified fuel. This is in support to the Philippine Government's effort in promotion energy conservation, environment-friendly and affordable energy through the use of optimized technologies as well as the DOE's policy and program of reviewing/updating the fuel quality specifications in terms of the current requirements of the industry, its users and manufacturers.

Enclosed is a copy of the draft standard for your comments. It is suggested that any proposed change to the specifications be supported with explanations/ justifications.

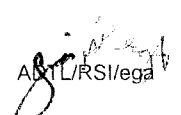
We appreciate receiving your comments on or before July 31, 2009 for it to be considered in the finalization of the standard. Non- receipt of your comments on the specified date shall be construed as an approval of the draft standard.

Thank you for your usual cooperation.

Very truly yours,



**ZENAIDA Y. MONSADA**  
Director  
TCPPA-Chairman



ASTL/RSI/ega

DPNS/DOE QS 010:2009

ICS \_\_\_\_\_

**Petroleum Products – Emulsified Fuel Oil – Specification**

**Foreword**

This Philippine National Standard Specification for Emulsified Fuel Oil was prepared by the Department of Energy's Technical Committee on Petroleum Products and Additives (DOE/TCPPA).

This standard supersedes PNS 200:1989.

The DOE/TCPPA undertook this review in keeping with the Department's thrust for the continuing development as well as updating the quality specifications of petroleum products in terms of the current requirement of the industry, its users and manufacturers vis-à-vis the continuing commitment in promoting energy conservations, environment-friendly and affordable energy through the use of optimized technologies.

This entire standard is subject for review and/or revision when necessary.

## 1 Scope

This standard specifies the requirements for emulsified fuel oil intended for users in industrial, power generation sectors and various types of boilers and furnaces. This standard is not applicable for mobile vehicle application.

Notwithstanding this standard, the user should consult the equipment manufacturer regarding the suitability of using emulsified fuel in a particular engine or application.

## 2 References

The titles of the standard publications referred to in this standard are listed on the inside back cover.

## 3 Definitions

For the purpose of this standard, the following definitions shall apply:

### 3.1

#### **bunker fuel oil**

defined as residual from distillation. It may be a blend of residual and distillates of petroleum origin.

### 3.2

#### **diesel oil**

refers to refined petroleum distillates, which may contain small amount of hydrocarbon or non-hydrocarbon additives to improve ignition qualities or other characteristics, suitable for compressed ignition engines and other suitable types of engines.

### 3.3 emulsified fuel

the mixture of water, bunker/diesel, emulsifier and/or other additives where the minute water particles are suspended in the petroleum product or vice-versa. May also refer to emulsified bunker or emulsified diesel.

## 4 Requirements

Emulsified fuel shall conform to the chemical and physical requirements specified in Table 1

**Table 1 – Chemical and physical requirements for Emulsified Fuel**

| <b>Property</b>                              | <b>Limit</b> | <b>Test method</b>  |
|--|--------------|---|
| Ash, % mass, max.                            | 0.20         | PNS ASTM D 482  |
| Couradson carbon residue,<br>% by mass, max. | 18           | PNS ASTM D 189  |
| Gross heating value, kcal/kg,                | Report       | PNS ASTM D 240  |
| Pour point, °C, max.                         | 27           | PNS ASTM D 97   |
| Sediment by extraction, %<br>by mass, max.   | 0.20         | PNS ASTM D 473  |
| Sulfur content, % mass                       | Report       | PNS ASTM D 1552   |
| Viscosity at 50°C, mm <sup>2</sup> /s        | Report       | PNS ASTM D 445  |
| Water, % volume                              | 10 - 30      | PNS ASTM D 95<br>PNS ASTM D 1364<br>PNS ISO 3733<br>PNS ASTM D 4006 |

## 5 Sampling

Emulsified fuel shall be sampled in accordance with PNS ASTM D 4057.

## 6 Test Methods

Emulsified fuel shall be tested in accordance with the test methods specified Table 1.

**References:**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

PNS ASTM D 95-05e1, Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

PNS ASTM D 97-08, Standard Test Method for Pour Point of Petroleum Products

PNS ASTM D 189-06e2, Standard Test Method for Conradson Carbon Residue of Petroleum Products

PNS ASTM D 240-02 (2007), Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter

PNS ASTM D 445-06, Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)

PNS ASTM D 473-07, Standard Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method

PNS ASTM D 482-07, Standard Test Method for Ash from Petroleum Products

PNS/ASTM D 1552-07, Standard Test Method for Sulfur in Petroleum products (High-Temperature Method)

PNS ASTM D 1364-07, Standard Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)

PNS ASTM D 1552-07, Standard Test method for Sulfur in Petroleum Products (High-Temperature Method)

PNS ASTM D 4006-07, Standard Test method for Water in Crude Oil by Distillation

PNS ASTM D 4057-07, Standard Practice for Manual Sampling of Petroleum and Petroleum Products

PNS ISO 3733-99, Petroleum Products and Bituminous Materials – Determination of Water – Distillation Method

**Abbreviations**

ASTM - American Society for Testing and Materials

PNS - Philippine National Standard

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