



# A Guide to Brazil's Oil and Oil Derivatives Compliance Requirements



# **A Guide to Importing Petroleum Products (Oil and Oil Derivatives) into Brazil**

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# A Guide to Importing Petroleum Products (Oil and Oil Derivatives) into Brazil

## 1. Scope

This guide addresses all types of petroleum products regulated in Brazil.

## 2. General Overview of the Brazilian Regulatory Framework

Several agencies at the federal level have the authority to issue technical regulations in the particular areas of their competence. Technical regulations are always published in the [Official Gazette](#) and are generally based on international standards.

All agencies follow similar general procedures to issue technical regulations. They can start the preparation of a technical regulation *ex officio* or at the request of a third party. If the competent authority deems it necessary, a draft regulation is prepared and published in the Official Gazette, after carrying out an impact assessment of the new technical regulation. Technical regulations take the form of laws, decrees or resolutions. Brazil normally allows a six-month period between the publication of a measure and its entry into force.

Public hearings are also a way of promoting the public consultation of the technical regulations. Likewise, when the proposed technical regulation is considered to produce trade effects, this is notified to the WTO in order to allow Members to comment.

The National Institute of Metrology, Quality and Technology ([INMETRO](#)) is responsible for notifying the proposed technical regulations to the World Trade Organization (WTO) and acts as the national enquiry point under the WTO Agreement on Technical Barriers to Trade (TBT). All the projects of technical regulations that impact on international trade, even if those regulations are identical to international standards, are notified to WTO. It is worth noting that the vast majority of Brazil's technical regulations are prepared based on international standards and performance criteria.

In addition to its regulations and conformity assessment procedures, Inmetro notifies to WTO other government agencies' technical requirements, for example, from the National Health Surveillance Agency ([ANVISA](#)), Ministry of Agriculture, Livestock and Supply ([MAPA](#)), the National Petroleum Agency, Natural Gas and Biofuels ([ANP](#)), the Ministry of Mines and Energy ([MME](#)), as well as the National Telecommunications Agency ([ANATEL](#)).

INMETRO is also responsible for receiving international comments concerning the drafts of technical regulations. The private sector, both domestic and foreign, may partake in discussions. After taking all comments and suggestions into account, the responsible body decides whether to adopt a technical regulation, with or without modifications.

With regard to the preparation of technical regulations, in 2007, Brazil adopted the [Guide of Good Regulatory Practices](#), which offers recommendations on how to prepare, revise, revoke and disseminate technical regulations. This encourages transparency and consistency in regulatory practices. The Guide recommends that public bodies focus on safety, health, environment and consumer protection issues. Nevertheless, there are no mandatory rules of general application to prepare technical regulations. Each entity is responsible for the adoption of technical regulations based on its own procedures.

INMETRO and all other regulators may develop and adopt conformity assessment procedures. The steps followed for conformity assessment procedures are similar to those taken for the preparation of technical regulations. There is a public consultation period and the measure is published in the *Official Gazette*. Conformity assessment procedures that differ from international standards or have considerable economic impact are also notified to WTO by INMETRO.

Based on the specific characteristics of the product, conformity assessment can be carried out through certification, labelling, inspection, sampling and/ or a conformity declaration by the supplier. Certification is performed by accredited third parties and is usually voluntary. Products and services subject to mandatory certification are those that affect consumer health, safety or the environment.

Brazil recognizes products and systems certifications carried out by foreign certification agencies that signed a memorandum of understanding (MOU) with the Brazilian certification body or that have an agreement with Inmetro.

INMETRO is also the national body responsible for the accreditation of certification bodies, inspection, training, calibration and testing.

In Brazil, the [Brazilian Association of Technical Standards \(ABNT\)](#) is a non-governmental agency that receives financial support from the federal government. It is responsible for the development of voluntary standards. ABNT represents Brazil in The International Organization for Standardization ([ISO](#)) and The International Electrotechnical Commission ([IEC](#)) and in regional standardisation fora.

To ensure that the standards' content is updated, standards in effect with more than five years are reviewed. The review process follows international guidelines and includes four months of public consultation through the ABNT website. During the consultation period, interested parties have the opportunity to tell whether the standard should be confirmed, cancelled or updated.

### 3. Regulatory Authorities for Petroleum Products

#### 3.1. ANP (National Agency of Petroleum, Natural Gas and Biofuels)

<http://www.anp.gov.br/>

##### **ANP's Technical Regulations:**

Get subsidies and additional information on the draft of the resolution that establishes the obligations concerning quality control and specifications of the diesel fuel to be met by the various economic agents who market the product nationwide.

[http://www.inmetro.gov.br/barreirastecnicas/pontofocal/textos/regulamentos/BRA\\_446.pdf](http://www.inmetro.gov.br/barreirastecnicas/pontofocal/textos/regulamentos/BRA_446.pdf)

1. ANP RESOLUTION N<sup>o</sup>. 19, from 07/11/2005 – published in Official Gazette in 12/07/2005. Rectified in Official Gazette in 07/25/2005.

The specifications for asphalt cements oil (CAP) are established. These cements are marketed by various economic agents across the country according to the provisions contained in ANP Technical Regulation N<sup>o</sup>. 3, from 11/07/2005, which is an integral part of this Resolution.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes\\_anp/2005/julho/ranp%2019%20-%202005.xml?f=templates\\$fn=default.htm&sync=1&vid=anp:10.1048/enu](http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes_anp/2005/julho/ranp%2019%20-%202005.xml?f=templates$fn=default.htm&sync=1&vid=anp:10.1048/enu)

2. ANP RESOLUTION N<sup>o</sup>. 36, from 12/06/2005 – published in Official Gazette in 07/12/2005.

Specifications of Ethyl Alcohol Anhydrous Fuel (EACA) and Hydrated Alcohol Fuel (AEHC), marketed by various economic agents across the country, are established by this resolution according to the provisions contained in the ANP Technical Regulation N<sup>o</sup>. 7/2005, which is an integral part of this Resolution.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes\\_anp/2005/dezembro/ranp%2036%20-%202005.xml?f=templates\\$fn=default.htm&sync=1&vid=anp:10.1048/enu](http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes_anp/2005/dezembro/ranp%2036%20-%202005.xml?f=templates$fn=default.htm&sync=1&vid=anp:10.1048/enu)

3. ANP RESOLUTION N<sup>o</sup>. 52, from 12/29/2010 – published in Official Gazette in 30/12/2010.

ANP's Technical Regulation establishes waterway fuel specifications marketed by various economic agents around the country.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes\\_anp/2010/dezembro/ranp%2052%20-%202010.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$q=\\$x=\\$nc=4327](http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes_anp/2010/dezembro/ranp%2052%20-%202010.xml?f=templates$fn=document-frame.htm$3.0$q=$x=$nc=4327)

4. Ministerial Act N<sup>o</sup>. 80, from 30/04/1999

The specification of fuel oil to be marketed in the country is established by the ANP Technical Regulation N<sup>o</sup>. 3/99 and related tables accompanying this Ordinance.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_tec/1999/maio/panp%2080%20-%201999.xml?f=templates\\$fn=default.htm&sync=1&vid=anp:10.1048/enu](http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder_portarias_anp/portarias_anp_tec/1999/maio/panp%2080%20-%201999.xml?f=templates$fn=default.htm&sync=1&vid=anp:10.1048/enu)

5. Ministerial Act N<sup>o</sup>. 104, from 08/07/ 2002

This ministerial act establishes the domestic or imported specification of natural gas, to be sold throughout the country, according to the provisions contained in ANP's Technical Regulation N<sup>o</sup>. 3/2002, part of this.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_tec/2002/julho/panp%20104%20-%202002.xml?f=templates\\$fn=default.htm&sync=1&vid=anp:10.1048/enu](http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder_portarias_anp/portarias_anp_tec/2002/julho/panp%20104%20-%202002.xml?f=templates$fn=default.htm&sync=1&vid=anp:10.1048/enu)

6. Ministerial Act N<sup>o</sup>. 129, from 30/07/1999

It is established that the marketing of basic lubricating oils in the country must comply with the specifications in the ANP's Technical Regulation N<sup>o</sup>. 04, from 30/07/1999 in Annex I of this ministerial act and their Tables I and II.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_tec/1999/julho/panp%20129%20-%201999.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$q=\\$x=\\$nc=3534](http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder_portarias_anp/portarias_anp_tec/1999/julho/panp%20129%20-%201999.xml?f=templates$fn=document-frame.htm$3.0$q=$x=$nc=3534)

7. Ministerial Act N<sup>o</sup>. 131, from 30/07/1999

It is established that the marketing of lubricating oils, greases and additives in a bottle for lubricating oils for automotive applications, manufactured in the country or imported in bulk or packaged, of mineral, vegetable or synthetic origin is subject to prior registration of the product in the National Petroleum Agency - ANP.

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_tec/1999/julho/panp%20131%20-%201999.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$q=\\$x=\\$nc=5011](http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder_portarias_anp/portarias_anp_tec/1999/julho/panp%20131%20-%201999.xml?f=templates$fn=document-frame.htm$3.0$q=$x=$nc=5011)

8. Ministerial Act N<sup>o</sup>. 309, from 27/12/2001

This ordinance establishes specifications for automotive gasoline destined for the consumer, marketed by various economic agents across the country, according to the provisions of ANP Technical Regulation N<sup>o</sup>. 5/2001, part of this Ordinance

[http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_tec/2001/dezembro/panp%20309%20-%202001.xml?f=templates\\$fn=default.htm&sync=1&vid=anp:10.1048/enu](http://nxt.anp.gov.br/NXT/gateway.dll/leg/folder_portarias_anp/portarias_anp_tec/2001/dezembro/panp%20309%20-%202001.xml?f=templates$fn=default.htm&sync=1&vid=anp:10.1048/enu)

### **3.2. INMETRO (National Institute of Metrology, Quality and Technology).**

<http://www.inmetro.gov.br/>

#### **INMETRO's Technical Regulations:**

1. INMETRO's Ministerial Act / MDIC Nº. 17, from 19/01/2005 - Revised.

It approves the Technical Regulation on Quality (RTQ) for components of exhaust systems and fuel supply.

<http://www.inmetro.gov.br/legislacao/rtac/pdf/RTAC000929.pdf>

2. INMETRO's Ministerial Act / MDIC Nº. 37, from 02/16/2005 - Revised.

It approves the Regulation on Conformity Assessment for components of exhaust systems and fuel supply.

<http://www.inmetro.gov.br/legislacao/rtac/pdf/RTAC000933.pdf>

3. INMETRO's Ministerial Act / MDIC Nº. 155, from 08/12/2005 – Revised.

It Approves the Metrological Technical Regulation in the Annex, which sets out the essential technical and metrological conditions which the measuring instruments of exhaust gases from motor vehicles of Otto Cycle must meet.

<http://www.inmetro.gov.br/legislacao/rtac/pdf/RTAC000968.pdf>

4. INMETRO's Ministerial Act. Nº. 455, from 12/01/2010.

It approves Conformity Assessment requirements for Centrifugal Pump and Motor pumps.

<http://www.inmetro.gov.br/legislacao/rtac/pdf/RTAC001633.pdf>

## 4. Standards Developing Organizations

### 4.1. ABNT (Brazilian Association of Technical Standards)

<http://www.abnt.org.br/>

#### **ABNT NBR ISO 4259:2008**

Petroleum products - Determination and application of precision data in relation to methods of test

Esta Norma apresenta um método para o cálculo das estimativas de precisão e sua aplicação às especificações. Ela contém ainda as definições dos termos estatísticos relevantes, os procedimentos a serem adotados para o planejamento de um programa interlaboratorial para determinação, a precisão de métodos de ensaios, o método para cálculo da precisão a partir dos resultados deste programa e o procedimento a ser utilizado na interpretação dos resultados laboratoriais tanto em relação à precisão do método de ensaio quanto aos limites estabelecidos nas especificações.

#### **ABNT NBR ISO 5275:2010**

Petroleum products and hydrocarbon solvents - Detection of thiols and other sulfur species - Doctor test

This standard describes the test method for determining the presence of thiols (mercaptans), hydrogen sulfide and elemental sulfur in hydrocarbon solvents and petroleum distillates. Preliminary procedures also detect the presence of phenolic substances and peroxides, which, when present in greater concentrations than traits, make this method unsuitable. Carbon disulfide at relatively high concentrations [up to 0.4% (m/m) sulfur] also interferes in the interpretation of the test by causing a darkening of the aqueous phase.

#### **ABNT NBR 5779:1989**

Insulating oils - Determination of inorganic chlorides and sulfates in mineral insulating oils - Method of test

This standard prescribes a method for qualitative determining the inorganic chlorides and sulfates in mineral insulating oils.

#### **ABNT NBR 5797:2011**

Petroleum waxes - Determination of oil content

This standard prescribes the method for determining the level of oil in paraffin oil with freezing point less than 30°C, as determined by ASTM D938, with oil level by 15%.

#### **ABNT NBR 5798:2009**



Petroleum products - Determination of base number by potentiometric perchloric acid titration

This standard describes the method for determining the basic constituents in petroleum products by titration with perchloric acid in glacial acetic acid.

**ABNT NBR 5834:1977**

Saponification index

This standard aims to determine the saponification index of oils and resins.

**ABNT NBR 6043:2002**

Paper - Determination of oil absorvency (castor oil test)

This standard prescribes a method for determining the time required by a paper to completely absorb a specified amount of oil.

**ABNT NBR 6043:2002 Amendment 1:2002**

Paper - Determination of oil absorption (the castor-oil test)

This Amendment 1, from 30/12/2002 complements the ABNT NBR 6043:2002.

**ABNT NBR NM 60851-4:2006**

Winding wires - Test methods Part 4: Chemical properties (IEC 60851-4:1997, MOD)

This part of NM 60851 specifies the following test: - Test 12: Resistance to solvents - Test 16: Resistance in refrigerants - Test 17: Weldability - Test 20: Resistance to hydrolysis and transformer oil.

**ABNT NBR 6234:1965**

Test method for determining the interfacial tension of water oil

This standard sets the way of proceeding to the determining, under conditions that don't the equilibrium of the interfacial tension of water mineral oils, determination of which this verification is provided by the practice reliable indication of the presence of hydrophilic compounds.

**ABNT NBR 6294:2008**

Lubricating oil and additives - Determination of sulfated ash

This standard prescribes the method for determination of sulfated ash in new lubricating oils containing the additives and concentrated additive used in formulating lubricating oils. These additives usually contain one or more of the metals barium, calcium, magnesium, zinc, sodium and tin. Sulfur, phosphorus and chlorine may also be present in combined form with other elements.

**ABNT NBR 7070:2006**Sampling of gases and mineral insulating oil of electrical equipment and free and solved gases analysis

This standard prescribes the methods of gases and insulating mineral oil sampling of electrical equipment and analysis of free and dissolved gases.

**ABNT NBR 7148:2001 Corrected Version:2006**Petroleum and petroleum products - Determination of density, relative density and °API gravity - Hydrometer method

This standard establishes the tests for determining the density, relative density and ° API gravity of petroleum, its derivatives or mixtures of these products with no petroleum derivatives that are normally liquid and have a Reid vapor pressure less than or equal to 101,325 kPa (14.696 psi).

**ABNT NBR 7148:2001 Erratum 1:2006**Petroleum and petroleum products - Determination of density, relative density and °API gravity - Hydrometer method

This Erratum 1 of 24.07.2006 corrects the ABNT NBR 7148:2001.

**ABNT NBR 7167:1992**Shipbuilding - International connection for oily residue discharge - Form and dimensions – Standardization

This standard standardizes the format, the dimensions and the materials for international connection of oiled residues discharge of ships.

**ABNT NBR 7974:2007**Petroleum products - Determination of flash point by Tag closed up

This standard establishes the method for determining the flash point, with the apparatus Tag closed, manual and automated, of liquids with a viscosity less than 5.5 mm<sup>2</sup>/s at 40°C, or less than 9.5mm<sup>2</sup>/s at 25°C, and with flash point less than 93°C.

**ABNT NBR 8393:1991**Bituminous coal - Determination of the reflectance of vitrinite by optical microscopy - Method of test

This standard prescribes the method for determining the maximum reflectance and/or random of vitrinite by optical microscopy in oil.

**ABNT NBR 8460:2011**Transportable gas container for liquefied petroleum gas (LPG) – Specification

This standard specifies the minimum requirements, ancillary parts and tests, for the project, manufacture, modification and safety at filling of transportable containers for packaging liquefied petroleum gas (LPG), constructed of steel plates welded by fusion.

#### **ABNT NBR 9234:2004**

##### Insumes - Fatty matter - Determination of the pH

This standard establishes the method for determining the pH of emulsifiable oil in water.

#### **ABNT NBR 9619:2009**

##### Petroleum products - Distillation at atmospheric pressure

This standard establishes the distillation method at atmospheric pressure for determination of distillation characteristics of automotive gasoline and ethanol blends, aviation gasoline, aviation kerosene, special solvents, naphtha, turpentine, kerosene, diesel and biodiesel blends until 20% v/v, distillate fuel oils, marine fuel oils and other petroleum products, using manual or automated equipment.

#### **ABNT NBR 9839:1987**

##### Adhesive tape to identify the lines for aerospace use – Specification

This standard sets the required conditions of an adhesive tape non-corrosive with polyester film, resistant to temperature of  $-51^{\circ}\text{C}$  to  $+163^{\circ}\text{C}$ , fuels, lubricating oils and hydraulic fluids, to identify the lines for aerospace use.

#### **ABNT NBR 9842:2009**

##### Petroleum products - Determination of ash

This standard prescribes the method for determining the ash in the range 0.001% to 0.180% in mass in distillate and waste fuels, fuel of gas turbine, crude oil, lubricating oil, paraffins and other oil products in which the any presence of ash-forming material is usually considered undesirable impurity or contaminant. This method applies to petroleum free products of ash-producing additive, including certain phosphorous compounds.

#### **ABNT NBR 10441:2007**

##### Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity

Esta Norma descreve um procedimento específico para a determinação da viscosidade cinemática,  $\nu$ , de produtos líquidos de petróleo, tanto transparentes quanto opacos, pela medição do tempo de escoamento de um determinado volume de líquido que flui sob a ação da força de gravidade, através de um viscosímetro capilar de vidro calibrado. A viscosidade dinâmica,  $\eta$ , pode ser obtida pela multiplicação da viscosidade cinemática medida pela massa específica,  $\rho$ , do líquido, determinada na mesma temperatura.

**ABNT NBR 10504:2010**

Mineral insulating oil - Determination of oxidation stability

This standard prescribes the method for determining the resistance of mineral oil insulating to oxidation, under conditions of accelerated aging. Oxidation stability is measured by the tendency for formation of sludge, acidic products and polar products formed during this aging period. The method is applied to new or regenerated oils is not inhibited. Its application to oil in use is still under study. For inhibited oils should be used to IEC 61125.

**ABNT NBR 10576:2006**

Mineral insulating oil in electrical equipment - Guide for supervision and maintenance

This Standard provides guidance on the supervision and maintenance of the quality of insulating mineral oil from electrical equipment.

**ABNT NBR 11026:2008**

Insunes - Fatty matter - Determination of the power emulsifying on the crude oil

This standard defines the procedure for determining the emulsifiability of modified fatty substances of crude oil.

**ABNT NBR 11115:1998**

Fatty substances - Determination of the acid index

This standard prescribes the method for determining the acid index in oils and greases, using ethanol as solvent. The method with ethanol is applicable to oil and grease plants and animals, crude or refined, is not applicable to phospholipids nor even the waxes.

**ABNT NBR 11325:1990**

Air-oil lubrication system – Specification

This standard sets the conditions required for the components of the air-oil lubrication system.

**ABNT NBR 11341:2008**

Petroleum products - Determination of the flash and fire points by Cleveland open cup

This standard describes the determination of flash points and combustion in petroleum products with Cleveland open cup apparatus manual or automatic.

**ABNT NBR 11343:2003**

Petroleum products - Determination of aniline point and mixed aniline point

This standard describes the method for determining the aniline point for petroleum products and hydrocarbon solvents.

#### **ABNT NBR 11346:2007**

##### Petroleum products - Determination of cloud point

This standard describes the method for determining the cloud point of petroleum products and biodiesel which are transparent in layers of 40 mm thickness and with cloud point less than 49°C.

#### **ABNT NBR 11347:2003 Corrected Version:2004**

##### Petroleum products and commercial aliphatic olefins - Determination of bromine number - Electrometric method

This standard prescribes the method for determining the bromine number.

#### **ABNT NBR 11347:2003 Erratum 1:2004**

##### Petroleum products and commercial aliphatic olefins - Determination of bromine number - Electrometric method

This Erratum 1 of 27.02.2004 corrects the ABNT NBR 11347:2003. Acquisition only by appointment.

#### **ABNT NBR 11348:2005**

##### Liquid petroleum products - Determination of water by Karl Fischer reagent

This standard prescribes the method for determining the water, in concentrations of 50 mg/kg to 1000 mg/kg, in liquid petroleum products by Karl Fischer reagent.

#### **ABNT NBT 11349:2009**

##### Petroleum product - Determination of pour point

Esta Norma prescreve o método para determinação do ponto de fluidez em produtos de petróleo.

#### **ABNT NBR 11400:1190**

##### Thermodensimeter for liquefied petroleum gas – Standardization

This standard standardizes the thermodensimeters characteristics of mass constant for use for determining the specific mass of liquefied petroleum gas, at a temperature of 20°C and must resist pressures up to 1.471 MPa (15 kgf/cm<sup>2</sup>).

#### **ABNT NBR 11531:1990**

##### Antirust properties of petroleum products pipeline - Method of test

This standard prescribes the method for determining the anticorrosive properties of petroleum products, transferred by pipelines.

**ABNT NBR 11635:1990**Minerals oils of high flash point for electrical apparatus – Procedure

This standard describes the minerals oils of high flash point, for electrical equipment, and its main characteristics and establishes guidelines for handling, packaging, labeling, storage and transportation.

**ABNT NBR 11787:1990**Minerals oils of high flash point for electrical apparatus – Specification.

This standard is applicable to mineral oils of high flash point, for use as insulation fluids in electrical equipment in accordance with NB-1330.

**ABNT NBR 12134:1991**Mineral insulating oil - Determination of 2,6-di-tert-butyl-paracresol - Method of test

This standard prescribes the method for determining the content of 2,6-di-tert-butyl-paracresol (DBPC) in new or used mineral insulating oil, by measuring the infrared absorption of stretching frequency groups (O-H) sterically hindered by phenols or by measuring the intensity of blue color of molybdenum complex, through a photometer.

**ABNT NBR 12135:1991**Inhibited mineral insulating oil - Determination of oxidation stability - Method of test

This standard prescribes the method of test for determining the oxidation resistance of inhibited mineral insulating oil under accelerated aging conditions, by measuring the time of induction.

**ABNT NBR 13165:1994**Hydraulic fluid power - Calibration of automatic-count instruments for particles suspended in liquids - Method using classified AC Fine Test Dust contaminant - Method of test

This standard prescribes the used method for calibration of an automatic counter of suspended particles in hydraulic liquids (1), (2), (3). This instrument is used for determination of particles size of contaminants found in the hydraulic liquid.

**ABNT NBR 13348:1995**Residual bath and liquid waste - Oil and grease content - Method of test

This standard prescribes the method for determining the oil and grease content in waste baths of process and in liquid effluents.

**ABNT NBR 13477:1995**Road Vehicles - Brake hose assemblies for hydraulic braking systems used with non-petroleum-based brake fluid - Specification.

This standard sets the required conditions for the receipt of flexible hoses fitted with metal terminals and up to 3.5 mm internal diameter, used in hydraulic brakes of road vehicles, which is used a liquid-type mineral oil.

**ABNT NBR 13478:1995**

Road vehicles - Flexible hose assemblies for hydraulic braking systems used with non-petroleum-based fluid - Method of test

This standard prescribes the methods by which the tests should be run in flexible hoses containing metal terminals and up to 3.5 mm internal diameter, used in hydraulic brakes of road vehicles that use brake fluid for non-mineral oil type.

**ABNT NBR 13523:2008**

Liquefied petroleum gases central storage – LPG

This standard establishes the minimum requirements for project, mounting, alteration, location and security of liquefied petroleum gas (LPG) central storage with total maximum storage capacity of 1500 m<sup>3</sup>, for commercial, residential, industrial and supply of forklifts installations.

**ABNT NBR 14063:1998**

Oil and grease - Processes of treatment in mining effluents

This standard characterize the removal process of oils and greases, of mineral origin, to provide subsidies for projects elaborations of effluent treatment of mining, attendant the legal standard in force (maximum of 20 mg/L), the occupational health and safety conditions, operational economy, abandonment and minimization of environmental impacts.

**ABNT NBR 14065:2006**

Petroleum distillates and viscous oils - Determination of density and relative density by digital densimeter

This standard establishes the test for determining the density and relative density of petroleum distillates and viscous oils, which can normally be handled as a liquid test temperatures. Its application is limited to liquid with a vapor pressure below 80 kPa and a viscosity below 15.000 mm<sup>2</sup>/s, approximately, at the test temperature.

**ABNT NBR 14066:2008**

Lubricating oil - Analysis of barium, calcium, magnesium and zinc by atomic absorption spectrometry

This standard describes the method for determination of barium (0.005% m/m to 1.0% w/w), calcium, magnesium (0.002% m/m to 0.3% w/w) and zinc (0.002% m/m to 0.2% w/w) in lubricating oils by atomic absorption spectrometry.

## **ABNT NBR 14156:2006**

### Petroleum products - Determination of vapor pressure - Mini method

This standard describes the method for determining the total vapor pressure in the vacuum by liquid and volatile petroleum products containing air and using automated instruments for measuring vapor pressure. This method, known as mini method, is suitable for testing samples as boiling point above 0°C, exerting pressures between 7 kPa and 130 kPa at 37.8°C and a vapor/liquid ratio of 4:1 (see note 1). The measurements are performed in liquid sample as volumes between 1 mL and 10 mL.

## **ABNT NBR 14157-1:2007**

### Lubricating oils - Determination of evaporation loss by the Noack Part 1: Using Woods Metal

This part of NBR ISO 14157 describes the procedure for determining the evaporation loss of lubricating oils (especially for motor oil), by the Noack test apparatus and using Woods alloy.

## **ABNT NBR 14157-2:2007**

### Lubricating oils - Determination of evaporation loss by the Noack method Part 2: Woods metal free

This part of NBR 14157 describes the procedure for determining the evaporation loss of lubricating oils (particularly engine oils) through Noack method using automated equipment without use of Woods alloy.

## **ABNT NBR 14157-3:2006**

### Noack method Part 3: Selby-Noack

This part of NBR 14157 prescribes the test method for determining the evaporation loss of lubricating oils (especially for motor oils) by the Selby-Noack method.

## **ABNT NBR 14172:2009**

### Petroleum oils and synthetic fluids - Determination of emulsion characteristics

This standard prescribes the method to assess the capacity of petroleum oils or synthetic fluids have to separate from the water.

## **ABNT NBR 14173:2005 Corrected Version:2005**

### Engine oils - Determination of apparent viscosity between - 5°C and - 35°C using the cold-cranking simulator

This standard describes the method for the laboratory determination of the apparent viscosity of motor oils by means of simulation of cold start-cold cranking simulator (CCS) at temperatures between -5 °C and -35 °C under the shear stress approximately 50.000 Pa



to 100.000 Pa, shear rates of equipment is dependent on model and version of software installed. The results are correlated with the characteristics of cold start of engine oils.

**ABNT NBR 14173:2005 Erratum 1:2005**

Motor oils - Determination of apparent viscosity between - 5 °C and - 35 °C by the simulator cold start

This Erratum rectifies Erratum 1, from 09/30/2005 ABNT NBR 14173:2005.

**ABNT NBR 14235:2007**

Lubricating oil - Determination of the foaming characteristics

This standard prescribes the method for determining the characteristics of foam formation in lubricating oils to 24.0°C and 93.5°C. Empirical means are described to assess the tendency to foam formation and stability.

**ABNT NBR 14236:2006**

Petroleum products and bituminous materials - Determination of water content by distillation

This standard prescribes the method for determining the water content in the range of 0% to 25% in volume by distillation in petroleum products, tars and other bituminous products.

**ABNT NBR 14248:2009**

Petroleum products - Determination of acid and base number - Indicator method

This standard describes the method for determining the acid or base constituents in petroleum products in general, soluble or almost completely soluble in mixtures of toluene and isopropyl alcohol. The method applies to the determination of acids and bases whose dissociation constants in aqueous solution be greater than  $10^{-9}$ . Acids or bases extremely weak whose dissociation constants are lower than  $10^{-9}$  not interfere. Salts react when their hydrolysis constants are greater than  $10^{-9}$ .

**ABNT NBR 14274:1999**

Test method for compatibility of electrical equipment materials with mineral insulating oil

This standard describes a method to be adopted for determining the compatibility of materials used in electrical equipment with mineral insulating oil.

**ABNT NBR 14275:1999**

Test method for determination of particles content in mineral insulating oil

This standard describes the method for determining of suspended solid particles content in mineral insulating oil, new or used, in electrical equipment using an automatic counter of particles.

**ABNT NBR 14318:2012**

Petroleum product - Determination of Ramsbottom carbon residue

This standard prescribes the method for determining of carbon residues quantity after evaporation and pyrolysis of an oil and is used to indicate the tendency for coke formation.

**ABNT NBR 14325:2004**

Lubricating oils with polymeric additives - Determination of shear stability by diesel injection nozzle

This standard describes the method for determining the shear stability of lubricating oils and hydraulic fluids containing polymer additives. The results of this test make it possible to predict on the permanent loss of viscosity of these products when in use.

**ABNT NBR 14358:2005**

Petroleum products - Calculating viscosity index from kinematic viscosity

This standard prescribes the procedures<sup>1)</sup> A and B for calculating viscosity index of petroleum products, such as lubricating oil and related, as from their kinematic viscosities at 40°C and 100°C.

**ABNT NBR 14358:2012**

Petroleum products — Calculating viscosity index from kinematic viscosity

This standard prescribes the procedures A and B for calculating the viscosity index of petroleum products, such as lubricating oils and related, from their kinematic viscosities at 40°C and 100°C. This standard does not apply to petroleum products with kinematic viscosities at 100°C, less than 2.000 mm<sup>2</sup>/s. Table A.1 refers to petroleum products with kinematic viscosity between 2 mm<sup>2</sup>/s and 70 mm<sup>2</sup>/s at 100°C. Equations are provided for calculating the viscosity index for petroleum products with kinematic viscosity at 100°C, above 70.00 mm<sup>2</sup>/s.

**ABNT NBR 14359:2005 Corrected Version:2006**

Petroleum products - Determination of corrosiveness by the copper strip method

This standard establishes the determination of corrosiveness by the copper method of aviation gasoline, aviation turbine fuel, automotive gasoline, natural gasoline, kerosene, diesel oil, distillate oil fuel, lubricating oil, cleaning solvents (Stoddard) or other hydrocarbons which vapor pressure is less than 124 kPa at 37.8°C (ATTENTION - see note 1 and annex A).

## **ABNT NBR 14448:2009 Corrected Version:2009**

### Petroleum products - Determination of acid number by potentiometric titration

This standard describes the procedures for determining the acid constituents in petroleum products, lubricants oils and hydraulic fluids soluble or partially soluble in mixtures of toluene and isopropanol (see note). It is applicable to the determination of acids whose dissociation constants in water are greater than  $10^{-9}$ ; extremely weak acids whose dissociation constants in water are smaller than  $10^{-9}$  are not detected. Salts react if their hydrolysis constants are greater than  $10^{-9}$ . The precision was obtained by the acid number of (0,1 to 150) mg/g KOH.

## **ABNT NBR 14448:2009 Erratum 1:2009**

### Lubricating oils and hydraulic fluids - Determination of the number of acidity by potentiometric titration method.

This document corrects Erratum 1, from 09/06/2009 ABNT NBR 14448:2009

## **ABNT NBR 14483:2008**

### Petroleum products - Determination of color by ASTM colorimeter

This standard prescribes a method for determining the color visual of a wide variety of petroleum products such as lubricating oils, heating oils, diesel and paraffins.

## **ABNT NBR 14525:2012**

### Fuels - Determination of gum by evaporation

This standard establishes the method for determination of gum contents current in aviation fuels and the gum contents in motor gasoline and/or others volatile distillates in their finished form, including those containing alcohol, others oxygenated ether type and additives to control the deposits, at the time of test.

## **ABNT NBR 14533:2011**

### Petroleum and petroleum products - Determination of sulfur by x-ray fluorescence spectrometry

This standard describes the method for determination of total sulfur in petroleum and petroleum products which are monophasic and liquid with room temperature, liquefied at moderate heating or soluble in hydrocarbon solvents. These products may include diesel, diesel and mixtures, jet fuel, kerosene, naphtha, residual oil, lube base oil, hydraulic oil, unleaded gasoline and their mixtures with alcohol and similar petroleum products.

## **ABNT NBR 14542:2006**

### Petroleum products - Determination of oxidation characteristics of inhibited mineral oils

This standard describes the method for evaluating the stability to oxidation of oils containing steam turbine antioxidant additives in the presence of oxygen, water, copper and iron, at an elevated temperature. This method is limited to a maximum time of 10000 test hours. The method also applies to other oils such as hydraulic oils and oils of movement which has lower density than water and containing rust inhibitors and oxidation.

## **ABNT NBR 14543:2009**

### Petroleum products - Determination of acid number by semi-micro color titration

This standard describes the procedure for determining the acid constituents in petroleum products and lubricants, new or used, soluble or nearly soluble in mixtures of toluene and isopropyl alcohol. This method is especially intended for cases where the sample quantity available is very small to permit accurate analysis using the NBR 14248 and NBR 14448. It is applicable for the determination of acids whose dissociation constants in water are greater than  $10^{-9}$ . Extremely weak acids whose dissociation constants are smaller than  $10^{-9}$  do not interfere in the test. The salts will be titrated if their hydrolysis constants are larger than  $10^{-9}$ .

## **ABNT NBR 14598:2007**

### Petroleum products - Determination of the flash-point by Pensky-Martens closed cup

This standard prescribes the method for determining the flash point of petroleum products by Pensky-Martens closed cup, manual or automated, in the temperature range from 40°C to 360°C.

## **ABNT NBR 14605-2:2009 amendment 1:2010**

### Oily Drainage system

Storage of flammable liquids and combustible - oil drainage system Part 2: Design, sizing methodology flow, installation, operation and maintenance for a retail service station car

This Amendment 1, from 11/11/2010 complements the ABNT NBR 14605-2:2009.

## **ABNT NBR 14605-2:2010**

### Storage of flammable and combustible liquids - Oil-water drainage system Part 2 - Service station project, installation and maintenance

This standard establishes criteria for design, sizing methodology flow, installation, operation and maintenance of the drainage system put in oily vehicle dealer (service).

**ABNT NBR 14605-7:2009**

Storage of flammable and combustible liquids - Oil-water drainage system Part 7:  
Oil/water separators proceeding from the superficial draining

This part of NBR 14605 establishes procedures related to equipment and sampling techniques to be used in the separation performance of water/oil coming from the contamination by runoff.

**ABNT NBR 14647:2010**

Petroleum products - Determination of water and sediments by the centrifuge method

This standard establishes testing laboratory for determination of water and sediments in oil and fuel oils, using the method of centrifugation.

**ABNT NBR 14657:2006**

Lubricating grease - Determination of oil separation during storage

This standard prescribes the method for determining the trend of the grease release oil during storage vessels partially or totally filled.

**ABNT NBR 14668:2001**

Refrigeration system using R134a gas - Chemical reactivity

This standard specifies a test method for determination of chemical reactivity of process fluids in front of the lubricating oil in components (individual parts) and groups (combinations of two or more components) for refrigeration system using R134a gas.

**ABNT NBR 14669:2001**

Refrigeration system using R134a gas - Miscibility determination - Test method

This standard specifies a method to determine the miscibility of fluids or process residues with refrigerants and lubricating oil of compressors in the components (individual parts) or groups (combinations of two or more components) for refrigeration system using R134a gas.

**ABNT NBR 14747:2008**

Diesel oil - Determination of cold filter plugging

This standard describes the method for determining the point temperature of the cold filter plugging of diesel fuel, including those containing additives, using manual or automated device.

**ABNT NBR 14748:2001**

Paper and board - Determination of the oil absorption of the surface (printing penetration/vamishability)

This standard describes a method for determining oil absorption of the surface of paper and board, using the apparatus IGT.

**ABNT NBR 14786:2010**

Lubricating oils - Determination of elements by inductively coupled plasma atomic emission spectrometry

This standard describes the procedure for the quantitative determination of barium, boron, calcium, copper, magnesium, molybdenum, phosphorus, sulfur (see Note 1) and zinc in new lubricating oil and in additive package by means of atomic emission spectrometry plasma inductively coupled.

**ABNT NBR 14803:2009**

Inhibited mineral oils - Rust-prevent characteristics in the presence of water

This standard establishes a method for evaluating the ability inhibited mineral oils, mainly oils to turbine steam, to assist in preventing corrosion of ferrous components occur when the water in oil mixture. This standard is also used to test other types of oil, hydraulic oils, movement and fluid heavier than water.

**ABNT NBR 14805:2002**

Fixed maximum level indicator for LPG containers

This standard sets the requirements for manufacturing and reception of fixed maximum level indicator for liquefied petroleum gas (LPG).

**ABNT NBR 14854-1:2007**

Petroleum products - Determination of saponification index Part 1: Color indicator titration

This part of NBR 14854-1 describes the method for the quantitative determination, by colorimetric titration, of unsaponifiable constituents of products, such as lubricants, additives and transmission fluids.

**ABNT NBR 14854-2:2007**

Petroleum products - Determination of saponification index Part 2: Potentiometric titration

This part of ABNT NBR 14854-2 describes the method for the quantitative determination, by potentiometric titration, of unsaponifiable constituents of petroleum products, such as lubricants, additives and transmission fluids.

**ABNT NBR 14883:2002 Corrected Version:2005**

Petroleum and petroleum products - Manual sampling

This standard describes the procedures for manually obtaining representative samples of petroleum products of a liquid, semi-liquid, or solid state, whose vapor pressure at ambient conditions is smaller than 101.3 kPa. Collection of samples can be obtained from tanks, pipes, drums, barrels, cans, tubes, bags, pots and free flowing.

**ABNT NBR 14883:2002 Erratum 1:2005**

Petroleum and petroleum products - Manual sampling

This Erratum 1 of 28.02.2005 corrects ABNT NBR 14883:2002.

**ABNT NBR 14921:2011**

Petroleum product - Determination of color - Saybolt colorimeter method

This standard prescribes the method of determining the color of oil petroleum and derived products such as automotive and aviation gasoline (without dyes), aviation kerosene and illuminating, naphtha, paraffin petroleum and white oils.

**ABNT NBR 14924:2008**

Lubricating oils - Determination of high temperature foaming characteristics

This standard describes the procedure for determining foam characteristics of lubricating oils (specifically transmission fluid and motor oil) at 150° C.

**ABNT NBR 14932:2011**

Liquid petroleum products - Determination of hydrocarbon types by fluorescent indicator adsorption

This standard establishes the method for determination of hydrocarbons types in the range of 5.0% to 99.0% in volume aromatics, 0.3% to 55.0 in volume for olefins and 1.0% to 95.0% in volume for saturates in petroleum derivatives that distill below 315°C. This standard may apply for concentrations outside these ranges, but the precision has not been determined. Samples of dark-colored that interfere in reading of chromatographic band cannot be analyzed.

**ABNT NBR 14938:2011**

Fuel oil - Determination of sediments by the extraction method

This standard describes the determination of sediment in fuel oils by extraction with toluene. The accuracy of this standard is obtained for a range of sediment level of 0.01% m/m to 40% w/w, although higher levels can be determined.

**ABNT NBR 14953:2007**

Used lubricating oils - Determination of insolubles

This standard prescribes the method for determination of insoluble in pentane and toluene, in lubricating oils by means of two procedures.

**ABNT NBR 14969:2008**

Petroleum products - Determination of color by the automatic tristimulus method

This standard prescribes the method for automatically determining the color of a wide variety of derivatives petroleum without dye, such as automotive and aviation gasoline, kerosene aviation, illuminating kerosene, naphtha, white oils, diesel, thermal oil and lubricating oils, through the automatic tristimulus method. This standard expresses the results in terms of ABNT NBR 14483 or ABNT NBR 14921, as calculated by the equipment.

**ABNT NBR 15017:2004 Corrected Version:2005**

Crude oil - Determination of salt content - Electrometric method

This standard establishes the method for determination of salt concentration in petroleum. The application range of this method is (0 to 500)mg/kg or (0 to 150)lb/1000 bbl.

**ABNT NBR 15017:2004 Erratum 1:2004**

Crude oil - Determination of salt content - Electrometric method

This Errata 1 of 31.12.2004 corrects ABNT NBR 15017:2004.

**ABNT NBR 15072:2004**

Service station - Underground or aboveground tank constructions for used oil storage purposes

This standard establishes the general requirements for the manufacture of cylindrical tanks of single or double wall for overhead or underground installation in a horizontal position, operating at atmospheric pressure, for a retail service station and gas station, for storage of used lubricating oil.

**ABNT NBR 15251:2005**

Liquid petroleum products - Viscosity-temperature charts

This standard prescribes the procedures to determine the kinematic viscosity of petroleum or petroleum liquid products at any temperature within a specified limit by means of viscosity-temperature charts, from values of kinematic viscosities at two different known temperatures

**ABNT NBR 15353:2006**

Lubricating oils - Determination of extreme-pressure properties by the four-ball method



This standard establishes two procedures for determining the properties of lubricating oils for resistance to application of loads, load index of wear (formerly Hertz average load) and welding load (method of the four spheres of extreme pressure).

**ABNT NBR 15362:2006**

Inhibited mineral insulating oil - Determination of oxidation stability by rotating bomb

This standard specifies a method for determining the oxidation by the rotary pump of new insulating mineral oils containing 2,6-di-tert-butyl paracresol and / or 2,6-diterciário-butyl phenol, by measuring the induction time.

**ABNT NBR 15363:2006**

Mineral insulating oil - Determination of carbon-type composition

The standards listed below contain provisions which, through reference in this text, constitute provisions of this Standard. The editions indicated were in force at the time of publication. As all standards are subject to review, it is recommended to those who carry out agreements based on this to verify the appropriateness of using the most recent editions of the standards listed below. ABNT has the information of the standards in force at any given time.

**ABNT NBR 15468:2007**

Petroleum products - Determination of pour point-automatic method

This standard prescribes the method for determining the pour point in the temperature range from - 57°C to 51°C using an automated device that tilts the test vessel during cooling and to detect the movement of the sample surface by sensor optical.

**ABNT NBR 15512:2008**

Fuel storage, transportation, supply and quality control in biodiesel and diesel/biodiesel blend

This standard establishes the conditions for determination of biodiesel - and methyl / ethyl or - in the range of 0.5% v/v to 30.0% v/v with diesel fuel by infrared spectroscopy Avg.

**ABNT NBR 15546:2007**

Petroleum products - Determination of sulfur by high temperature method - IR detection

This standard presents the procedures for determining the total sulfur in petroleum products including finished lubricating oils and in additives. This method is applicable to samples with a boiling point above 177° C and a minimum sulfur content of 0,06% in bulk. This standard describes the procedure that uses infrared detection subsequent to pyrolysis in a resistance furnace.

#### **ABNT NBR 15550:2008 Corrected Version:2008**

Fuels - Determination of lubricity of diesel fuels by the high-frequency reciprocating rig (HFRR)

This standard evaluates the lubricity of diesel fuels, using a high-frequency reciprocating rig (HFRR).

#### **ABNT NBR 15553:2008 Corrected Version 2:2009**

Fat and oil product derivatives - Fatty acid methyl/ethyl esters - Determination of calcium, magnesium, sodium, phosphorus and potassium content by inductively coupled plasma optical emission spectrometry (ICPOES)

This standard specifies a method of optical emission of spectrometry with inductively coupled plasma (ICPOES) for detecting the levels of calcium, magnesium, sodium and phosphorus equal or greater than 1 mg/kg of potassium and less than 2 mg/kg in the esters methyl/ethyl fatty acids, now known as biodiesel.

#### **ABNT NBR 15553:2008 Erratum 1:2009**

Products derived from oils and fats - methyl esters / fatty acid ethyl - Determination of calcium, magnesium, sodium, phosphorus and potassium by optical emission spectrometry with inductively coupled plasma (ICPOES)

Dated from 08/19/2009, it corrects ABNT NBR 15553:2008.

#### **ABNT NBR 15554:2008 Corrected Version 2008**

Fat and oil product derivatives - Fatty acid methyl/ethyl esters - Determination of sodium content by atomic absorption spectrometry

This standard aims to evaluate the quality of biodiesel in terms of sodium, whose presence above a certain concentration can affect its fuel use. This element may lie in the production process of biodiesel and/or possible contamination.

#### **ABNT NBR 15554:2008 Erratum 1:2008**

Products derived from oils and fats - methyl esters/fatty acid ethyl - Determination of sodium content by atomic absorption spectrometry

This Erratum 1, from 18/02/2008, rectifies ABNT NBR 15554:2008.

#### **ABNT NBR 15555:2008 Corrected Version:2008**

Fat and oil product derivatives - Fatty acid methyl/ethyl esters - Determination of potassium content by atomic absorption spectrometry

This standard aims to evaluate the quality of biodiesel in terms of potassium content, whose presence above a certain concentration may affect its fuel use. This element may lie in the production process of biodiesel and/or possible contamination.

#### **ABNT NBR 15555:2008 Erratum 1:2008**

Products derived from oils and fats - methyl esters / fatty acid ethyl - Determination of potassium content by atomic absorption spectrometry

This Erratum 1, from 18/02/2008, rectifies ABNT NBR 15555:2008.

#### **ABNT NBR 15556:2008 Corrected Version:2008**

Fat and oil product derivatives - Fatty acid methyl/ethyl esters - Determination of sodium, potassium, magnesium and calcium content by atomic absorption spectrometry

It assesses the quality of biodiesel, in accordance with levels of sodium, potassium, magnesium and calcium, whose presence above certain concentration may affect its use as fuel. These elements may result from the process of obtaining biodiesel and/or possible contamination. Usually, calcium and magnesium are derived from the washing water and sodium and potassium from the catalyst.

#### **ABNT NBR 15556:2008 Erratum 1:2008**

Products derived from oils and fats - methyl esters / fatty acid ethyl - Determination of sodium, potassium, magnesium and calcium atomic absorption spectrometry.

This Erratum 1, from 18/02/2008, rectifies ABNT NBR 15556:2008.

#### **ABNT NBR 15568:2008**

Biodiesel - Determination of biodiesel content in diesel fuel oil by mid infrared spectroscopy

This standard establishes the conditions for determination of biodiesel level - methyl and/or ethyl - in the range of 0.5% v/v to 30.0% v/v, in diesel fuel oil mid infrared spectroscopy.

#### **ABNT NBR 15586:2008**

Petroleum products - Determination of carbon residue method - Micro method

This standard prescribes a method for determining, under certain conditions, the carbon residue formed after evaporation and pyrolysis of petroleum, in order to provide some indication of the formation tendency of coke thereof.

#### **ABNT NBR 15690:2009 Corrected Version:2009**

Storage of flammable and combustible liquids - Hoses of supplying, transfer, charge and discharge of fuels, biofuels and additives

This standard sets standards for the manufacture, testing and inspection of hoses of supplying, transfer, charge and discharge of petroleum and petroleum products (naphtha, gasoline, aviation gasoline, kerosene, aviation kerosene, diesel, lubricating oil, fuel oil etc. ),

biofuels, alcohols, additives, petrochemicals products (except aircraft hoses of supplying, pump hose fuel for vehicular use and discharge in vehicle service stations).

**ABNT NBR 15764:2012**

Biodiesel — Determination of total esters content by gas chromatography

This standard establishes the method for determining the concentration of total esters in biodiesel by gas chromatography and external standardization.

**ABNT NBR 15908:2012**

Biodiesel — Determination of free glycerin, monoglycerides, diglycerides, triglycerides and total glycerin by gas chromatography

This standard establishes the method for quantitative determination of free glycerin levels, monoglycerides, diglycerides, triglycerides and total glycerin by gas chromatography in samples from biodiesel of any raw material, including coconut, palm oil and animal fat. However, this standard does not apply to biodiesel from castor oil.

**ABNT NBR 15908:2011 Amend 1:2012**

Biodiesel — Determination of free glycerin, monoglycerides, diglycerides, triglycerides and total glycerin by gas chromatography

This Amend 1 of 16.07.2012 complements the ABNT NBR 15908:2011.

**ABNT NBR 15983:2011**

Petroleum products – Determination of dynamic viscosity and density of liquids by Stabinger viscometer (and the calculation of kinematic viscosity)

This standard specifies the procedure for measuring the dynamic viscosity concomitant,  $\eta$ , and density,  $\rho$ , of liquid petroleum products and crude oils, both transparent and opaque. The kinematic viscosity,  $\nu$ , can be obtained by dividing the dynamic viscosity,  $\eta$ , the density,  $\rho$ , obtained from the same temperature of test.

**ABNT NBR 15983:2011 Corrected Version:2012**

Petroleum products – Determination of dynamic viscosity and density of liquids by Stabinger viscometer (and the calculation of kinematic viscosity)

This corrected version of ABNT NBR 15983:2011 incorporates the Erratum 1 of 11.05.2012.

**ABNT NBR 15983:2011 Erratum 1:2012**

Petroleum products – Determination of dynamic viscosity and density of liquids by Stabinger viscometer (and the calculation of kinematic viscosity)

This Erratum 1 of 11.05.2012 corrects the ABNT NBR 15983:2011.

## **ABNT NBR ISO 20844:2010**

### Petroleum products - Determination of shear stability of polymer-containing oils using a diesel injection nozzle

This standard specifies a method to evaluate the shear applied to mineral, synthetic oils and other fluids containing polymers, when subjected to the passage by a diesel nozzle. The shear stability is measured by the change in viscosity of the fluid under test, caused by polymer degradation during exercise. Under normal circumstances, this standard is applied to evaluate the resistance of hydraulic fluids of categories HR and HV as defined in ISO 6743-4 [1] and specified in ISO 11158 [2], but can also be applied to non-flammable hydraulic fluids in categories HFA, HFB, HFC and HFD, in changed conditions as specified in ISO 12922 [3].

## **5. Certification and Testing Bodies**

### **5.1. Certification Laboratories Listed by Inmetro**

#### **I. BVQI do Brasil Sociedade Certificadora Ltda.**

Address: Avenida do Café, 277 - 5ª Andar, Vila Guarani - São Paulo - SP. Brazil.

Phone: (11) 2655-9001 and Fax: (11) 2655-9001

Email: [certificacao.bvqi@br.bureauveritas.com](mailto:certificacao.bvqi@br.bureauveritas.com)

Site: <http://www.bvqi.com.br>

#### **II. ABS - Quality Evaluations Inc.**

Address: Rua Fidêncio Ramos, 100 - 4º andar, Vila Olímpia - São Paulo – SP. Brazil.

Phone: (11) 3707-1087 and Fax: (11) 3707-1091

Email: [scustodio@eagle.org](mailto:scustodio@eagle.org)

Site: <http://www.abs-qe.com>

#### **III. Det Norske Veritas Certificadora Ltda.**

Address: Avenida Egydio de Souza Aranha, 100 - 3º And. - Bl. D, Jardim Santo Antônio - São Paulo – SP. Brazil.

Phone: (11) 3305-3305 and Fax: (11) 3097-8859

Email: [mauricio.venturin@dnv.com](mailto:mauricio.venturin@dnv.com)

Site: <http://www.dnv.com>

#### **IV. FCAV - Fundação Carlos Alberto Vanzolini.**

Address: Rua Camburiu, 255, Lapa - São Paulo - SP. Brazil.

Phone: (11) 3836-6566 and Fax: (11) 3836-6566

Email: [certific@vanzolinicert.org.br](mailto:certific@vanzolinicert.org.br)

Site: <http://www.vanzolini.org.br>

#### **V. ABNT - Associação Brasileira de Normas Técnicas.**

Address: Avenida Treze de Maio, 13 - 28º andar, Centro - Rio de Janeiro - RJ. Brazil.

Phone: (21) 3974-2306 and Fax: (21) 3974-2315

Email: [guy.ladvocat@abnt.org.br](mailto:guy.ladvocat@abnt.org.br)

Site: <http://www.abnt.org.br>

#### **VI. BSI Brasil Sistema De Gestão Ltda.**

Address: Rua Gomes de Carvalho, 1069 - 18º andar, Vila Olímpia - São Paulo - SP. Brazil.

Phone: (11) 2148-9600 and Fax: (11) 2148-9601

Email: [Sergio.Fellauer@bsigroup.com](mailto:Sergio.Fellauer@bsigroup.com)

Site: <http://www.bsibrasil.com.br>

#### **VII. IFBQ - Instituto Falcão Bauer da Qualidade.**

Address: Rua Aquinos, 111 - 3º andar, Água Branca - São Paulo - SP. Brazil.

Phone: (11) 3611-1729 and Fax: (11) 3611-1729

Email: [sgqifbq@ifbauer.org.br](mailto:sgqifbq@ifbauer.org.br) e [dferreira@ifbauer.org.br](mailto:dferreira@ifbauer.org.br)

Site: <http://www.ifbauer.org.br>

#### **VIII. TÜV Rheinland do Brasil Ltda.**

Address: Avenida Paulista, n.º 302 - 2º, 3º e 4º andar, Bela Vista - São Paulo - SP. Brazil.

Phone: (11) 3638-5700 and Fax: (11) 3638-5844

Email: [suzete.suzuki@br.tuv.com](mailto:suzete.suzuki@br.tuv.com)

Site: <http://www.tuvbrasil.com.br>

#### **IX. PUC - Pontifícia Universidade Católica - NPT/SP Núcleo de Pesquisa Tecnológica.**

Address: Rua Marques de Paranaguá, 111, Consolação - São Paulo- SP. Brazil.

Phone: (11) 3124-7204 and Fax: (11) 3124-7205

Email: [npt@pucsp.br](mailto:npt@pucsp.br)

Site: <http://www.pucsp.br/npt/OC/>

#### **X. BRTÜV Avaliações da Qualidade S. A.**

Address: Alameda Madeira, 222 - 3º Andar, Cj. 31, Alphaville – Barueri - SP. Brazil.

Phone: (11) 4689-9400 and Fax: (11) 4689-9404

Email: [thfuto@tuv-nord.com](mailto:thfuto@tuv-nord.com)

Site: <http://www.brtuv.com.br>

**XI. UL do Brasil Certificações S/C.**

Address: Rua Fidêncio Ramos, 195 - 2º andar, Vila Olímpia - São Paulo - SP. Brasil.  
Phone: (11) 3049 -8300 and Fax: (11) 3049- 8252  
Email: [pericles.arilho@br.ul.com](mailto:pericles.arilho@br.ul.com)

**XII. Centro Tecnológico Brasileiro da Conformidade - CTBC.**

Address: Rua Clemente Álvares, n.º 119, Lapa - São Paulo - SP. Brazil.  
Phone: (11) 2768-5455 and Fax: (11) 2768-5455  
Email: [thfuto@tuv-nord.com](mailto:thfuto@tuv-nord.com)

**XIII. SGS do Brazil Ltda.**

Address: Avenida Andromeda, nº 832, 2º andar, Alphaville - Barueri – SP. Brasil.  
Phone: (11) 2768-5455 and Fax: (11) 2768-5455  
Email: [marcio.freitas@sgs.com](mailto:marcio.freitas@sgs.com) e [fabiane.vencato@sgs.com](mailto:fabiane.vencato@sgs.com)

**XIV. Det Norske Veritas Certificadora Ltda.**

Address: Avenida Egydio de Souza Aranha, 100 - 3º And. - Bl. D, Jardim Santo Antônio - São Paulo – SP. Brazil.  
Phone: (11) 3305-3305 and Fax: (11) 3097-8859  
Email: [mauricio.venturin@dnv.com](mailto:mauricio.venturin@dnv.com)  
Site: <http://www.dnv.com>

**XV. Lloyd's Register do Brasil Ltda.**

Address: Rua Helena, 235 - 6º andar, Vila Olímpia - São Paulo – SP. Brazil.  
Phone: (11) 3523-3940 and Fax: (11) 3523-3943  
Email: [lcm.buenodasilva@lr.org](mailto:lcm.buenodasilva@lr.org)  
Site: <http://www.lrqa.com.br>

**XVI. Fondo norma - Fondo para la Normalización y la Certificación de la Calidad.**

Address: Avenida Libertador / Ed. Libertador, Nucleo A, Piso , Chacao - Caracas. Venezuela.  
Phone: +58+212+201-77-11 and Fax: +58+212+201-77-17  
Email: [fabian.ugas@fondonorma.org.ve](mailto:fabian.ugas@fondonorma.org.ve)  
Site: <http://www.fondonorma.org.ve>

**XVII. RINA Services S.p.A.**

Address: Avenida do Contorno, 8000 - Conj. 705, Lourdes - Belo Horizonte – MG. Brazil.  
Phone: (31) 3337-7358 and Fax: (31) 3335-5211  
Email: [belohorizonte.office@rina.org](mailto:belohorizonte.office@rina.org)

Site: <http://www.rina.org>

## 5.2 Testing Laboratories Listed by Inmetro

### **I. Associação Brasileira de Cimento Portland - ABCP – ABCP - Laboratório.**

Address: Av. Torres de Oliveira, 76, Jaguaré. São Paulo, SP. Brasil.

Phone: (11) 3760-5353/5324 and Fax: (11) 3760-5340

Email: [arnaldo.battagin@abcp.org.br](mailto:arnaldo.battagin@abcp.org.br)

### **II. L. A. Falcão Bauer - Centro Tecnológico de Controle Qualidade Ltda. – Laboratório de Tecnologia de Materiais e Produtos.**

Address: Rua Aquinos nº 111. Água branca, São Paulo, SP. Brazil.

Phone: (11) 3611-0833 (R. 247) and Fax: (11) 3861-0170

Email: [qualidade@falcaobauer.com.br](mailto:qualidade@falcaobauer.com.br)

### **III. Centro de Pesquisas de Energia Elétrica - CEPEL - Divisão de Laboratórios de Adrianópolis - DVLA.**

Address: Av. Olínda - s/nº. Nova Iguaçu, Rio de Janeiro, RJ. Brazil.

Phone: (21) 2598-6050 and Fax: (21) 2598-6289

Email: [burd@cepel.br](mailto:burd@cepel.br)

### **IV. Serviço Nacional de Aprendizagem Industrial - SENAI – Laboratório de Ensaio em Lubrificantes Tintas e Vernizes.**

Address: Rua Aristeu Rodrigues Sampaio, 271, Jardim das Nações, Lençóis Paulista, SP. Brasil.

Phone: (14) 3269-3966 and Fax: (14) 3269-3966

Email: [labelt@sp.senai.br](mailto:labelt@sp.senai.br)

### **V. CCDM - Centro de Caract. e Desenv. de Materiais - Fundação de Apoio Inst. ao Desenv. Científico e Tecnológico – UFSCAR - Laboratório do Centro de Caracterização e Desenvolvimento de Materiais- UFSCAR/UNESP.**

Address: Rod. Washington Luiz - km 235 - Caixa Postal - 676, Monjolinho, São Carlos, SP. Brasil.

Phone: (16) 3351-8808 and Fax: (16) 3351-8850

Email: [rubens@ccdm.ufscar.br](mailto:rubens@ccdm.ufscar.br)

### **VI. Cientec- Fundação de Ciência e Tecnologia - Departamento de Química – DEQUIM.**

Address: Rua Washington Luiz, 675. Cidade Baixa, Porto Alegre, RS. Brasil.

Phone: (51) 3287-2088 and Fax: (51) 3287-2079

Email: [veradias@cientec.rs.gov.br](mailto:veradias@cientec.rs.gov.br)

### **VII. Nova Ambi Serviços Analíticos Ltda – Laboratório de Ensaio em Ambiental.**

Address: Rua Sebastião Eugênio de Camargo, 59. Butantã, São Paulo, SP. Brasil.



Phone: (11) 3731-8703 and Fax: (11) 3731-8703

Email: [silvio@novaambi.com.br](mailto:silvio@novaambi.com.br)

**VIII. Universidade Federal do Rio de Janeiro - Escola de Química - Laboratório de Combustíveis e Derivados de Petróleo.**

Address: Centro de Tecnologia, Bloco K 02, Ilha do Fundão, Rio de Janeiro, RJ. Brasil.

Email: [davila@eq.ufrj.br](mailto:davila@eq.ufrj.br)

**IX. Fundação Centro Tecnológico de Minas Gerais – CETEC - Setor de Análises Químicas - CETEC/STQ.**

Address: Av. José Cândido da Silveira, 2.000, Horto, Belo Horizonte, MG. Brasil.

Phone: (31) 3489-2202 and Fax: (31) 3489-2200

Email: [stq.secretaria@cetec.br](mailto:stq.secretaria@cetec.br)

**X. Fundação de Desenvolvimento da UNICAMP - Central Analítica do Instituto de Química da UNICAMP.**

Address: Campus UNICAMP, S/Nº, NST. Química, Bl/ K , 1 and, Barão Geraldo, Campinas. SP.

Phone: (19) 3521-3007 and Fax: (19) 3521-3052

Email: [prates@iqm.unicamp.br](mailto:prates@iqm.unicamp.br)

**XI. Instituto de Pesquisas Tecnológicas do Estado de São Paulo - IPT – Centro de Metrologia em Química.**

Address: Av. Professor Almeida Prado, 532, Cidade Universitária, São Paulo, SP. Brasil.

Phone: (11) 3767-4569 and Fax: (11) 3767-4572

Email: [cmgsouza@ipt.br](mailto:cmgsouza@ipt.br)

**XII. Universidade Federal de Pernambuco - Laboratório de Combustíveis da UFPE.**

Address: Av. Prof. Artur de Sá, S/Nº, Cidade Universitária, Recife, PE. Brasil.

Phone: (81) 2126-7237/7236/7239 and Fax: (81) 2126-7235/7231

Email: [qualidade.lac@ufpe.br](mailto:qualidade.lac@ufpe.br)

**XIII. Fundação para o Desenvolvimento da UNESP - Centro de Monitoramento e Pesquisa da Qualidade de Combustíveis Biocombustíveis Petróleo e Derivados.**

Address: Rua Professor Francisco Degni, S/N, Quitandinha, Araraquara, SP. Brasil.

Phone: (16) 3301-9823 and Fax: (16) 3301-9666

Email: [jeduardo@iq.unesp.br](mailto:jeduardo@iq.unesp.br)

**XIV. Universidade Federal do Paraná - Laboratório de Análises de Combustíveis Automotivos - LACAUTets.**

Address: Rua XV de Novembro, 1.299, Centro, Curitiba, PR. Brasil.

Phone: (41) 3361-3188 and Fax: (41) 3361-3188

Email: [loremnc@ufpr.br](mailto:loremnc@ufpr.br)

## **XV. UFRGS- Universidade Federal do Rio Grande do Sul - Laboratório de Combustíveis do CECOM-IQ/UFRGS.**

Address: Av Bento Gonçalves, 9.500 - Setor 6 - Prédio 105, Agronomia, Porto Alegre, RS. Brazil.

Phone: (51) 3308-9880 and Fax: (51) 3308-9892

Email: [alex@iq.ufrgs.br](mailto:alex@iq.ufrgs.br)

### **6. Government Partners**

#### **I. INMETRO**

National Institute of Metrology, Quality and Technology (INMETRO)

General Coordination of International Affairs (CAINT)

Overcoming Technical Barriers Division (DISBT)

<http://www.inmetro.gov.br/barreirastecnicas/>

[http://www.inmetro.gov.br/legislacao/consulta.asp?seq\\_classe=1](http://www.inmetro.gov.br/legislacao/consulta.asp?seq_classe=1)

#### **II. ANP**

National Agency of Petroleum, Natural Gas and Biofuels (ANP)

<http://www.anp.gov.br/>

<http://www.anp.gov.br/?id=478>

#### **III. ABNT**

Brazilian Association of Technical Standards (ABNT)

<http://www.abnt.org.br>

<http://www.abntnet.com.br>

<http://www.abntcatalogo.com.br>

## 7. Major Market Entities

### **I. Brazilian Association of Research and Development in Petroleum and Gas - ABPG**

<http://www.portalabpg.org.br/>

### **II. Brazilian Association of Independent Producers of Petroleum and Gas - ABPIP**

<http://www.abpip.com.br/>

### **III. Brazilian Association of Technology in Petroleum, Gas and Energy - ABRATEP**

<http://www.abratep.org.br/>

### **IV. Brazilian Institute of Petroleum, Gas and Biofuels - IBP**

<http://www.ibp.org.br/>