

GLOSSARY

Anhydrous Ethanol: obtained in Brazil through the fermentation of sugar cane molasses. It has an alcoholic content of 99.3° INPM. The anhydrous ethanol is used in mixtures with gasoline A, for producing gasoline type C, in proportions defined by applicable law.

Apparent Consumption: the summation of parcels referring to production and imports, minus the exported volume.

Bbl/d: barrels per day.

Bidding Round: denomination for the several international public bids promoted by ANP, aiming the granting of concessions to the winning bidders (previously qualified companies) for exploring and producing oil and natural gas in pre-defined areas (blocks).

Biodiesel: fuel composed by alkyl esters, derived from vegetal oils or animal fats, according to the specification of ANP Ordinance No. 45/2014.

Boe: “barrel of oil equivalent”. A measurement unit for equivalent energy, per convention equal to 1,390 Mcal.

Calorie: this book adopts the calorie at 15 °C (cal_{15}). 1 cal_{15} is the amount of thermal energy required to heat 1g of air-free water from 14.5 °C to 15.5 °C under a constant pressure of 101.325 kPa (quiloPascals). Conversion factor: 1 cal_{15} = 4.1855 J.

Concession: an administrative contract through which ANP grants to companies that meet the technical, economic and legal requirements the right to explore and produce oil and natural gas in the Brazilian territory.

Concessionaire: a company incorporated under Brazilian law, with main office and management located in Brazil that was granted a concession contract by ANP for the exploration and production of oil and natural gas in a sedimentary basin located in the Brazilian territory.

Dew Point Plant (DPP): plant that uses Joule-Thomson effect to adjust dew point of processed gas.

Energy Oil Products: oil products mainly utilized as fuels, which release energy and/or light when burned. That denomination covers the following oil products: LPG, gasoline A, aviation gasoline, lamp fuel, jet fuel, diesel oil, fuel oil and coke.

Ethanol: composed of two carbon atoms, five hydrogen atoms and one hydroxyl group (C_2H_5OH), it is obtained in Brazil through the fermentation of sugar cane molasses. Used as a fuel in Otto cycle internal combustion engines, mainly on road transportation.

Gasoline A: fuel produced by the process of oil refining or formulated by mixing currents from the petroleum refining and natural gas processing, for vehicles equipped with automotive Otto cycle engines, free of oxygenated components. ANP Ordinance No. 40/2013.

Gasoline C: gasoline composed of a mixture of gasoline A and anhydrous ethanol, in proportions defined by the applicable law. ANP Ordinance No. 40/2013.

Hydrated Ethanol: motor vehicle fuel obtained in Brazil through the fermentation of sugar cane molasses. When free from hydrocarbons, it has an alcoholic content between 92.6° and 93.8° INPM. Used in Otto cycle internal combustion engines, specifically in alcohol-powered vehicles for road transportation.

INPM: represents the alcohol percentage in mass in the mixture (% m/m) used in

Brazil.

Liquefied Natural Gas (LNG): natural gas in liquid state obtained by cryogenics process it has undergone and stored in near atmospheric pressure. ANP Ordinance No. 41/2013.

Liquid Fractionation Plant (LFP): plant designed to separate NGLs components (ethane, propane, butane, iso-butane and C_5^+), consisting of boiling off hydrocarbons one by one.

Liquid Recovery Plant (LRP): plant designed to process natural gas in order to recover NGLs. That process is required to meet pipeline dewpoint specifications.

Methanol: chemical compound whose chemical formula is CH_3OH . It is liquid and inflammable, besides possessing an invisible flame and freezing point of around - 98 °C. Methanol has large-scale utilization in plastics industry and in reactions of pharmacological importance. Concerning the biofuels industry, methanol is used in the transesterification of vegetal oils and animal grasses, in order to produce biodiesel.

Natural Gas Condensate Processing Plant (NGCPP): plant that separates natural gas condensate from a raw natural gas.

Natural Gas Liquids (NGL): hydrocarbons in natural gas removed from gas as liquids, in lease separators, field facilities, NGPPs or in pipeline transfers, according to ANP Ordinance No. 118/2000.

Natural Gas Processing Plant (NGPP): plant designed to separate heavy components (propane and butane) from natural gas.

Natural Gas Refrigeration Plant (NGRP): plant that separates natural gas from natural gas liquids.

Natural Gas Unit (UGN): plant that separate condensate from natural gas and stabilize it.

Non-Energy Oil Products: oil products that, although having significant energy content, are used for non-energy aims. That denomination covers the following oil products: greases, lubricants, paraffin, asphalts, solvents, coke, naphtha, aromatic extract, vacuum gas oil, light cycle oil, atmospheric residue, diluents, n-paraffin, other petroleum oils, bituminous minerals, as well as other oil products of lesser importance.

Operator company: enterprise that is legally designated by the consortium for conducting and executing all the operations and activities in the concession area, according to the provisions established in the concession contract signed by ANP and the concessionaire.

Petroleum Law: Law No. 9478, of August 6, 1997.

Refining capacity: processing capacity for which an industrial plant was designed, measured in bbl/d or m³/d.

Refining Capacity per Operation Day: maximum load volume that the primary distillation plant(s) can process in a 24-hour period, when operating at full capacity, under optimal and stable conditions in terms of raw materials, products and downstream plants, without any maintenance interruptions scheduled in any of the components of the refinery's production system. It is expressed in operation m³/d or bbl/stream day.

Refining Capacity per Calendar Day: maximum load volume, expressed in a 24-hour period, that the primary distillation plant(s) can process, under average and normal operating conditions, during the complete cycle of plant maintenance activities. This capacity takes into account any reduction in capacity of all the

refinery's plants in continuous operation resulting from limitations that may delay, interrupt or reduce production. It is expressed in m³/calendar day or bbl/calendar day.

Round Zero: denominates the act of signing, under the provisions of the Petroleum Law, article 34, of August 6, 1998, of licensing contracts between ANP and Petrobras for 397 blocks that were already under exploration, development or production by the state-owned company at the time the Petroleum Law was enforced.

Toe: "ton of oil equivalent". A measuring unit for equivalent energy, per convention, equal to 10,000 Mcal.

Shale: generally clay sedimentary rock, organic material (kerogen) –rich. When submitted to high temperatures, shale releases oil, water and gas, as well as a carbon solid residual.