



Roma Brisbane Pipeline – Gas Specification

1. Gas Quality

- (a) The gas delivered by the Shipper to APA at the Receipt Points must be in accordance with:
 - (i) the specifications for “fuel gas” imposed under the *Petroleum and Gas (Production and Safety) Act 2004* (Qld) which adopts the specification set out in Australian Standard “AS 4564 – specification for general purpose natural gas” (2005); and
 - (ii) any additional parameters lawfully agreed between the Shipper and APA.
- (b) Gas delivered by APA to the Shipper at the Delivery Point must meet the quality specifications in clause 2.

2. Gas Quality at the Delivery Point

- (a) The gas delivered by the Shipper to APA at the Receipt Points will be commingled with gas received under other Transportation Agreements, including prior Transportation Agreements (as renewed or extended). The gas quality specifications under these prior Transportation Agreements are the Prior Gas Specifications.
- (b) During the currency of the prior Transportation Agreements referred to in paragraph (a):
 - (i) APA must use its reasonable endeavours in accordance with Good Engineering and Operating Practice and as APA is obliged under those agreements to maintain the quality of the gas stream commingled in the Pipeline as close as possible to the gas quality specification referred to in clause 1; and
 - (ii) despite paragraph (i), the quality specification of the gas delivered at the Delivery Points may, as a result of that commingling, vary from that referred to in clause 1 but will in no event be of a lesser quality than the Prior Gas Specifications.
- (c) After the termination of all prior Transportation Agreements referred to in paragraph (a), the gas delivered by APA to the Shipper at the Delivery Point must meet the quality specifications referred to in clause 1.
- (d) APA must notify the Shipper as soon as reasonably practicable if it becomes aware that gas to be delivered to a Delivery Point will not comply with the requirements of this clause 2.



Gas Specification

The gas specification is the quality of gas specified under the *Petroleum and Gas (Production and Safety) Act 2004* or as approved by the Chief Gas Inspector is:

| Characteristics and components | Limit | |
|--------------------------------|---------|---|
| Wobbe Index | Minimum | 46.0 MJ/m ³ |
| | Maximum | 52.0 MJ/m ³ |
| Oxygen | Maximum | 0.2 mol % |
| Hydrogen sulfide | Maximum | 5.7 mg/m ³ |
| Total sulfur | Maximum | 50 mg/m ³ |
| Water content | Maximum | Dewpoint 0°C at the highest MAOP in the relevant transmission system (in any case, no more than 112.0 mg/m ³) |
| Hydrocarbon dewpoint | Maximum | 10 degrees Celsius between the pressures of 1000 kPag and 10,000 kPag |
| Total inert gases | Maximum | 7.0 mol% |
| Carbon dioxide | Maximum | 3.0 mol% |

The gas shall not contain:

- (a) materials, dust, and other solid or liquid matter, waxes, gums, gum forming constituents, and unsaturated or aromatic hydrocarbons to an extent which might cause damage to, or interference with the proper operation of, pipes, meters, regulators, control systems, equipment or appliances;
- (b) unsaturated or aromatic hydrocarbons to an extent which causes unacceptable sooting; or
- (c) other substances that cause damage to, or problems in operation of, pipelines or appliances or that cause the products of combustion to be toxic, or hazardous to health, other than substances that are usually found in natural gas combustion products.



Prior Gas Specifications

The specifications for gas received by APA under the prior Transportation Agreements referred to in clause 2(a) (**Prior Gas Specifications**) are –

- (a) it must not contain more than 0.2 per cent by volume of oxygen;
- (b) it must not contain more than 50 milligrams per cubic metre of total sulphur;
- (c) it must not contain more than 7 milligrams per cubic metre of hydrogen sulphide;
- (d) it must not contain more than 15 milligrams per cubic metre of mercaptans;
- (e) the hydrocarbon dew point of the Gas will be a maximum of 10 degrees Celsius between the pressures of 1000 kPag and 10,000 kPag;
- (f) it must not contain more than 65 milligrams per cubic metre of water vapour;
- (g) it must not contain more than 3 per cent by volume of carbon dioxide;
- (h) it must not contain more than 6 per cent by volume of inert gases;
- (i) if the Gas contains more than 4.0 per cent by volume of inerts, then the Gas shall have a Gross Heating Value of not less than 37.9 MJ per cubic metre of Gas and not more than 42.3 MJ per cubic metre of Gas on a dry basis and if the Gas contains less than or equal to 4.0 per cent by volume of inerts, then the Gas shall have a Gross Heating Value of not less than 35 MJ per cubic metre of Gas and not more than 43 MJ per cubic metre of Gas;
- (j) the Wobbe Index of the Gas shall be not less than 47 and not more than 52; and
- (k) the Gas shall be reasonably free from dust, gums, gum forming constituents or other liquid or solid matter which might cause injury to, or interference with, proper operation of pipeline regulators, meters or other appliances through which it flows or which may interfere with the commercial utilisation of the Gas by the Shipper.
- (l) shall have a temperature of not less than 0 degrees Celsius and not more than 50 degrees Celsius.

The gas delivered must:

- (m) be reasonably free from sand, dust, gums, crude oil, impurities or other objectionable substances which may be injurious to pipelines or control equipment or may interfere with the transmission of or commercial utilisation of the gas;
- (n) not contain hydrogen sulphide in concentration greater than 7.0 mg/m³;
- (o) not contain total sulphur in concentration greater than 50 mg/m³;
- (p) not contain more than 3% by volume of carbon dioxide;



- (q) not contain more than 112 mg/m³ of water vapour; and
- (r) have a Gross Heating Value of not less than 35.5 MJ/m³ and not more than 48 MJ/m³, provided that APA shall not be obliged to accept gas having a Gross Heating Value in excess of 43 MJ/m³ if this would result in the commingled gas stream in the Pipeline exceeding 43 MJ/m³ Gross Heating Value.