



ARA POLICY ON AFRICAN GASOLINE AND DIESEL SPECIFICATIONS

The African Refiners Association (ARA), founded in 2006, has consistently campaigned for improved fuel specifications as a partial solution to raising air quality in Africa.

ARA POLICY

- 1) ARA supports the application of AFRI specifications across Africa. The objective is that these will be adopted by the African Union as the official African Road Map for fuel specs.
- 2) African governments should take the necessary actions to ensure that fuel quality meets AFRI 4 by 2020 and AFRI 5 by 2030
- 3) Governments should take into account all socio-economic benefits of maintaining a refining structure to help raise the finance needed to upgrade refineries to meet the AFRI Roadmap
- 4) Improving fuel quality needs to be accompanied by laws restricting the age and quality of vehicle imports and the introduction of a comprehensive vehicle maintenance, inspection and testing programme
- 5) Harmonisation of regional fuel specifications should be developed along natural supply chains to reduce bulk transportation costs and to optimise regional logistic infrastructure. Regional harmonisation of taxes, excise duties and subsidies will help reduce smuggling and adulteration of fuels.
- 6) ARA Members will work with their governments and regional economic communities to encourage the implementation of the above actions and implement the necessary regulatory framework.

This policy is based on several landmark studies carried out by the ARA as outlined in the Annexe below

Abidjan March 2017




ANNEXE

1) Establishment of the AFRI Specs in 2007

The AFRI 1 to 4 specifications were designed as a “road map” for African governments to improve product quality with a goal of achieving AFRI-4 by 2020. AFRI 5 was added in 2012


Property	AFRI-1	AFRI-2	AFRI-3	AFRI-4	AFRI-5
UNLEADED GASOLINE					
RON, min. ⁽¹⁾	91	91	91	91	91
MON, min.	81	81	81	81	81
Lead content, mg/l max. ⁽⁴⁾	5	5	5	5	5
Sulphur content, mg/kg, max.	1000	500	300	150	50
Benzene content, vol%, max.	to be reported	to be reported	5	1	1
Aromatics, vol%, max.	n/a	n/a	n/a	n/a	42
Density at 15°C, kg/m ³ min-max	n/a	n/a	n/a	n/a	725-780
RVP, kPa, max.	n/a	n/a	n/a	n/a	65
Ethanol content, vol%, max. ⁽²⁾	5	5	5	10	10

1. A higher grade of gasoline may be marketed if required.
2. Imported gasoline to be free from oxygenates.
3. In cases of dispute ASTM D3244 / EN ISO 4259 shall be used.
4. No intentional addition of lead.



Property	AFRI-1	AFRI-2	AFRI-3	AFRI-4	AFRI-5
GAS OIL / DIESEL					
Sulphur content, mg/kg mass, max.	8000	3500	500	50	50
Density at 15°C, kg/m ³ , min - max.	800 - 890	800 - 890	800 - 890	820 - 880	820 - 880
Cetane Index (calculated), min.	42	45	45	45	46
Cetane Number, min.	n/a	n/a	n/a	n/a	49
Polycyclic Aromatic Hydrocarbons (PAH), mass %, max.	n/a	n/a	n/a	n/a	11
Lubricity (HFRR @ 60 °C), micron, max.	to be reported	to be reported	460	460	460
Oxidation stability (Hr) ⁽¹⁾	20	20	20	20	20
FAME content, vol%, max.	7	7	7	7	7

1. Applicable only to gas oil / diesel containing more than 2 % v/v FAME.
2. In cases of dispute ASTM D3244 / EN ISO 4259 shall be used.



2) World Bank/ARA Health and refining study (2009)

This landmark study used modelling techniques to assess the impact on air quality of applying AFRI 4 both with/without the introduction of more modern vehicles and with/without vehicle testing. It then used the results of the modelling to assess the “value” of the improvement in human health that results from better air quality. It also used the ENSYS global model to assess the return on investment for refiners to upgrade to AFRI-4 quality.

An important conclusion of the study was that an investment of about \$6 billion in refinery upgrades could generate around \$43 billion in economic benefit as a result of better public health. But it also signalled that, the refiners gain little from the investment and **most of the benefit accrues to governments.**

<http://documents.worldbank.org/curated/en/754901468203695110/Sub-Saharan-Africa-refinery-study>

3) Wood Mackenzie/ARA study “Assessing the value of African refining” (2014)

This study assessed the total economic value of an African country keeping (and therefore modernising) a refinery rather than converting the refinery to an import terminal.

The study categorised the refineries into 4 “quadrants” and, in addition to the refining margin, assessed the value of direct and indirect employment, supply security, tax collection, regulation, skills development and environmental impact.

This study produced a work sheet for each refinery to assess its “value added”. It concluded that many African refineries could add value and justify upgrading investment.

<http://www.afrra.org/en/woodmac-study>

4) Review of the relationship between sulphur level in diesel fuel and African air quality (2016)

This study demonstrated that improvement in air quality depends on several inter-related actions by African governments

- Using data from the above studies and a recent report by CCAC, this study demonstrated that improving product quality alone only eliminates 15 to 20% of vehicle air pollution and that reducing vehicle pollution only solves part of the problem, - road dust, factories, ships and charcoal/wood burning all contribute to poor air quality
- The study shows how fuels and vehicles must be treated as an integrated system; reductions in sulphur need to be linked to restrictions on vehicle imports, the introduction of advanced vehicle technologies and testing regimes that ensure significant emission reduction benefits.

<http://www.afrra.org/en/library/public>