BACKGROUND

The Hong Kong Green Label Scheme (HKGLS) is an independent and voluntary scheme which aims to identify products that are, based on life cycle analysis consideration, more environmentally preferable than other similar products with the same function. The Scheme is organized by the Green Council (GC) with contributions from the HKGLS Advisory Committee and a number of supporting organizations.

The prime objectives of HKGLS are:

- For Consumers: assist in making purchases of products that are less harmful to the environment;
- For Industry: stimulate development and production of environmentally preferable alternatives.

This specification sets out the requirements that Fuel Additive will be required to meet in order to be licensed to use the HKGLS label. The requirements include environmental criteria and product characteristics. The specification also defines the testing and other means to be used to verify conformance with the product performance and environmental criteria.

The Product Environmental Criteria is primarily in reference to the United States Environmental Protection Agency Code of Federal Regulations - Title 40 CFR Part 79 Regulations for the registration of gasoline and diesel fuels and fuel additives, including detergent additives.[i]

POTENTIAL ENVIRONMENTAL IMPACTS

Motor vehicles release pollutants into the air, mostly through the exhaust fumes from the tailpipe during engine operation. Diesel vehicles, in particular, are the main causes of pollution at street level.

Fuel additives are added to petrol, motor vehicle diesel and other fuels to enhance engine operation of vehicles, achieving such benefits as improving combustion efficiency, reducing engine deposits, decreasing pollutant emissions including particulates, total hydrocarbons, carbon monoxide, sulphur dioxide and nitrogen oxides.

In reducing pollutants from motor vehicles, fuel additives promote a cleaner atmosphere and a healthier environment. Effective use of fuel additives and catalyst also improves fuel economy, resulting in lower maintenance cost of engines.

[i] Accessible at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=7db2cf9b76cf083acc1881e31734a0f3&tpl=/ecfrbrowse/Title40/40cfr79_main_02.tpl

LABEL OBJECTIVE

The aim of the environmental criteria developed for Fuel Additive is to:

- Ensure quality additives are available, thereby reducing pollution of the atmosphere by motor vehicles, as well as lowering the risk to public health from exposure to such emissions.

PRODUCT DEFINITION

The products covered by in this criteria document include additives for the primary types of petroleum-based fuels of petrol and diesel motor fuel. The products are in consumer-sized packages and are added directly to the fuel/motor in vehicles.

"Additive" means any substance, other than one composed solely of carbon and/or hydrogen, which is intentionally added to a fuel (including any substance added to a motor vehicle's fuel system).

"Bulk fuel additive" means an additive which is added to fuel before introduction into the fuel tank of a motor vehicle.

"Aftermarket fuel additive" means an additive which is added directly to fuel in a motor vehicle.

"Aerosol additive" means an additive in aerosol form generally used as a motor vehicle engine starting aid or carburetor cleaner and not recommended to be placed in the fuel tank.

PRODUCT CRITERIA

The products are required to meet or exceed applicable and accepted quality standard in its target market, which is demonstrated by providing testing reports from an independent organization or case studies demonstrating market suitability and quality.

The product's production process shall also conform to relevant national or local environmental regulation.

Moreover, the products are required to meet the Product Environmental Criteria for the product category of "Fuel Additive" (GL-010-002) set out in the ensuing table.

Product Environmental Criteria	Verification Methods*
Product Performance Criteria 1. The chemical composition of the additive shall be provided,[1] impurities greater than 0.1% by weight shall be listed.	✓ Review of detailed supporting documentation regarding the composition of the product.
2. The recommended purpose-in-use[1][2] of the fuel addictive shall include at least one of the following: • Combustion improver/modifier • Detergent[3][4] • Deposit modifier/control[5] • Gum solvent • Flow improver • Carburetor and choke cleaner • Combustion chamber cleaner	✓ Declaration Letter and; ✓ Review of supporting information.
3. The final mixture of the additive and fuel should not contain more than 50ppm of sulfur. [6][7]	✓ Review of laboratory test report(s).
4. Emission products of the fuel additive when used in gasoline and /or diesel fuel shall be identified. The effects of the fuel additive on the emissions, and/ or the effects of the emission products on the performance of emission control devices or systems shall be stated.	✓ Review of detailed documentation and/or laboratory test report(s).[II]
Product Environmental Criteria 5. Emission products of the additive shall not have toxic or other public health effects	✓ Declaration Letter and; ✓ Review of supporting information.

Product Environmental Criteria	Verification Methods*
6. The recommended usage (for unleaded petrol or motor vehicle diesel fuel) and range of concentration shall be specified.	✓ Review of supporting information.

*Analytical testing should be accredited and performed by laboratories that meet the requirement laid out in the IEC/ISO 17025 or EN45001 standards or any equivalent systems e.g. HOKLAS, CNAS. Under special situation and with the approval from GC, test can be performed by in-house method by the accredited laboratory or manufacturer

Verification Notes

(I) ASTM D2622-05 Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry; ISO 14596:1998 Petroleum products – Determination of sulfur content – Wavelength-dispersive X-ray fluorescence spectrometry, or equivalent method.

(II) Code of Federal Regulations Title 40 – Protection of Environment Chapter 1 – Environmental Protection Agency (continued) Part 86 Control of Emissions from New and in-use Highway Vehicles and Engines, Subpart B—Emission Regulations for 1977 and Later Model Year New Light- Duty Vehicles; Test Procedures; and Subpart D – Emission Regulations for New Gasoline-Fueled and Diesel- Fueled Heavy-Duty Engines; Gaseous Exhaust Test Procedures.

Notes

(1) (US) Code of Federal Regulations Title 40 – Protection of Environment Chapter 1 – Environmental Protection Agency (continued) Part 79 Registration of Fuels and Fuel Additives.

(2) Additives are used in the primary types of petroleum-based fuels including motor gasoline, diesel motor fuel, heating oil, aviation fuels, and marine fuels. Performance additives, (http://www.ethanol-gec.org/clean/cf08.htm) include detergents, dispersants (detergents and dispersants are known collectively as "deposit control additives"), anti-icers, combustion enhancers/modifiers, fluidizer oils and flow improvers.
Other additives include antiknocks, corrosion inhibitors and antioxidants, biocides and fungicides.

(3) A detergent cleans and dissolves fuel-related deposits such as gum, varnish, and carbon residues, and inhibits buildup of deposits in the combustion chamber and other engine parts.

(4) As of 1 January , 1995, no gasoline in the United States can be marketed without an approved detergent additive which have been certified in accordance with the regulations at 40 CFR 80, Subpart G.

(5) Deposits that form in the engines and fuel supply systems of gasoline-powered motor vehicles have been shown to increase emissions of harmful air pollutants. On 5 July, 1996, EPA established a gasoline deposit control additive program to ensure that all gasoline used in the United States contains additives that limit the formation of such deposits http://www.epa.gov/otaq//regs/fuels/additive/420105014.htm.

(6) Ultra Low Sulphur Diesel (ULSD) in Hong Kong: Since 7 July, 2000, the Hong Kong government has introduced a concessionary duty on ULSD as an incentive to encourage diesel vehicles to switch to ULSD. Hong Kong is the first place in Asia to introduce ULSD on a comprehensive scale for its vehicle fleet. Since 1 April, 2002, ULSD is the statutory standard for motor diesel. (Cap 311 L Air Pollution Control (Motor Vehicle Fuel) Regulation Schedule 1 – Specifications of Motor Vehicle Diesel – 01/04/2002).

(7) Code of Federal Regulations. Title 40 –Protection of Environment (Revised 1 July, 2005) Chapter 1 – Environmental Protection Agency (Continued) Part 80 Regulation of Fuel and Fuel additives. In this new regulation, EPA sets standards for low sulphur gasoline and low sulphur diesel, which will help ensure the effectiveness of low emission - control technologies in vehicles and reduce harmful air pollution.