Commission Regulation (EU) No 406/2010 of 26 April 2010 implementing Regulation (EC) No 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles (Text with EEA relevance)

COMMISSION REGULATION (EU) No 406/2010

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implementing Regulation (EC) No 79/2009 of the European Parliament and of the Council on type-approval of hydrogen-powered motor vehicles

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 79/2009 of the European Parliament and of the Council of 14 January 2009 on type-approval of hydrogen-powered motor vehicles, and amending Directive 2007/46/EC[(1)], and in particular Article 12 thereof,

Whereas:

(1) Regulation (EC) No 79/2009 is a separate Regulation for the purposes of the Community type-approval procedure provided for by Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive)[(2)].

(2) Regulation (EC) No 79/2009 lays down fundamental provisions on requirements for the type-approval of motor vehicles with regard to hydrogen propulsion, for the type-approval of hydrogen components and hydrogen systems and for the installation of such components and systems.

(3) From entry into force of the present Regulation manufacturers should be able to apply for the EC whole-vehicle type-approval of hydrogen-powered vehicles on a voluntary basis. However, some of the separate Directives in the context of the Community type-approval procedure under Directive 2007/46/EC or some of their requirements should not apply to hydrogen-powered vehicles, since the technical characteristics of hydrogen-powered vehicles differ significantly from conventional ones, for which those type-approval Directives were essentially designed. Pending the amendment of those Directives to include specific provisions and test procedures on hydrogen-powered vehicles, it is necessary to set out transitional provisions in order to exempt hydrogen-powered vehicles from those Directive or some of their requirements.

(4) Adopting harmonised rules on hydrogen receptacles, including receptacles designed to use liquid hydrogen, is necessary in order to ensure that hydrogen vehicles can be refuelled throughout the Community in a safe and reliable manner.

Changes to legislation: *There are currently no known outstanding effects for the Commission Regulation (EU) No 406/2010. (See end of Document for details)*

(5) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee — Motor Vehicles,

HAS ADOPTED THIS REGULATION:

Article 1

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) 'Hydrogen sensor' means a sensor used to detect hydrogen in air;

(2) 'Class 0 component' means high-pressure hydrogen components including fuel lines and fittings containing hydrogen at a nominal working pressure greater than 3,0 MPa;

(3) 'Class 1 component' means medium-pressure hydrogen components including fuel lines and fittings containing hydrogen at a nominal working pressure greater than 0,45 MPa and up to and including 3,0 MPa;

(4) 'Class 2 component' means low-pressure hydrogen components including fuel lines and fittings containing hydrogen at a nominal working pressure up to and including 0,45 MPa;

(5) 'Fully wrap' means over-wrap with the filaments wound around the liner both in the circumferential and longitudinal directions of the container;

(6) 'Hoop wrap' means over-wrap with the filaments wound in a substantially circumferential pattern over the cylindrical portion of the liner, so that the filaments do not carry any significant load in the longitudinal direction of the container;

(7) 'Nm^3' or 'Ncm^3' means a volume of dry gas that occupies a volume of 1 m^3 or 1 cm^3 at a temperature of 273,15 K (0 °C) and an absolute pressure of 101,325 kPa (1 atm);

(8) 'Service life' means the life in years during which the containers may safely be used in accordance with the service conditions;

(9) 'Type of hydrogen system' means a group of hydrogen systems which do not differ either as regards their trade name or mark of their manufacturer or as regards the hydrogen components included therein;

(10) 'Vehicle type with regard to hydrogen propulsion' means a group of vehicles which do not differ as regards the state of the hydrogen used or the main characteristics of its hydrogen system(s);

(11) 'Type of hydrogen component' means a group of hydrogen components which do not differ in any of the following aspects:

(a) trade name or mark of their manufacturer;

(b) classification;

(c) main function;

(12) 'Electronic control system' means a combination of units, designed to cooperate in the production of the stated vehicle control function by electronic data processing;

(13) 'Complex electronic vehicle control systems' mean electronic control systems which are subject to a hierarchy of control in which one electronically controlled function may be over-ridden by a higher-level system/function and become part of the complex system;

(14) 'Container' means any system used for the storage of cryogenic hydrogen or compressed gaseous hydrogen, excluding any other hydrogen components which may be attached to or fitted inside the container;

(15) 'Container Assembly' means two or more containers with integral interconnecting fuel lines, protectively encased inside a housing shell or protective frame;

(16) 'Duty Cycle' means one start up and shut down cycle of the hydrogen conversion system(s);

(17) 'Filling cycle' means a pressure increase of more than 25 per cent of the working pressure of the container due to an external source of hydrogen;

(18) 'Pressure regulator' means a device used to control the delivery pressure of gaseous fuel to the hydrogen conversion system;

(19) 'First pressure regulator' means the pressure regulator having the container pressure as its inlet pressure;

(20) 'Non-return valve' means a valve that allows hydrogen to flow in only one direction;

(21) 'Pressure' means gauge pressure measured in MPa against atmospheric pressure, unless otherwise stated;

(22) 'Fitting' means a connector used in a piping, tubing or hose system;

(23) 'Flexible fuel line' means flexible tubing or a hose through which hydrogen flows;

(24) 'Heat exchanger' means a device for heating the hydrogen;

(25) 'Hydrogen filter' means a filter used to separate oil, water and dirt from hydrogen;

(26) 'Automatic valve' means a valve that is not operated manually, but by an actuator, with the exception of non-return valves as defined in point 20;

(27) 'Pressure relief device' means a non-reclosing device that, when activated under specified conditions, is used to release fluid from a pressurised hydrogen system;

(28) 'Pressure relief valve' means a reclosing pressure activated device that, when activated under specified conditions, is used to release fluid from a pressurised hydrogen system;

(29) 'Refuelling connection' or 'receptacle' means a device used to fill the container at the filling station;

(30) 'Removable storage system' means a removable system within a vehicle that houses and protects one or more container(s) or a container assembly;

(31) 'Removable storage system connector' means the hydrogen connection device between a removable storage system and the section of the hydrogen system permanently installed in the vehicle;

(32) 'Auto-frettage' means a pressure application procedure used in manufacturing composite containers with metal liners, which strains the liner past its yield point

sufficiently to cause permanent plastic deformation, which results in the liner having compressive stresses and the fibres having tensile stresses at zero internal pressure;

(33) 'Liner' means a part of a container that is used as a gas tight inner shell, on which reinforcing fibres are filament wound to reach the necessary strength;

(34) 'Ambient temperature' means a temperature range of 20 °C ± 10 °C;

(35) 'Units' mean the smallest divisions of system components for the purposes of Annex VI, as these combinations of components are treated as single entities for purposes of identification, analysis or replacement;

(36) 'Ground clearance of the vehicle' means the distance between the ground plane and the underside of the vehicle;

(37) 'Safety device' means a device that ensures safe operation within the normal operating range or the permissible fault range of the system;

(38) 'Hydrogen conversion system' means any system designed for the conversion of hydrogen into electrical, mechanical or thermal energy and includes, for example, the propulsion system(s) or auxiliary power unit(s);

(39) 'Impermissible fault range' of a process variable means the range within which an unwanted event is to be expected;

(40) 'Leak test gas' means hydrogen, helium or an inert gas mixture containing a demonstrated detectable amount of helium or hydrogen gas;

(41) 'Normal operating range' of a process variable means the range planned for its values;

(42) 'Outer pressure' means the pressure acting on the convex side of the inner tank or outer jacket;

(43) 'Outer jacket' means the part of the container that encases the inner tank(s) and its insulation system;

(44) 'Rigid fuel line' means tubing that has not been designed to flex in normal operation and through which hydrogen flows;

(45) 'Boil off management system' means a system that renders boil off gas harmless in normal conditions;

(46) 'Safety instrumented systems' mean process control systems that prevent an impermissible fault range from being reached by an automatic intervention in the process;

(47) 'Batch' means a quantity of successively produced finished containers having the same nominal dimensions, design, specified materials of construction, process of manufacture, equipment for manufacture and, where appropriate, conditions of time, temperature and atmosphere during heat treatment;

(48) 'Equipment of the container' means all devices that are fixed directly to the inner tank or outer jacket of the container;

(49) 'Finished container' means a container that is typical of normal production, complete with external coating including integral insulation specified by the manufacturer, but free from non-integral insulation or protection;

(50) 'Burst pressure' means the pressure at which the container ruptures;

(51) 'Permissible fault range' of a process variable means the range between the normal operating range and the impermissible fault range;

(52) 'Boil off system' means a system that in normal conditions vents the boil-off before the pressure relief device of the container(s) opens;

(53) 'Manual valve' means a manually operated valve;

(54) 'Safety concept' means measures designed to ensure safe operation even in the event of a failure or random faults;

(55) 'Usage monitoring and control system' means a system that counts the filling cycles and prevents further use of the vehicle when a predetermined number of filling cycles is exceeded;

(56) 'Fuel supply line' means the line that supplies hydrogen to the hydrogen conversion system(s);

(57) 'Composite container' means a container constructed of more than one material;

(58) 'Over-wrap' means resin impregnated continuous filaments used as reinforcement around a liner;

(59) 'Auto-frettage pressure' means the pressure within the over-wrapped container at which the required distribution of stresses between the liner and the over-wrap is established;

(60) 'Boundary of functional operation' means the boundaries of the external physical limits within which a system is able to maintain control;

(61) 'Range of control' means the range over which the system is likely to exercise control with regard to an output variable;

(62) 'Transmission links' mean the means used for interconnecting distributed units for the purpose of conveying signals, operating data or an energy supply;

(63) 'Higher-level systems/functions' mean controls that employ additional processing and/or sensing provisions to modify vehicle behaviour by commanding variations in the normal function(s) of the vehicle control system.

Article 2

Administrative provisions for EC type-approval of a vehicle with regard to hydrogen propulsion

1 The manufacturer or his representative shall submit to the type-approval authority the application for EC type-approval of a vehicle with regard to hydrogen propulsion.

2 The application shall be drawn in accordance with the model of the information document set out in Part 1 of Annex I.

The manufacturer shall provide the information set out in Part 3 of Annex I for periodic requalification by inspection during the service life of the vehicle.

3 If the relevant requirements set out in Part 1 of Annex III or Part 1 of Annex IV, Annex V and Annex VI are met, the approval authority shall grant an EC type-approval and