

This leaflet provides information about Euro IV heavy duty vehicles for prospective buyers in choosing Euro IV models meeting their operational needs.

Introduction of Euro IV Emission Standards

Since 1 October 2006, newly registered heavy duty vehicles over 3.5 tonnes are required to comply with Euro IV emission standards. A Euro IV heavy duty vehicle emits about 80% and 30% less respirable suspended particulates (RSP) and nitrogen oxides (NO_x) respectively than a Euro III model. The introduction of Euro IV emission standards thus can significantly reduce vehicular emissions and improve roadside air quality.

Euro IV Heavy Duty Vehicles

Both Euro IV and Euro III heavy duty vehicles are using electronic controlled engine systems. To comply with the more stringent Euro IV emission standards, Euro IV models are further equipped with exhaust gas recirculation (EGR) systems or selective catalytic reduction (SCR) systems to reduce exhaust emission. According to the current information, most of Euro IV models are installed with ERG systems while SCR-equipped Euro IV vehicles are mainly for heavy duty vehicles over 10 tonnes.

The EGR System

EGR system re-circulates some of the exhaust gas into the engine for re-combustion in order to reduce the overall vehicular emissions. In the past, EGR systems were mainly used in petrol vehicles. Some Euro III diesel models were also equipped with EGR systems for emission reduction. To meet Euro IV emission standards, the EGR system has started to be widely used in diesel vehicles.

The SCR System

A SCR system requires urea solution at appropriate concentration and amount to inject into the exhaust gas of a vehicle to break down NO_x in the exhaust gas into harmless nitrogen (N₂) and water through a catalyst. SCR-equipped vehicles have a separate tank for storing urea solution which should be refilled from time to time. The capacity of a urea storage tank ranges from 30 litres to over 100 litres depending on operational needs.

According to the information from vehicle manufacturers, some SCR models

consume less fuel than non-SCR models. Some vehicle manufacturers envisage that more and more Euro IV and future models will be equipped with SCR systems in the future.

Urea solution for vehicles and its consumption

Urea solution is a colourless, non-corrosive solution and is not classified as dangerous substance. Urea solution for use in vehicles has a concentration of 32.5% and shall comply with Standard DIN 70070 at Table 1.

Vehicle urea solution is available in portable buckets of different volume including 5 litres, 10 litres, 20 litres, etc depending on the daily operational needs of vehicle owners.

Urea consumption is about 5% of fuel consumption. A vehicle with a urea storage tank of 50 litres can drive for about 3 000 mileage without the need for urea refilling.

Indication of the need for urea solution refilling

SCR-equipped vehicles have built-in devices for monitoring the use of urea solution including

- the volume of urea solution in storage
- the quality of urea solution
- the consumption of urea solution

The system alerts drivers through a light signal to the need for refilling urea solution, replacement of substandard urea solution, etc.

Consequences of late refilling of urea solution or use of substandard urea solution

The light in the monitoring system will be on when late refilling of urea solution or use of substandard urea solution is detected. If the driver fails to rectify any irregularities during the vehicle is stopped for remedial works, the power of the vehicle will reduce to 60% of its normal level after it is restarted. Some models even cannot be restarted to ensure early rectification of the problems by the driver. Drivers should confirm with vehicle manufacturers the design of their vehicles so as to avoid operational problems arising from late refilling. Drivers may also consider storing a small amount of urea solution in their vehicles.

Attention should also be paid to the standard of urea solution upon purchase to make sure that it complies with Standard DIN70070.

Vehicle urea solution refilling locations

SCR vehicle suppliers will provide urea solution refilling service to customers through their maintenance and sales network. They will also further expand their urea solution refilling networks with the help of the Motor Traders Association of Hong Kong (MTA). Details of urea solution refilling locations can be found on the website of the MTA. A hyperlink to the MTA's website will also be provided on the website of the Environmental Protection Department (EPD). SCR vehicle suppliers will distribute information leaflets on urea solution refilling locations to their customers.

MTA's Website: <http://www.hkmta.com>

EPD's Website: <http://www.epd.gov.hk>

Enquiry

Vehicle owners can contact the MTA and their members for further information about the availability of SCR and non-SCR models and their features. The telephone number of the MTA is 2409 0039.

Enquiries may also be directed to the EPD at 2594 6392.

Table I. Specification of SCR Grade Urea (STANDARD DIN 70 070)

Parameter	Unit	Minimum Limit	Maximum Limit
Urea concentration	% by weight	31.8	33.3
Density 20°C	g/cm ³	1.0870	1.0920
Refractive index 20°C	N/A	1.3817	1.3840
NH ₃	%	Not specified	0.2
Carbonate	%	Not specified	0.2
Biuret	%	Not specified	0.3
Formaldehyde	mg/kg	Not specified	10
Insoluble substances	mg/kg	Not specified	20
Phosphate	mg/kg	Not specified	0.5
Calcium	mg/kg	Not specified	0.5
Iron	mg/kg	Not specified	0.5
Copper	mg/kg	Not specified	0.2
Zinc	mg/kg	Not specified	0.2
Chromium	mg/kg	Not specified	0.2
Nickel	mg/kg	Not specified	0.2
Magnesium	mg/kg	Not specified	0.5
Sodium	mg/kg	Not specified	0.5
Potassium	mg/kg	Not specified	0.5