WLTP: Mandatory Measures 2019

Evaporative Emission (EVAP)
Dear Readers,
You have already been informed about the implementation of the new Worldwide Harmonised Light Vehicles Test Procedure (WLTP), which is the new standard since September 2017. As your mobility partner, we had explained the new legal regulations and we will continue to accompanying you on further implementations of the new type approval regulations. Additionally, we will support you in adjusting your fleet to the new circumstances.

With this paper, we inform you about the most relevant regulations becoming effective in 2019 & 2020. We explain the connection between the upcoming test procedures, the stages of Real Driving Emissions (RDE) test and the associated Euro 6 standards.

With the implementation of Euro 6d Temp (temporary until the end of 2020), WLTP values and new thresholds for the real driving test (RDE) on the road became mandatory. The nitrogen oxide value (NO\textsubscript{X}) measured in the RDE test may not exceed 2.1 times the measured threshold value under WLTP. The value for particle emissions (PN) has already to fulfil the conformity factor of 1.0 with a measuring tolerance of 0.5. Therefore, the value measured under real-driving conditions is a maximum of 1.5 times higher than the value measured under WLTP. With the continuous adaption of RDE regulations, the Euro 6d standard, which comes into effect in 2020 has a reduced conformity factor for NO\textsubscript{X} of 1.0 with a measuring tolerance of 0.43. Therefore, the NO\textsubscript{X} value measured under real-driving conditions is a maximum of 1.43 times higher than the value measured under WLTP. Of course, we will continue to keep you informed.

### EFFECTIVE DATES AND TRANSITION PERIODS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dynamometer Test</strong></td>
<td>NEDC</td>
<td>WLTP</td>
<td>ISC</td>
<td>EVAP (48h)</td>
<td>OBFCM****</td>
</tr>
<tr>
<td>CO\textsubscript{2} and exhaust emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For all vehicles [M1, N1 = PKW]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only new types*** [M1, N1 = PKW]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RDE Test</td>
<td>RDE-NO\textsubscript{X} (CF=2.1)</td>
<td></td>
<td>RDE-NO\textsubscript{X} (CF=1+margin*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RDE PN (CF=1+margin*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emission Norm</td>
<td>Euro 6d-TEMP*****</td>
<td></td>
<td>Euro 6d-TEMP-ISC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro 6d-TEMP-EVAP-ISC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro 6d-ISC-FCM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01.09.</td>
<td>01.01.</td>
<td>01.09.</td>
<td>01.01.</td>
<td>01.01.</td>
<td></td>
</tr>
</tbody>
</table>

* Measurement uncertainty: yearly adjustable NO\textsubscript{X}-Margin=0.43; PN-Margin=0.5
** Passenger Cars
*** 01.01.2021 (new types) -> 01.01.2022 (all vehicles) [N1 II, III-LCV]
**** On Board Fuel Consumption Monitoring
***** Parallel to that emission norm Euro 6c can be registered until 31.08.2019

In addition to the WLTP test procedure for new vehicles, the EU Commission has also decided to extend the verification of vehicles being in service for a period of 0.5 to 5 years\(^5\) (starts 01.01.2019)\(^6\). With the implementation of this extended/revised ISC (In Service Conformity) regulations, the nomination of the EURO norms is also been amended (e.g. Euro 6d-TEMP-ISC).

\(^5\) Vehicles with min. 15,000 km and 6 month registration period (max. 100,000 km and 5 years)
\(^6\) 01.01.2019 all vehicles [N1 II, III - LCV]
**EVAPORATIVE EMISSION**\(^3\) (EVAP)

With the amendment of WLTP, the EU Commission has confirmed the introduction of the updated test procedure for evaporative emissions valid from 01.09.2019. This is mandatory to all new type-approvals and first registrations of vehicles from that date. The nomination of the EURO norms therefore is: “Euro 6d-TEMP-EVAP-ISC”.

Vehicles with petrol engines have a pressure equalization line on the petrol tank, which prevents negative pressure from forming in the tank. By inflowing air, the contraction of the tank while driving is avoided. In case the fuel is heated, the pressure equalization line prevents the tank from bursting. The petrol vapours\(^4\) are collected and temporarily stored in an activated carbon filter when the vehicle is stationary. During driving, the fuel is supplied to the combustion. This ensures that the escape of fuel will be mostly avoided.

Within the EVAP emissions test, hydrocarbon emissions (HC) emissions that occur during driving and parking (hot soaks) are considered. The evaporation-test cycle to check the hydrocarbon emissions (HC) of vehicles with petrol engines takes place in a sealed housing for evaporative determination (SHED). The hydrocarbon emissions caused by temperature fluctuations (during the course of the day), parking (hot soaks) and driving in the city are recorded.

In addition to evaporative emissions, the ageing of the activated carbon filter and the permeability of the fuel storage system are also considered. In order to carry out the test it is necessary that the test vehicle has already completed at least a distance of 3.000 km and that there has been no excessive flushing/loading of the activated carbon filter.

The cycle-test includes the “Drive Test” (WLTC-Phases Low-Medium-High-Medium), the measurement of hot soak losses and tank respiratory losses although tests using the previous NEDC cycle and the new test procedure remain valid.

With the amendment of RDE, the EU Commission has adapted the evaporation test process to the WLTP as described before and updated the associated emission standards accordingly. The previous maximum amount of evaporative emissions from ≤2g HC was retained. Previously, it could be emitted within 24 hours, but according to the new procedure, this emission quantity should not be exceeded over 48 hours.

The “EURO 6 DG” emissions standard, mandatory from 01.09.2019, includes the requirements for the dynamometer test, the RDE test (NO\(_X\) [CF\(^{5}\)=1+margin\(^6\)]; PN [CF=1+margin\(^7\)]) and the revised test procedure for evaporative emissions (≤2g HC within 48h) to receive the type approval. Even though the evaporative emissions occur only from Petrol engines the same approval characters are also effective for Diesel engines but Diesel engines do not need to run the EVAP-test procedure.

The implementation of EVAP can cause some changes for fleet customers and their fleets. Throughout the entire implementation phase and beyond, it would be a pleasure for the Volkswagen Group to assist you. You are more than welcome to make an appointment with one of our experts. We look forward to supporting and advising you.

---

\(^3\)Verordnung (EU) 2017/1221

\(^4\)Volatile hydrocarbons (HC)

These do not occur at Diesel engines!

\(^5\)Conformity Factor

\(^6\)Margin = 0,43 → in total 1,43

\(^7\)Margin = 0,50 → in total 1,5

---

For more information about the Volkswagen AG fleet customer business, go to: www.volkswagenag.com/en/fleet