

# Summary of GTR19 Amendment 2

**7<sup>th</sup> Jan., 2019**

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## Two Calculations : For Different SHED Types

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EPA / CARB : For SHEDs using either Constant Leak or Measured Leak techniques

$$M_{HC} = k \times V \times \left( \frac{C_{HCf} \times P_f}{T_f} - \frac{C_{HCi} \times P_i}{T_i} \right) + M_{HC,out} - M_{HC,in}$$

Actual volume (number of molecules) within the fixed volume enclosure depends on the temperature and pressure change during the test

Alternative equation for variable-volume SHED

EPA / CARB : For SHEDs using Volume Adjustment e.g Moving Roof or Internal or External Bags

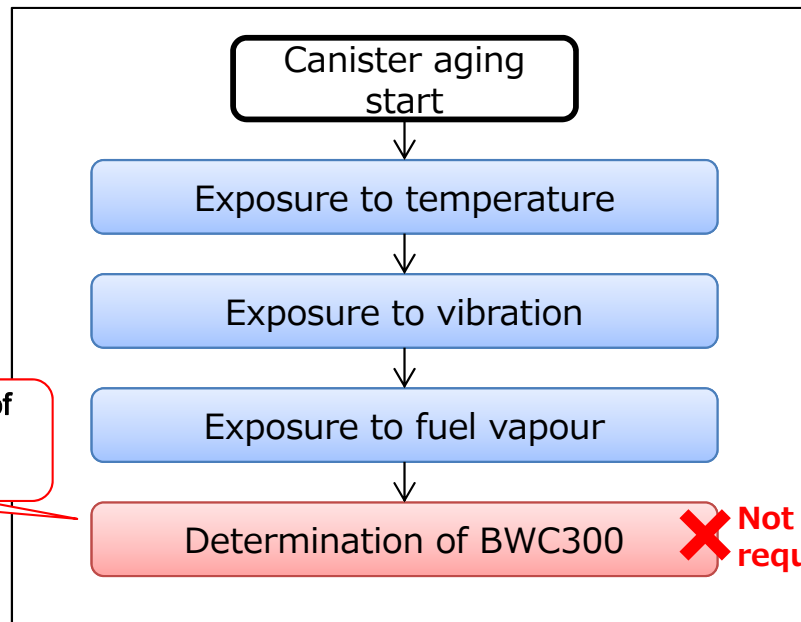
$$M_{HC} = k \times V \times \frac{P_i}{T_i} \times (C_{HCf} - C_{HCi})$$

Assuming no gas is removed during the test, the volume at test start Temp and Press conditions (number of molecules) must remain the same as at the start of the test

# Carbon canister aging and its installation to vehicle

- The aged carbon canister shall not be installed during the run-in or before the start of test procedure flow chart.
- The carbon canister aging will need the temperature exposure, vibration exposure and fuel vapour exposure.

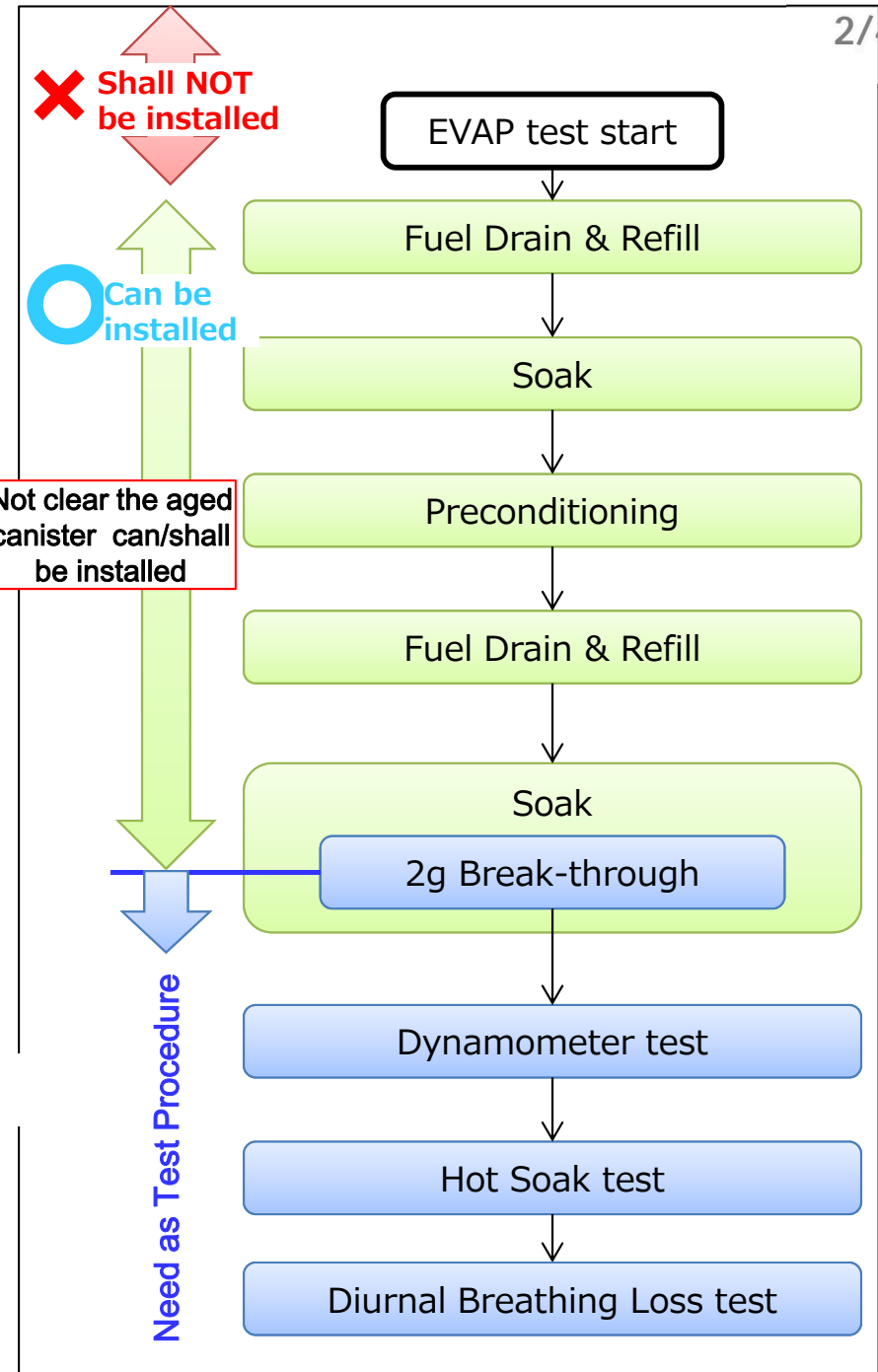
(No determination of BWC300 is required)



Not clear determination of BWC300 is included in canister aging

Not required

**Clarified texts concerning the aged carbon canister.**



# Calibration requirements / EVAP family requirements

## • Calibration requirements and intervals of test equipment

- Follow the calibration requirements in referred UNR/GTR.
- For others, it shall be calibrated before its initial use and at appropriate timing.

4. Test equipment, calibration requirements and intervals

Unless stated otherwise in this paragraph, equipment used for testing shall be calibrated before its initial use and at appropriate service intervals thereafter. An appropriate service interval shall be either equipment manufacturer recommendation or according to good engineering practice.

**Clarified calibration requirements**

## • Change/ Clarification of Vehicles considered as same EVAP family

- Vapour hose material, fuel line materials and connection technique are not required to be "identical" but "technically equivalent."

(With different hose or line manufacturers, the materials used may be slightly different.)

- Only connection technique of fuel line shall be considered in EVAP family.

(The pressure inside fuel line is very high that connection technique should be checked to avoid leak.

However, the pressure inside the vapour hose is very low and at the instance that it have no chance to leak.)

### Shall be identical

Fuel tank system material and construction

Sealed tank or non-sealed tank system

Fuel tank relief valve setting (air ingestion and relief)

### Shall be technically equivalent

Vapour hose material,

fuel line material and **connection technique**

These are separate

Not clear these words are only for fuel line or both vapour hose and fuel line

### Within stated tolerance

BWC and volume of charcoal

Purge control system

**Clarified in regulatory text.**

# Conclusions and Schedule

- **The discussions on missing equation/contents in GTR 19 are closed.**
  - Add alternative equation for variable volume SHED.
  - Clarification of text concerning the aged carbon canister.
  - Add calibration requirements and intervals of test equipment.
  - Change/clarification of Vehicles considered as same EVAP family
- **The working document of GTR19 Amd2 was submitted on 16<sup>th</sup> Oct.**
- **The EVAP task force will be closed after #25 WLTP IWG.**

	2018							2019			
	Apr	May	Jun	July	Aug	Sep	Oct	...	Jan	...	June
GRPE			7-8 #76 GRPE				16 Submit WD		10-11 #78 GRPE	Get approval of GTR 19 Amd2	
IWG	17-20 WLTP #22		4-5 WLTP #23	GTR 19 Amd1 was approved			18-21 WLTP #24	IWG approved concept of GTR19 Amd2			
TF		8 Web				3 Web			7-8 WLTP #25 <b>TODAY</b>		
		17 Web	28 Web			25 Web Drafting					

**Thank you very much  
for your attention!**

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