

# TEST METHOD AS PER STANDARDS

## Cyclic test conditions (CETP 00.00-L-467) – FORD

### TEST SCOPE

This standard specifies an accelerated laboratory atmospheric corrosion test. The testing environment addressed is similar in effect to that of the salt load climatic part of the proving ground corrosion test procedure CETP 00.00-R-343 and yields corresponding results. The objective of the test is to allow evaluation of the corrosion resistance of metals in environments where there is a significant influence of chloride ions, mainly as sodium chloride from a marine source or by winter road de-icing salt. The laboratory test provides full exposure to the salt load and humidity environment. It does not attempt to simulate other engraving factors such as mud loads, temperature stresses or wear.

It serves as a general purpose atmospheric corrosion test and applies to a variety of materials, coatings, and interactions of materials, both as test specimens or in designed components. The test can be used as a design verification method in order to

- (a) develop and qualify new corrosion resistant products,
- (b) develop new pre-treatments and finishing processes,
- (c) select materials and,
- (d) perform quality control of the final product.

The standard specifies controlled conditions for equipment and procedures to allow the test to be performed with a high degree of repeatability and reproducibility. It is designed to be suitable to run in various climate chambers, either as a fully automated procedure or with partial manual operations.



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## SUMMARY OF TEST CONTENT

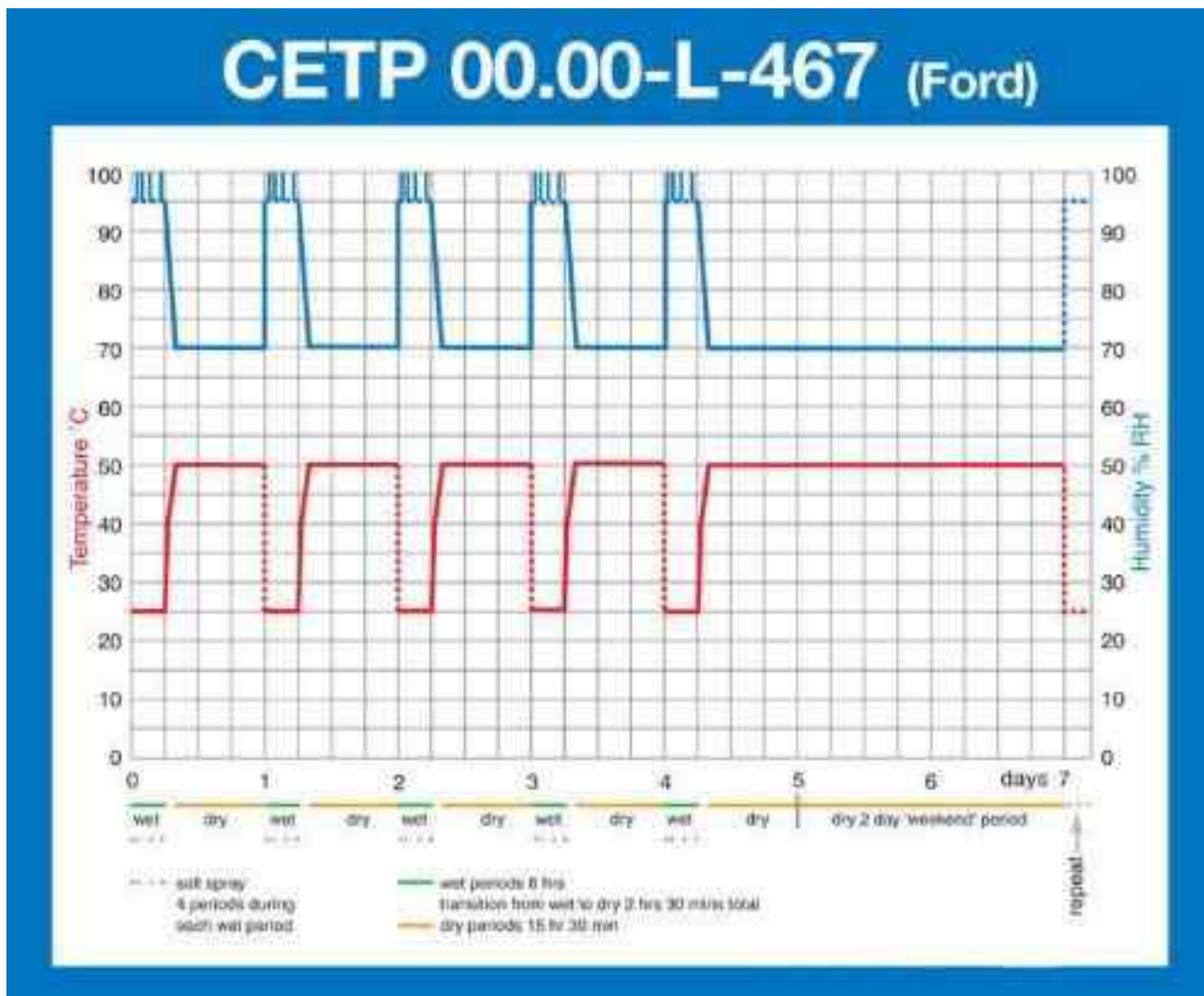
The workday test procedure consists of:- .

A 6 h wet phase at room temperature with intermittent exposure to salt solution (0.5% + NaCl)

A 2.5 h transition phase with drying under climate control.

A 15.5 h phase with constant temperature and humidity (50°C, + 70% + RH).

After repeating this procedure Mon-Fri a 48 h weekend phase under continued constant climate control is added.



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## INSTRUMENTATION

The following elements are usually required to conduct the test procedure:

- 2.1 Compressed, clean air of 4-6 bars for cleaning salt solution from spray nozzles, as a source for the renewal of chamber air and for humidification, supplied by spray humidifiers.
- 2.2 A low conductivity water supply for humidification on evaporative spray humidifiers and for the preparation of salt solutions.
- 2.3 A tank for preparation and storage of salt solution or, alternatively, a system for direct on-line mixing of water and saturated NaCl solution to the actual concentration (0.5 ± 0.05% by weight)
- 2.4 A conductivity meter with built-in temperature compensation for preparation and control of the 0.5% NaCl salt solution (conductivity: 8.3 mS/cm 0.820°C). A 0.50% by weight NaCl solution is used as a calibration standard at each measurement.
- 2.5 A high quality device for independent control of temperature and relative humidity shall be accessible. This instrument shall on a stipulated regular interval be used for independent monitoring and calibration of the conditions in the very test plane of the exposure chamber. The total measurement error must not exceed 0.1°C.
- 2.6 Racks of inert material for support and aligned fixation of test specimens must not hamper a free air-flow around the test objects, nor collect standing wetness. The test objects in a rack must not screen one another from the salt solution downfall and they should be exposed with the stipulated exposure angle to the spray (15- 20 degrees inclination from vertical).
- 2.7 Pressurized hand-spray equipment for application of the 0.5% NaCl solution if a manual spray procedure is used. The capacity must be sufficient to meet the downfall requirement
- 2.8 Funnels, beakers/ measuring glasses and a balance with at least 0.1 g accuracy for monitoring and calibration of salt solution downfall throughout the test plane of the exposure chamber.
- 2.9 All test measurement equipment must be calibrated and maintained per FAP03-015, Control, Calibration, and Maintenance of Measurement and Test Equipment.
- 2.10 All applicable safety guidelines and procedures must be followed

