

TEST METHOD AS PER STANDARDS

VOLVO STD 423-0010

This standard briefs about the details of apparatus, the reagents and the procedure that to be used in tests of neutral salt spray (NSS), acetic acid salt spray (AASS) and cupreous acetic acid salt spray (CASS) for assessment of the corrosion resistance of metallic materials, anodic oxide and conversion coatings .

It does not specify the details of sample dimensions, test duration & interpretation or evaluation of test results as the details are provided in the appropriate product specifications or mutually agreed in between buyer and supplier.

TEST SOLUTIONS & ITS PH LEVEL

NSS- The sodium chloride concentration in the sprayed solution (distilled water) shall be 50 g/l \pm 5 g/l and PH within the range of 6.5 to 7.2.

AASS- Add a sufficient amount of glacial acetic acid to the salt solution (50 +/- 5 g/l NACL in water) so that PH of the solution falls within the range of 3.0 to 3.1.

CASS - Dissolve a sufficient mass of copper(II) chloride dihydrate ($\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$) in the salt solution (50 +/- 5 g/l NACL in water) to produce a concentration of 0.26 g/l \pm 0.02 g/l [equivalent to (0.205 \pm 0.015) g of CuCl_2 per litre]

OPERATING CONDITIONS FOR NSS, AASS & CASS

Test method Item	Neutral salt spray (NSS)	Acetic acid salt spray (AASS)	Copper-accelerated acetic acid salt spray (CASS)
Temperature	35 °C \pm 2 °C	35 °C \pm 2 °C	50 °C \pm 2 °C
Average collection rate for a horizontal collecting area of 80 cm ²	1,5 ml/h \pm 0,5 ml/h		
Concentration of sodium chloride (collected solution)	50 g/l \pm 5 g/l		
pH (collected solution)	6,5 to 7,2	3,1 to 3,3	3,1 to 3,3



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INSTRUMENTATION

The test cabinet volume must be not less than 0.2 m³ , preferred volume is 0.4 m³. In case using bigger volume test cabinets, must met the conditions of homogeneity and distribution of the spray. The upper Cover of the chamber shall be designed so that condensed water drops of sprayed solution do not fall on the specimens being tested.

An apparatus that maintains the cabinet and its contents at the specified temperature within the tolerance of +/- 2 degree c

Before entering the atomizer , the clean, oil free, filtered compressed air shall be passed through saturator tower containing hot water approx. 10 degrees higher than the cabinet temperature. The cabinet must equipped with at least two Fog collection funnels with the stems inserted through stoppers into graduated cylinders having collecting surface area of 80 cm². The collecting vessels shall be placed in the exposure zone of the cabinet where the test pieces are being placed. They shall be placed in such a way so that only fog , and not liquid falling from test pieces or from any part of the cabinet, is collected.

The cabinet shall be thoroughly clean, if using same cabinet for NSS, AASS & CASS tests. The angle at which the tested surfaces shall inclined is in between 15 to 30 degree from vertical. The fog collection should be checked after a minimum exposure period of 24 h of continuous spraying.

Method to evaluate corrosivity of the test cabinet

The methodology is being used for evaluating the reproducibility of the test results.

This analysis is carried out with clean reference test pieces by positioning them (unprotected side facing the fog) inside the test cabinet in four different quadrants in the test apparatus at an angle of 20 +/- 5 degree from the vertical.

Before placing the reference pieces in the cabinet, Determine the mass of the reference test pieces with an accuracy of ± 1 mg. Protect one side of the reference test pieces with a removable coating. After the completion of the test duration, protective coating has to peeled off, then Remove the corrosion products by dipping them in a cleaning solution of hydrochloric acid.

Then thoroughly clean the reference test pieces at room temperature with water, then with acetone, & let them dry .

Weigh again the reference test pieces nearest to 1 mg and calculate the mass loss in grams per square metre.

