



Accelerated Corrosion Testing

These are used to give some idea as to the relative performance of different coatings. They are also used as a “quick” test for quality control purposes. (Though now some advanced coatings are lasting for 500-1500 hours in accelerated tests, they are not so quick!)

The most commonly used test is the 5% Neutral Salt Spray Test (to BS7479, ISO 3768 or ASTM B117). This test is used by most of the world for assessing the performance of many coatings (though not nickel chromium). See performance figures in Table below.

Other tests used include:

- A.S.S. Acetic Acid Salt Spray BS 7479 ISO 3769.
- C.A.S.S. Copper Accelerated Acetic Acid Salt Spray BS 7479, ISO3770. A fairly aggressive test used mostly for nickel chromium coatings.
- C.O.R.R. Corrode Cote BS 7479, ISO 4541. Used as above.
- Kesternich A test using sulphur dioxide.

Cyclic Tests (Climatic Tests)

To try to bring accelerated testing to give results more comparable with actual corrosion, many Original Equipment Manufacturers and other users have produced testing sequences which often use a combination of salt spray, humidity, drying periods, high (and sometimes low) temperatures. Parts are often subjected to a number of cycles. No standard test has yet been adopted but this situation is likely to change in the near future.

The usual failure point under accelerated testing is considered to be the first appearance of base metal corrosion (for zinc coatings, the appearance of white corrosion also has to be considered).

There is no correlation between the different accelerated tests and it is difficult to compare tests with actual performance in use, as the exposure in the environment varies considerably from place to place and year to year.

Approximate comparisons can be taken from the table below:

APPROXIMATE SALT SPRAY AND “LIFE” IN VARIOUS ENVIRONMENTS

COATING	THICKNESS (microns)	5% S/S TEST		TIME TO 1st APPEARANCE OF RUST				
		w.c.p.	rust hrs.	under car exposure	under bonnet exposure	Environment		
						Urban	Rural	Marine
Zinc and Yellow passivate	8	96	192	8mths		1yrs	1-5yr	9mths
Zinc heavy wt passivate and seal	8	96	240	18mths	3yrs	18mths	2-6yrs	1yr
Zinc nickel and heavy wt passivate	8	360	720	2 yrs	5yrs	2yrs	3-8yrs	1 + yrs
Zinc Iron	8	96	240	1 yr	3yrs	18mths	2-6yrs	1yr
Zinc flake -dip	Class -A 5-7 Class -B 8-10	-	500 800	2yrs 3yrs	5yrs	18mths 30mths	2-4yrs	18 mths 30 mths
Zinc flake - spray	10- 20	-	500 -1000 depending on grade	5yrs	up to 10 yrs	5yrs	up to 10yrs	-3 yrs
Galvanised	67min	12		-	-	5-10yrs	10-20yrs	-

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