Salt spray test machine

RHL-60

Operation

Manual

Foreword

Thank you for purchasing our testing machine.

This manual details the operating procedures, maintenance methods and simple troubleshooting and precautions for use.

Please read this manual carefully and follow the prescribed procedures to ensure that you can operate it smoothly every time. Please keep in mind the precautions to avoid machine failure due to improper human operation. Proper maintenance methods can extend the life of the machine .

All products of our company have passed strict quality control inspection before leaving the factory, you can use it with peace of mind, if you have any difficulties or problems, please contact our company directly .

Contents

1. Salt spray test standard

Chinese National Standard	Salt spray test method for surface treatment	Total number	4 1 5 8
CNS		Class number	H 2 0 4 0

Method of Salt Spray (Fog) Test for Surface Finishing

1 . Scope of application: This standard stipulates the test method of salt spray resistance of various metal substrates after electroplating, organic or inorganic coating and other surface treatments.

2 . Test method: This method is a corrosion test method in which a sodium chloride solution is used to spray the sodium chloride solution on the plating coating film in the form of a mist. The main conditions of the test are shown in Table 1 .

Table 1 Main test conditions

Term project	When preparing	Testing	Preparation Note
Sodium chloride solution concentration (g/L)	50	40~60	It is best to calibrate the concentration once a day
PH	6.5	6.5-7.2	After collection, determine the pH value in the test
Compressed air pressure (kgf/cm 2)	...	1.00 ± 0.01	Continuous without interruption
Spray volume (ml/80cm 2 /h)	...	1.0~2.0	At least 16 hours should be collected and averaged
Pressure barrel	···	47 ± 1	

temperature (℃)			
Brine barrel temperature (℃)	...	35 ± 1	
Laboratory temperature (℃)	...	35 ± 1	Test at least twice a day, at least at intervals 7 hours
Laboratory relative humidity	...	85% or more	Other humidity requirements are agreed by the buyer and seller
Test time			That is, the continuous time from the beginning to the end of the spray, or by the buyer and seller.

3 . Preparation of test solution: Dissolve reagent grade sodium chloride in distilled water (or water with total dissolved solids less than 200 ppm), and prepare a test solution with a concentration of 5 ± 1% . After spraying the test solution at 35 ℃, the PH value of the collected solution should be 6.5~7.3 . And before spraying, this test liquid must not contain floating matter.

Note (1): Sodium chloride cannot contain copper-purified nickel impurities, and the content of sodium iodide in the solid is less than 0.1% . Because impurities may contain corrosion inhibitors, the total content of impurities must be less than 0.3% .

(2): The specific gravity of the test liquid measured at 33~35 ℃ should be 1.0258~1.0402 , and the specific gravity when measured at 25 ℃ is 1.0292~1.0443 . The concentration of this test solution can also be calibrated by silver nitrate titration or other methods.

(3): test solution must be a dilute solution of sodium hydroxide or hydrochloric acid to adjust the level of the reagent pH value , * and at pH meter or other reliable method of measuring the test liquid formulated · Since water contains carbon dioxide , carbon dioxide with a solubility in water Effect of temperature change of the solution pH value, and thus should be carefully controlled pH value, · pH value is adjusted to follow one of the following methods:

① Prepare the test solution at normal temperature, spray at 35 ℃, because part of carbon dioxide escapes from the solution due to the temperature increase, and the pH value is raised . Therefore, when preparing the test solution at normal

temperature, the pH value should be adjusted within 6.5 , so that the pH value of the collection solution can be between 6.5 and 7.2 .

② Before adjusting the pH value, allow the test solution to boil and then cool to 35 ℃, or maintain the temperature at 35 ℃ for 48 hours. When the pH value adjusted in this way is sprayed at 35 ℃, it will not change much.

③ First heat the water above 35 ℃ to remove the dissolved carbon dioxide, and then prepare the test solution and adjust the pH value, so that when spraying at 35 ℃, the adjusted pH value will not change much.

(4): In order to avoid the clogging of the spray nozzle, the test liquid must be filtered or carefully tilted into the brine tank, or a glass sieve is installed at the front end of the spray suction pipe to filter.

4. Component : The test equipment is required for the spray nozzle, bucket salts, the test piece holder, the spray collecting vessel, the test chamber, brine [supplies barrel, the barrel pressure, the compressed air supply device and the like constituting the exhaust system The device is shown in Figure 1 and tested according to the following conditions.

4.1Passive materials shall be used for the salt spray test machine and the required pipelines, and shall not affect the spray corrosion test or be corroded by itself.

4 . 2 The spray nozzle shall not directly spray the test liquid towards the sample, and the solution accumulated at the top of the spray chamber shall not drip on the test piece.

4.3 The test solution dripped from the test piece shall not flow back to the salt water tank, but shall be used for the test again.

4.4 Compressed air must not contain grease and dust, so an air cleaner is required. Air pressure should be kept at 1.00 ± 0.01kgf / cm & lt 2 , because the compressed air in expansion, an endothermic phenomenon, it is subject to the prior preheating (6), in Schedule 1 to obtain a uniform spray temperature.

Note (6): Preheat to increase the temperature and humidity of compressed air.

4.5 The spray taker has a horizontal taking area of 80 cm 2 and a diameter of about 10 cm and is placed near the test piece (near the two places closest to and farthest from the nozzle).

4.6 The amount of spray liquid is calculated over the entire time. On the collection container, an average of 1.0 to 2.0 ml of saline solution should be collected per hour . The spray liquid should be collected for at least 16 hours , and the average value indicates the amount of spray .

4.7 Test salt water tub , which is sodium chloride concentration of the solution should

be maintained 40 ~ 60g / L

4.8 The temperature of the pressure tank must be maintained at 47 ± 1 ℃ , and the temperature of the brine tank at 35 ± 1 ℃ .

4.9 the relative humidity of the test chamber should be kept at 85% or more , the higher the relative humidity required by the agreement of the sale and purchase .

5. Sample

5.1 Location : The sample can be taken from the main surface of the product or the product itself can be used as a sample . However, if the product cannot be tested or judged, it can be replaced by a test piece agreed by both parties . This test piece must be able to represent the product .

5.2 Scale : The standard size of the test piece is 150×70mm, or 100×65mm.

5.3 Number : The number of samples is agreed between the seller and the buyer .

5.4 Pre-treatment

5.4.1 The samples must be properly cleaned according to the nature of the coating and the degree of cleanliness . The abrasives and solvents with corrosion or inhibitory effects cannot be cleaned , and the cleaning method must not damage the surface . As for the stainless steel samples, the seller and the buyer can use nitric acid to clean. passivation . sample after clean (by pulling an aqueous test), with a clean cloth or absorbent of moisture to dry , or dry with oil-free air dried . a last resort , may be used magnesium oxide paste . the paste The substance is 10g of test-grade magnesium oxide added to 100mL of distilled water.

5.4.2 Unless otherwise specified , otherwise the sample cutout and the exposed part of the substrate due to the hanging color, or the plating defect caused by the identification mark.

It should be covered with a suitable protective layer during the test. Such as hard wax (ceresin wax), vinyl tape and other insulation .

5.4.3 Contamination of hand prints will cause serious adverse test results. The sample shall not have any contamination of hand prints after cleaning.

6 . Placement of the sample: During the test, the position of the sample in the test chamber meets the following conditions:

6 . 1 The main surface of the sample is inclined at 15 to 30 degrees from the vertical line , and when viewed from above the test chamber, it should be parallel to the main flow direction of the spray. Special parts have main surfaces in many directions. When testing is required at the same time , multiple samples can be placed . Make sure that each main surface can receive the spray of salt water at the same time.

6 . 2 The arrangement of the samples shall allow the spray to fall freely on all test pieces, and shall not prevent the spray from falling freely.

6 . 3 The specimens shall not touch each other, nor shall they come into contact with metallic conductors, substances with capillary action, or other objects other than the support frame.

6 . 4 Do not drip saline solution from one sample to other samples.

6 . 5 Sample identification marks or assembly holes should be covered below.

7 . Operations for: Laboratory and was adjusted to the temperature of the salt water tub Celsius 35 degrees Celsius temperature and pressure of the barrel 47 degrees, the spray pressure was kept at 1.00 ± 0.01kgf / cm & lt 2 when , to start spraying.

7.1 Test conditions: Test conditions are shown in Table 1 .

7.2 Test time: It is the continuous time from the beginning to the end of spraying. The test time is an important quality data of the plating layer, and the required time can be agreed by the buyer and the seller.

7 .3 Post-test treatment: after the spray test is completed, when opening the lid of the test chamber, do not drop the solution and carefully remove the sample, not to damage the main surface, quickly remove the adhered salt particles with clean water below 38 ℃, use a brush Or sponge to remove the corrosion products outside the corrosion point, and immediately dry it with clean compressed air.

8 . Record record: buy and sell sides, if not otherwise agreed by this test should be recorded following the :(Schedule 2 for the reference of the records in the table)

8.1 When preparing brine, the quality of the salt and water used.

8 .2 Test temperature record.

8. 3 The device of the spray taker shall be recorded as follows:

8.3 . 1 spray volume

8.3. 2 Collect the specific gravity or concentration of the solution at room temperature

8 . 3 . 3 PH value of the collected solution

8 . 4 Type, shape, scale and number of samples.

8 . 5 Pre-treatment cleaning of samples and methods of processing and cleaning.

8 . 6 Placement method of the sample in the test room.

8 . 7 The coating method used in accordance with Section 5.4.2 .

8.8 spray time.

8.9 If the test time is interrupted, the reason and time of the interruption shall be recorded.

8.10 All results of other inspections.

9.Judgment method: The determination of the corrosion status of the measurement surface can be carried out according to the chart of the relevant grade number standard. If bubbles, cracks, etc. are difficult to judge using standard charts, they can be judged by a magnifying glass with a ruler, or by a method agreed in advance between the seller and the buyer.

Attached Table 1 The compressed air pressure and the required preheating temperature during the 35 ℃ spray test

Compressed air pressure	(k P a)	84	98	111	126
	(kgf/cm 2)	0 . 86	1 . 00	1 . 14	1 . 29
Required . Preheating temperature (℃).		46	47	48	49

Remarks : 1kpa-0.4 psi

Attached table 2 : Record table of salt spray test

Trial date of May Day Test number:
Test time : date : to date : total hours (Spray time) If the test is interrupted, the reasons are:

1 . Sodium chloride quality		
2 . Distilled water quality		
3 . Spray taker :		mL /80cm/h
	3.1 Spray volume	
	3.2 The specific gravity or concentration of the collected solution at room temperature	
	3.3 PH	
4 . Sample:		
	4.1 Type	
	4.2 Shape	
	4.3 scale	
	4.4 number	
5 . Compressed air pressure		Kgf/cm
6 . Laboratory relative humidity		
7 . Laboratory temperature		° C
8 . Pressure barrel temperature		° C
9 . Brine bucket temperature		° C
10 . other		° C
determination:	1. Judging by the standard diagram :	
	2. Judging by other methods :	
Test Members:		

2. Introduction to the structure

2.1.1. Internal chamber

① **Spray tower**: The built-in glass spray head is placed inside the spray pipe, and the spray is dispersed into the laboratory through the cone guide and then through the conical disperser.

② **Spray regulator**: adjust the spray volume, increase the spray volume to increase, decrease the spray volume to decrease. Brine preheating tank at the bottom of the spray tower, the brine is injected into this groove preheating tank via the brine added bottle, the water level of the preheating tank is controlled by a float, it can automatically control the water level, with the bottom of the cleaning tank by the drain silicon rubber plug control.

③ Receiving set is: fog off the nozzle discharge amount, falling body to its own way in 80cm 2 funnel Cup, then flows into the measuring cup by the airway tube.

④ Wet bulb cup: The L -shaped wet bulb cup is a container that uses humidity to create water.

⑤ Opposite thereof frame: this frame but the PVC is made, so that the focal point does not exceed the weight of 2kg limited, such as dispersants placed still afford 10kg or less. There are two rows of upper and lower round holes on both sides of the rack, which is used to place

the stick with 15 degrees at a vertical plane and 30 degrees angle .

⑥ Through the filter is : for filtering impurities in the salt solution, to ensure that the nozzle is not clogged debris .

⑦ Add hot water tank : This laboratory sink attached to the bottom, means for heating the water to maintain stable temperature and humidity test, its heating function, insulation.

2.1.2. External chamber

1) Wet and dry bulb thermometer: reading test test temperature and humidity of the room.
2) Total amount of barrel: the collection of test volume per spray, 50 ml of the characterization

3) Tight sealing water tank : water seal principle, in order to avoid leakage of salt spray
4) Saturated and air gas barrel : placed in the bottom of the control box, using SUS # 304 made of stainless steel. Its function is that the air is heated and humidified through this bucket, so that the air reaches the saturation humidity and sprayed to the nozzle.

5) Salt water supplement filling bottles : automatic replenishment tank of warm saline brine.

6) Test experiments cover : rooftop angle 100 degrees perspective view a cover, for covering on the sample over the test chamber is integral.

7) Adjusting the pressure valve : the valve is too high or low air pressure, by the pressure gauge shows a pressure adjusting LABORATORY

(Test condition 1kg/cm 2).

8) Pressure Force Table: in this table refers to the needle pressure is the pressure at the display of the air through the saturated air heated barrel, a nozzle communicating reached (test conditions 1kg / cm & lt 2).

9) Exhaust gas pipe: 2 . 1 / 2 "diameter line, in conjunction with said discharge mist outdoors, there are not accumulated phenomenon water, so that mist discharged naturally .

10) Discharge water pipe: 1/2 "diameter pipe, in conjunction with the drain water discharge groove , so that the waste water thereby discharging out (FIG. B . 8) .

11) The water inlet: automatic supplementary laboratory and saturated water to the tub in normal use conditions.

12)Control system based system:

13)Laboratory temperature control: It is to control the temperature of the laboratory, set according to the standard temperature, brine test 35 ℃ , corrosion resistance test 50 ℃ .

14)Saturated air barrel temperature controller: to control the temperature is the saturated air of the tub, the temperature setting brine test experiments 47 deg.] C , corrosion test 63 is deg.] C .

15)Total time is: Adjustable 0.1 S -9999hr can be arbitrarily set the time required for the experiment, the end of the automatic shutdown .

16)Tired when the device: direct reading 0-9999.9hr may indicate the cumulative time of the test, for a total time of recording instrumentation .

17)Heating water tank temperature controller: It controls the water temperature of the heating water tank. The controller cooperates with the laboratory temperature control . When the ambient temperature variation around the inspection machine is too large, it also needs to be adjusted. Its setting method is located in the control box.

18)Salt water spray test: the laboratory temperature controller is set to 35 ℃, and the heating tank temperature controller is set to 47 ℃ (40 ℃ -50 ℃).

19)Corrosion resistance test: the temperature controller of the laboratory

is set to 50 ℃, and the temperature controller of the heating tank is set to65 ℃ (60 ℃ -70 ℃).

20) Saturated air drum safety temperature controller: Saturated air drum safety protection device, the temperature safety setting is 5 ℃ higher than the actual temperature (located in the control box) .

21) Power switch: illuminate the rocker type to control the total power of the whole machine .

22) Operation switches: seesaw illumination control test laboratory heating bath tub of saturated air and heating system .

23) Timer switch : illuminate the rocker type to control the power of the time controller .

24) Spray switch: illuminate the rocker type to control the spray system .

25) Demisting switch: illuminate the rocker type, control the demisting system , and remove the salt mist in the box .

26) Over-temperature warning light : when the temperature of the heating tank exceeds 65 º , this light will turn on and cut off the power supply .

27) Low salt water warning light : the water level of the salt water preheating tank is lower than the lower limit, then this light is on, and the operating system is cut off .

28) End indicator : The time required for the timing setting is over. This indicator lights up and stops automatically.

29) Low water level warning light on the left: when the water level of the

heating tank is lower than the lower limit, the light is on and the power is turned off .

30)Low water level warning light on the right: when the water level of the saturation bucket is lower than the lower limit, this light will be on and the operating system will be cut off .

3. Installation instructions and precautions

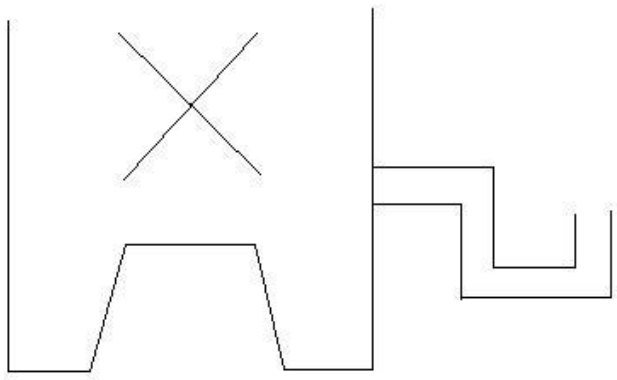
1 . Power supply 220V single phase 15 A

2 . There is space for maintenance on the left and right sides of the machine about 50cm away from the wall .

3 . Connect the air compressor pipe to the air inlet valve in front of the air compressor.

4 . The drain pipe can be discharged with PVC1/2 "hard pipe. Please pay attention that the water pipe should go down .

An exhaust pipe required rigid tube of PVC 2 . 1 / 2 "wand, along a discharge extends to outside, the exhaust pipe is attached should be noted that, in parallel by a machine down.



5 . The installation position of the machine, please avoid direct sunlight, so as not to affect the test conditions .

6 . The installation location of the machine should be as close as possible to other electrical equipment , precision instruments or flammable items to avoid danger.

7 . This machine is made of PVC plastic. Please do not hit hard to avoid rupture. Do not use the temperature beyond the test standard range to avoid deformation due to overheating .

4. operating instructions

1 . Please connect the power cord and air pressure pipe to the back of the machine first.

2 . Connect the water inlet pipe to the water inlet. The machine has an automatic water adding device, so it must be connected to the water pipe, otherwise it will not operate normally . If there is no running water pipe, please use the manual water adding device to operate .

★ Pay attention to the upper cover of the experiment and put it gently to avoid damage.

3 . The drain and exhaust pipes are connected.

4 . Add the sealed water tank to the position of the backing plate and prepare the test solution .

a) Modulation method: Take 9.5 liters of purified distilled water and

test whether the PH value is

Between 6.5 and 7.2 .

b) If the PH value is greater than 7.2 , add a little glacial acetic acid .

c) If the PH value is less than 6.5 , add a little sodium hydroxide .

(The above b and c generally use pure water and do not need to be measured)

d) Add 500g of sodium chloride (NaCl) . Stir well.

5 . Pour the saline into the saline refill bottle, that is, automatically fill the saline into the laboratory

The internal preheating tank allows the liquid medicine to flow into the brine preheating tank. The economic model is 15 liters and the standard model is 30 liters.

The wet bulb cup is filled with water, the wet bulb thermometer is covered with gauze, and the end of the gauze is placed in the wet bulb cup.

★The display angle is based on the required standard. For example, the standard test piece 130 × 70 (mm) can be tilted at 15 degrees and 30 degrees .

8 . Set test temperature

★ Set according to the required standard (press " ∨ " to decrease, press " △ " to increase)

A . Salt water test: laboratory temperature 35 ℃

Saturated air barrel temperature 47 ℃

B . Corrosion test: laboratory temperature 50 ℃

Saturated air barrel temperature 63 ℃

9 . Test time setting: 0 .1s -999 . 9 the HR

(H: hour M: minute S: second button " + " is the increase button " - " is the decrease) (please refer to the timer operation manual)

10 . Press the power operation button to pre-heat to the set temperature.

11 . Press the spray button

A . Open the air outlet valve in front of the air compressor and adjust the pressure to 2kg/cm 2 once.

B . Adjust the pressure regulating valve to a pressure of 1kg/cm 2. The pressure can be obtained from the pressure gauge (increasing clockwise, decreasing counterclockwise) .

12 . Press the timer button to count the time according to the set time .

13 . After the test, turn off the switches in sequence .

14 . If there is any abnormal phenomenon in the test, please refer to the function abnormal judgment table to deal with .

5. Fault indication

A . Overtemperature indicator: Jie Zuoyouliangfang overtemperature indicator (laboratory is left, the right barrel saturated). When the over-temperature light is on, there are the following three situations.

1 . Safety temperature controller alarm device set incorrectly

2 . Check if the temperature setting is too low , please reset

3 . If the over-temperature indicator is on continuously , notify our company to deal with it

B . Low water level indicator: When the lights, the power supply cut-off operation, this time should be in the laboratory automatic water or saturated water tub until the lamp is extinguished low (check whether the water inlet is opened) .

C . End indicator: This light, it indicates the end of the test time point .

6. Judgment and treatment of abnormal function

Like conditions	The original reason	Office manager
The laboratory cannot rise to the set	1 . Test chamber temperature control device temperature is set too low	1 . Set the temperature controller to the

temperature	2 . Laboratory safety protection switch is set too low 3 . Heating system failure 4 . Electromagnetic relay electrical fault 5 . Controller failure	desired temperature 2 . Set the safety switch to the required temperature 3 . Notify the company 4 . Notify the company 5 . Notify the company
The saturation barrel temperature cannot rise to the set temperature	Saturated barrel temperature controller is too low Saturated barrel safety protection switch is set too low Heating system failure Electromagnetic relay failure Controller failure	Set the temperature controller to the desired temperature Set the safety switch to the required temperature Notify the company Notify the company Notify the company
Insufficient spray volume	1 . Spray regulator placed too low	1 . Turn up the spray regulator

	2 . The glass filter in the preheating tank is blocked 3 . The pressure is set too low	2 . Clean the glass filter 3 . Adjust the pressure regulating valve to a pressure of 1kg/cm 2 , and the air compressor is marked with a pressure regulating valve to adjust the pressure to 2kg/cm 2

Like conditions	The original reason	Office manager
When you cannot spray PS: Device method of air pipe and suction	1 . Air compressor is not running 2 . The main switch of the air compressor outlet is not turned on 3 . Solenoid valve failure 4 . Pressure gauge failure or low	1 . Turn on the air compressor button 2 . Turn on the air compressor

pipe of nozzle (--- Type pipe is a suction pipe, L type is air pipe)	pressure 5 . Electromagnetic contactor failure 6 . Nozzle clogged	main switch 3 . Notify the company 4 . Notify the company 5 . Notify the company 6 . Remove the nozzle to clean (Please disassemble carefully)
When the low water alarm light is on	Indicates that the water level is too low	Check if there is water in the water inlet
There is a normal spray and the air compressor is not running	The air compressor itself has the function of self-protection	Use as usual
Cannot run after turning on the	When the water level in the heating tank is too low, the power supply for	Just add the water level of

power	operation will be cut off	the heating tank to normal condition
When the temperature controller displays EEE	1 . Temperature controller failure 2 . Temperature sensor failure	1 . Notify the company to deal with 2 . Notify the company to deal with
When the spray volume is too high	1 . Spray regulator placed too high 2 . The glass nozzle has been used for a long time, the nozzle diameter is too large	1 . Spray regulator lowered 2 . Replace with new glass nozzle

7. Maintenance matters

- If the test period exceeds 1 month , please replace the water in the heating tank .
- As a test of the salt solution is not used more than a week , do not re-used , in order to avoid impact test Of quality .

- The longer the time interval from the next test, after completion of this test, please wash the solid test chamber
- The inner portion, and adds heat water within the water tank emissions .
- The water in the heated water tank is discharged ---------- Open the drain valve .
- The water in the tank discharge isolation ---------- intermediate silica gel plug uprooted .
- The warm water tank discharge ---------- the inner silica gel plug uprooted .
- To ensure the quality of the standard test, with each . 4 0 00 within hours, periodically replace glass glass nozzle .