

Coolant- Influence of metal ions on nickel-plated copper connectors

Experiment date: 2009.12.16 13:00 -2010.1.11 13:00

Experiment time: 26 days (about 624 hours)

Experiment reason: As the customer bought other brands of connectors and coolant, and after a period of time, the following events happened.

They thought the possible reasons (as below) :

1. potential difference
2. Water generates scale.
3. Metal rust



The purpose of experiment: Soak two different connectors in high metal ion coolant and Jingway low conductivity coolant, and after a period of time :

1. Whether the potential difference will happen
2. Test whether the copper nickel-plated connectors will rust when placed in coolant

Experiment conditions :

1. After sealing the beaker, put it in the incubator 70°C
2. Specifications are shown as below table

		#1	#2
coolant		other brand coolant	Jingway coolant
before test	TDS	1871ppm	42ppm
	PH	7.4	6.92
connectors	material	Copper nickel-plated	Copper nickel-plated
	quantity	plated: 2 pcs not plated: 2 pcs	plated: 2 pcs not plated: 2 pcs
remark		* not plated means that copper exposes	

Table 1- Experiment conditions



Figure 1- Before putting in the coolant 2009.12.16 (flaw means not plated)



Figure 2- before the experiment 2009.12.16



Figure 3- observation 2009.12.21

Result:



Figure 4- End of experiment 2010.1.11



Figure 5- Before washing 2010.1.11



Figure 6-after washing 2010.1.11

Conclusion:

1. Observed situation: 5 days after experiment (about 120 hours), found #1 (other brand coolant) 4 connectors in high metal ion coolant show plating spallation and the copper material can be seen clearly.
2. After 26 days (about 624 hours), from #1 (other brand coolant) The connectors can still see the plating spallation, but #2 (Jingway coolant) 4 connectors in low metal ion coolant do not have the plating spallation.
3. From the above description, we can understand that the same connector material will show plating spallation due to high metal ion content. It can be seen that Jingway coolant, with stable and excellent quality, is not as easy to damage connector as other brand coolant.
4. Moreover, by this experiment, we can also know that Jingway coolant does not evaporate as fast as other brand coolant in high temperature circumstance.