

Performance and Filter Life of Tabletop Smoke Absorber

1 Introduction

Trace amount of flux fume and lead fume can be generated from soldering with flux cored Sn-Pb (Tin-Lead) solder wire. In addition, if much lead is accumulated within the human body, it may cause a kidney disorder.

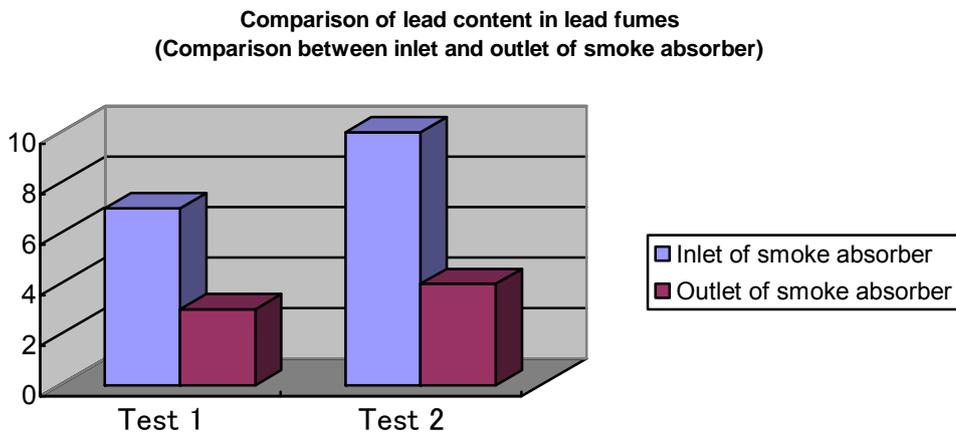
To prevent such hazardous substances from affecting the human body, the Industrial Safety and Health Law has established the Ordinance on Prevention of Lead Poisoning in Japan to specify the working environment. (Lead concentration shall not exceed $0.15\text{mg}/\text{m}^3$.) Unfortunately, we don't have information about the restriction in other countries.

In consideration of human health, use of a smoke absorber during soldering is advisable.

2 Performance

At present, we provide two models of tabletop smoke absorbers: HAKKO493 and HAKKO 420. Both models 493 and 420 use an activated carbon filter.

Lead absorbency of activated carbon filter



Test 1: Inlet of smoke absorber: $7\mu\text{g}/\text{m}^3$ → Outlet of smoke absorber: $3\mu\text{g}/\text{m}^3$
 Test 2: Inlet of smoke absorber: $10\mu\text{g}/\text{m}^3$ → Outlet of smoke absorber: $4\mu\text{g}/\text{m}^3$

As indicated above, using an absorber with an activated carbon reduces filter lead content.

For users who wish to further remove soldering fumes, we can provide the HAKKO FA-430 air purifying smoke absorber with a high performance 3-layer filter.

3 Filter life

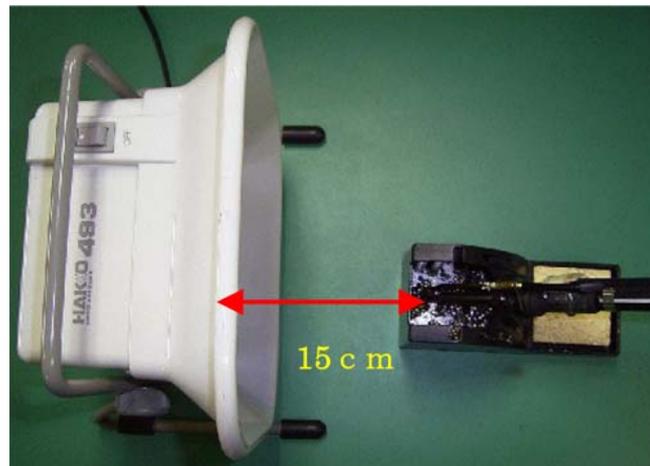
As the activated carbon filter absorbs the soldering fumes, components in the fumes are gradually stuck to the activated carbon filter. The filter becomes clogged, deteriorating the absorbency of the filter. It is necessary to clean and replace the filter periodically according to the following test results.

Object of test

To verify the clogging of an activated carbon filter and its absorbency at each soldering point

Test method

Smoke absorber:	HAKKO493
Handpiece:	HAKKO 936 350°C type B
Automatic solder feeding:	HAKKO 373 2mm once per 3 seconds
Solder:	HAKKO HEXSOL No. 49 Eutectic solder 1.0φ



Set the handpiece on which the automatic solder feeder was mounted to the iron holder so that the distance between the smoke absorber and the tip end is 15cm.

Test results

Photo 1
Initial condition

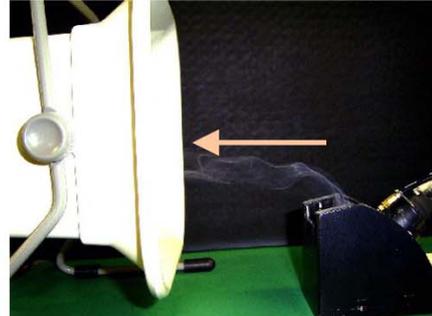


Photo 2
After 10,000 points

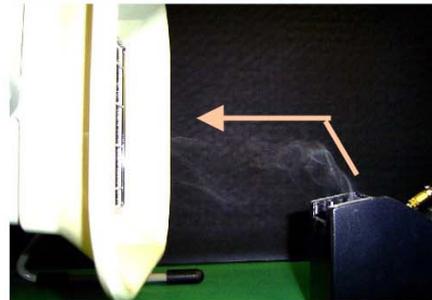


Photo 3
After 25,000 points

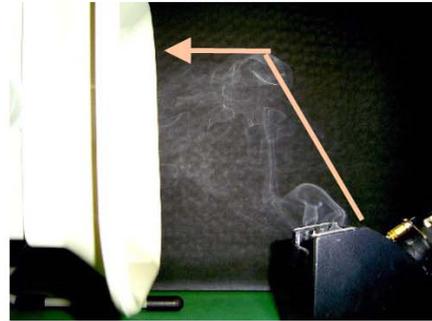


Photo 4
Photo 30,000 points



Test points

There was noticeable degradation of suction power after soldering 25,000 points (photo 3).

When it turned up 30,000 points (photo 4), solder fume rose directly overhead due to loss of suction ability.

Judging from the data above, it was confirmed that an interval of 30,000 points is a suitable indication of the time for replacement of activated carbon filter.

(30,000 points = About 1 roll of Sn-Pb Solder, 1kg/roll, DIA 1.0Φ)

However, this is just an indication and please note that the timing for replacement of filter varies depending on type of works, solder alloys, solder diameters, and etc.

*Sales of HAKKO 493 was terminated in February 2012.

The successor model is HAKKO FA-400.

Established on Jun. 14, 2004

Revised on Nov. 11, 2013