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K O S L O W . C O M

Aluminum Grade Manager

No. 1513

ALLOY ID KIT

INSTRUCTIONS

Version 11.1

Quality Since 1966

The ALUMINUM GRADE MANAGER No. 1513 Contains:

Quantity	Item
Six, 30mL bottles	Solutions No. 8, 9, 24, 25, 26 & 29
3	Little Plastic Test Tube Cups
1	Electro Spot Model 4
100	Fiber Sheets - #0300
400	Test Papers - #0100
1	Medicine Dropper

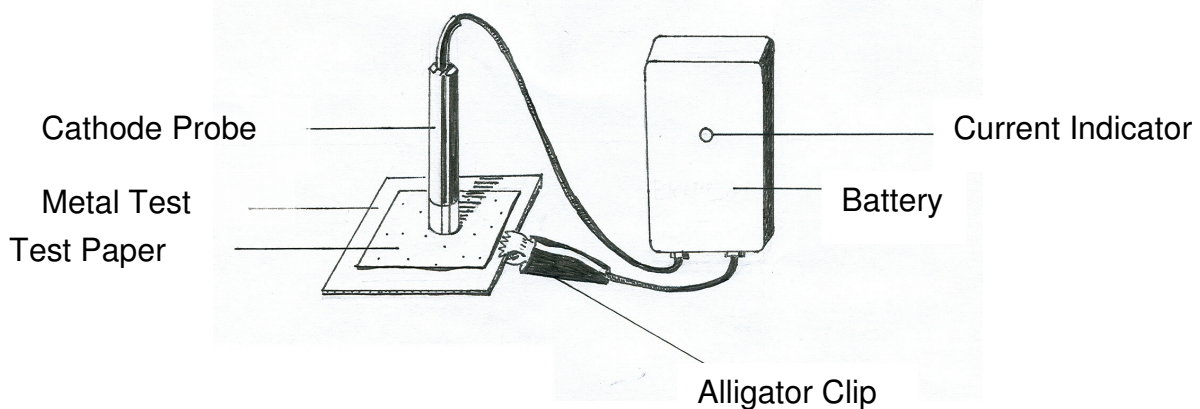
ElectroSpot Sampling

The Electro-Spot Alloy Extractor sampling is the heart of the testing method. <http://koslow.com/method.html> A very small amount of the alloy is dissolved into a test paper by the passage of an electric current between the test metal and the cylinder probe, called the cathode. The longer the sampling time, the larger the amount of alloy dissolved, resulting in more intense color development. In this way, the amount of alloying component in the metal can often be estimated.

The Electro Spot Model 4 apparatus is a fixed current source with indicator light. The light indicates that current is flowing and therefore operating properly. There are two leads from the ElectroSpot apparatus, one is an alligator clip to be attached to the test metal, and the other is an aluminum rod, also called the cathode.

INSTRUCTIONS

1. Attach the clip lead to the test metal. Press it against the piece if too large to bite.
2. Add the solution to the test paper and place it on a cleaned, abraded area of the metal surface.
3. Gently press the aluminum probe into the test paper as described below. Hold for the prescribed length of time.
4. Remove the test paper, turn it over, and add the color developer solution.





Safe Handling of Kits

- Like the handling of any chemical, good industrial hygiene practices are imperative
- Kit solutions may be hazardous. Caution should be exercised in kit use
- Wear a shop coat or protective clothing. Some solutions can stain or damage clothing
- Use eye protection or splash resistant goggles
- Use gloves to prevent unnecessary exposure to skin
- Do not intentionally inhale vapors
- Wash hands after kit use
- Wipe spills quickly
- Only use solutions for metal testing purposes
- Dispose of kit contents according to local regulations
- Consult your physician immediately if ingested
- **For complete information, consult the M.S.D.S. sheet**

Maintenance

Maintain kit by storing in a cool dark place. Keep parts in carry case with protective foam. Each bottle of Test Solution has an expiration date printed on the label. Annual battery checks and calibration cycles (when applicable) can be logged on the last page of this instruction manual. Maintenance items are the responsibility of customer/user. Failure to observe these recommendations may adversely effect operation of equipment.

Test Results by Alloy Group

ALLOY GROUP	ZINC	COPPER	MAGNESIUM	DISSOLUTION
1000	-	-	-	-
2000		+	+	
5000			+	(-)
6000			+	+
7000	+	+	+	

Copper-in-Aluminum (2000 Series)

Solutions required: Solutions 9 and 24; test paper

1. Add to the test paper: 2 drops Solution 24
2. ElectroSpot: 10 seconds
3. Then add: 2 drops Solution 9
4. Observe: A pronounced red color indicates copper and the alloy is of the 2000 Series (if 7000 has been ruled out with the zinc test). Ignore a very faint, barely detectable pink color, due to even smaller amounts of copper in the other alloys. Compare using a known aluminum alloy. If little or no color develops proceed with the manganese test.

Note: That a positive test for copper does not necessarily prove that an alloy is 2000 Series since the 7000 Series also contain copper.

Zinc-in-Aluminum (7000 Series)

Solutions required: Solution 25 and 26; #0100 test paper

NOTE: Observe preparation of Solution 25. See label on bottle.

1. Add two (2) drops of Solution #25 to a square test paper.
2. ElectroSpot low setting for 5 seconds.
3. Add one (1) drop of Solution #26 to the center of the metal side of the test paper.
4. Observe for about 5 – 10 seconds, not longer. A blue color is a positive zinc test and identifies the alloy as being of the 7000 Series. Tests on an aluminum alloy such as 1100 will gradually turn blue. This is not a positive test for zinc. The blue color must develop in 5 – 10 seconds for a positive zinc test. If no color develops, proceed with the copper test.

Magnesium-in-Aluminum (5000 or 6000 Series)

Solutions required: Solutions 8, 24 and 29; #0300 Fibre sheet (not test paper)

1. Abrade the surface with emery or plastic scouring pad.
2. Add to fiber sheet: 1 drop of Solution 24
3. ElectroSpot: 5 seconds
4. Then add: 1 drop Solution 8, 1 drop of Solution 29 and one more drop of Solution 8 to the alloy side of the fiber sheet.

- Observe: a sky-blue color spot remaining in the center, entrapped in the fibers, is a positive test for magnesium identifying a 5000 or 6000 Series alloy. The relative intensity of the blue color is a measure of the level of magnesium in the alloy and can be used to identify it. Use a known alloy for comparison.

Note: For example, 5052 gives a more intense color than does alloy 6061, and there is no spot testing alloy 110.

Dissolution Test (5000 vs. 6000 Series)

Solutions required: Solution 8 and little plastic test tube cups.

- File off a small sample of the test metal onto a large piece of paper. Use a medium to coarse file to remove a small amount of metal. Approximately 10 strokes of the file will be sufficient, giving about 10 mg of filings, enough to be easily seen. Try to avoid using a larger sample than you will need.
- Fold the paper in half so that the filings fall to the center of the paper and carefully transfer them into one of the small plastic cups.
- Add 5 drops of Solution 8 to each sample and allow to react about 5 minutes.
- View the samples in the plastic cups against a white background, and look for small black specks. These identify alloy 6061, and other 6000 series alloys. Sample 5052 has a milky suspension and may be slightly brown or dirty looking. However, there are no separate black specks as in the 6061 sample. If too large a sample of filings was used, un-dissolved filings will remain and require the addition of more Solution 8.
- Wash the plastic cups in running water when you are through testing. Caution: Avoid contact with the chemicals which contain strong alkali.

NOTE: This test only works when applied to alloys known to belong to the 5000 or 6000 Series. It is not useful for identification of totally unknown aluminum samples, which should be tested using the analysis sequence above.

Helpful Tips

- When putting Electro Spot Model 4 away, do not let the clip-lead touch the cylinder lead; also, when replacing the battery, do not let internal wires touch.
- The battery with the leads can be tested by measuring the current flow between the probe and the clip. If less than 100 mA, replace the battery.
- Shelf-life – Refer to bottle label for expiration dates.
- Commonly used alloys samples are available in our Metal Samples Collection #1900.
- Comparison of the relative intensities of highly colored spots is difficult. Therefore, sampling time should be as small as possible, yet long enough to result in a clearly recognizable color. Always compare results with known samples.

***Reorder Information:**

ITEM	PART NUMBER	QUANTITY
Solution 8	#0008	40 mL
Solution 9	#0009	40 mL
Solution 24	#0024	40 mL
Solution 25	#0025	40 mL
Solution 26	#0026	40 mL
Solution 29	#0029	40 mL
Test Paper	#0100	1,000 pieces
Fiber Sheets	#0300	600 pieces

www.koslow.com/refill - Tech & Sales Staff - 201 541-9100



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