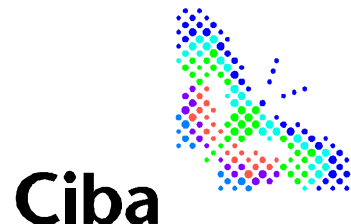


Ciba® Expert Services
Ciba Safety Testing Laboratory
1379 Ciba Road
McIntosh, AL 36553
Ph (251) 436-2738 Fx (251) 436-5044
mike.oliver@ciba.com



Title:	Resistance Measurements of GoatThroat Pumps	
Customer:	Nancy Westcott GoatThroat Pumps 184 West 10 th Street New York, NY 10014 Ph: (646)486-3636 nwestcott@goatthroat.com	
CST Ref.:	105-08	Customer Ref.
Lab Work:	M. Oliver	
Report By:	M. Oliver	
Date:	October 9, 2009	

1. Summary

Three pump heads and four tubes made from various materials were tested to determine if they are static conductive.

NFPA 77, Paragraph 6.4.1.3: "To prevent the accumulation of static electricity in conductive equipment, the total resistance of the ground path to earth should be sufficient to dissipate charges that are otherwise likely to be present. A resistance of 1 megohm (10^6 ohms) or less is generally considered adequate."

Only the head and tube marked "conductive" met the criteria. With the other materials, only with the leads attached on opposite sides of the same ends of the tube could a resistance less than 100 teraohms be measured.

Michael Oliver
Manager, Safety Testing
Ciba® Expert Services

Date

2. Samples for testing

Material of construction	Sample Description
Regular	Head and Tube
Containing Irgastat	Head and Tube
Containing other antistat	Tube only
Conductive	Head and Tube

3. Test Equipment

Resistance measurements were made with the following electrometers

1. Fluke 1520 Megaohm Meter: Range =250 kilohms to 4000 megohms
2. Keithley 6517B High Resistance Meter. 200 kilohms to 100 teraohms.
3. Fluke 87 III True RMS Multimeter: Range = 0-40 megohms.

4. Test Results

Three pump heads and four tubes made from various materials were tested to determine if they were conductive. This was accomplished by measuring the resistance across several points. See pictures on the next page for depiction of test points.

Test	Description
A	Resistance from head to ground wire (lead attached to foil wrapped around head)
B	Resistance from ground wire on head to end of tube
C	Resistance across length of tube
D	Resistance across end of Tube

Table 1: Test Results

Test	A	B	C	D
Regular	>4 G ¹	>4 G ¹	> 100 T ²	30 T ²
Irgastat	>4 G ¹	>4 G ¹	> 100 T ²	1.0 T ²
Other Antistat	NA	NA	> 100 T ²	1.9 T ²
Conductive	78 K ³	80 K ³	4.7 K ³	900 ³

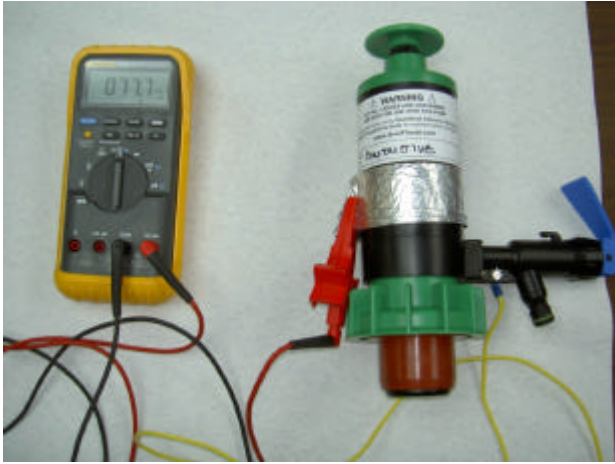
1. Fluke 1520 Megohm Meter.
2. Keithley 6517B High Resistance Meter.
3. Fluke 87 III True RMS Multimeter.

$$K = 10^3 \quad M = 10^6$$

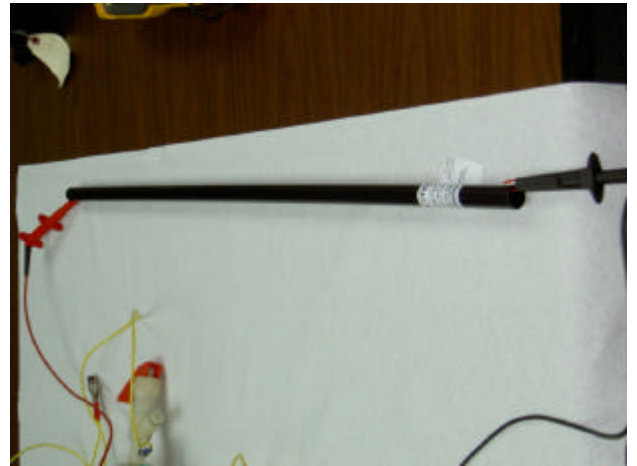
$$G = 10^9 \quad T = 10^{12}$$

5. Test Description

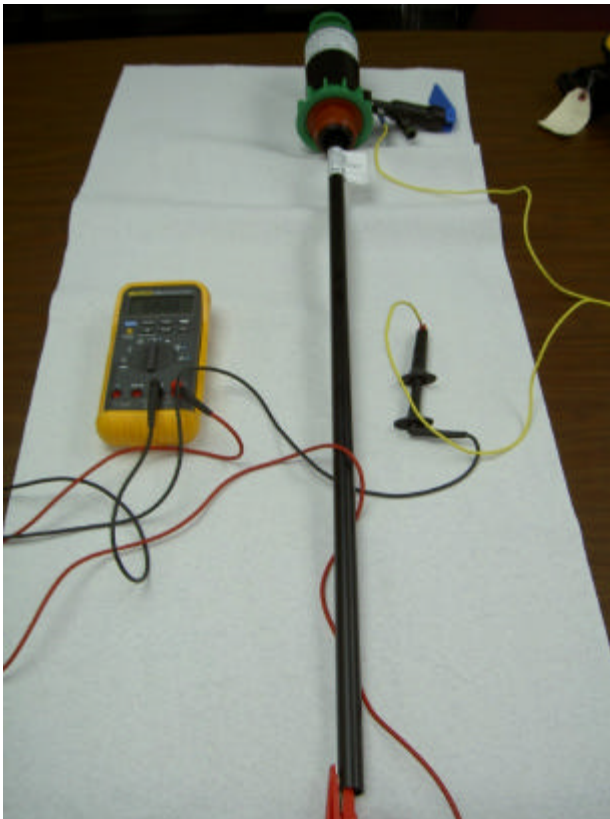
Test A



Test C



Test B



Test D

