

## Title: Boss Shotshells Shotshell Evaluation Report

Report Date: **3/27/2026**

Report Prepared By: **Mike Clapper**

Project Number: **PN15511 / 4792157213**

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### Description of Test:

The purpose of this validation testing is to independently evaluate the performance of the Boss Shotshells MkIII Shotshell Tester™ in screening shotshell pellet materials based on two measurable physical properties: magnetic response and electrical conductivity response.

Testing is intended to confirm that the device produces screening outputs consistent with expected material classes when tested with representative ammunition samples.

### Scope:

Testing will evaluate the following device functions:

- Device startup verification by powering on and producing output.
- Magnetic screening by detecting magnetic pellet materials.
- Conductivity screening by differentiation of non-magnetic pellet materials.
- Display response by generating the correct LED / LCD bar output.
- Repeatability and consistency of results across repeated tests.

Material Pellet Material Categories:

- Steel
- Tungsten
- Lead
- Bismuth
- Copper

**Test Summary:**

All eight testers evaluated performed as expected across 1,840 individual evaluations.

All magnetic response and conductivity readings met expectations for all tested shotshell types and gauges, achieving 100% accuracy.

One observation was noted with the Winchester Pawling Mountain Club tungsten samples. These samples exhibited a weaker magnetic response compared to other tungsten and steel samples. This reduced response could present challenges in field conditions where testing cannot be conducted on a perfectly level surface and wind-free environments.

Row Labels	Conductivity Bars (Observed)						Grand Total
	0	1	2	3	4	5	
<input checked="" type="checkbox"/> <b>Magnetic Response: No</b>	<b>480</b>	<b>177</b>	<b>63</b>	<b>310</b>	<b>90</b>		<b>1120</b>
Bismuth	480						480
Copper				310	90		400
Lead		177	63				240
<input checked="" type="checkbox"/> <b>Magnetic Response: Yes</b>		<b>7</b>	<b>153</b>	<b>140</b>	<b>262</b>	<b>158</b>	<b>720</b>
Steel					162	158	320
Tungsten		7	153	140	100		400
<b>Grand Total</b>	<b>480</b>	<b>184</b>	<b>216</b>	<b>450</b>	<b>352</b>	<b>158</b>	<b>1840</b>

**Expected conductivity range for non-magnetic shotshells:**

- Bismuth        0 Bars
- Lead            1 – 2 Bars
- Copper         3 – 4 Bars

**Test Samples:**

**Boss Shotshells MkIII Shotshell Tester™**

UL Tracking Number	Sample Description	Battery Type
9555036 - 1	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 2	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 3	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 4	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 5	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 6	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 7	Boss Shotshells MkIII Shotshell Tester™	9V
9555036 - 8	Boss Shotshells MkIII Shotshell Tester™	9V



# Boss Shotshells Shotshell Evaluation Report



## Shotshell Samples

UL Tracking Number	Sample Description	Shot Pellet Material Type
9555035 - 1	1 - Boss, 10 Ga, 3.5, 1 Shot, Copper Plated, non-toxic	Bismuth
9555035 - 2	2 - Migra, 12 Ga, 3, 1/3 Steel Shot	Steel
9555035 - 3	3 - HeviShot HeviBismuth, 12 Ga, 2.75, 6 Shot	Bismuth
9555035 - 4	4 - Kent Fasteel, 12 Ga, 3, 3 Shot	Steel
9555035 - 5	5 - Boss Copper, 12 Ga, 3, 2 Shot	Copper
9555035 - 6	6 - Boss Steel Reserve, 12 Ga, 3, 3 Shot, Copper Plated	Steel
9555035 - 7	7 - Boss Warchief, 12 Ga, 3, 4 Shot, Bismuth	Bismuth
9555035 - 8	8 - Dynamit Noble Gamester, 12 Ga, 2.75, 7.5	Lead
9555035 - 9	9 - Federal Ultra Shok Heavyweight, 12 Ga, 3, 6	Tungsten
9555035 - 10	10 - Boss Wolfram, 12 Ga, 2.75, 9, Copper Plated Tungsten	Tungsten
9555035 - 11	11 - Boss, 16 Ga, 2.75, 3/5 Copper	Copper
9555035 - 12	12 - Winchester Super Target, 20 Ga, 2.75, 7.5, Lead	Lead
9555035 - 13	13 - Winchester Pawling Mountain Club Xtended, 20 Ga, 2.75, 6	Tungsten
9555035 - 14	14 - Boss, 20 Ga, 3, 5, Copper	Copper
9555035 - 15	15 - Boss, 20 Ga, 3, 4	Bismuth
9555035 - 16	16 - Boss Wolfram, 20 Ga, 2.75, 9	Tungsten
9555035 - 17	17 - Boss Unleaded, 20 Ga, 3, 8, Steel	Steel
9555035 - 18	18 - Boss, 28 Ga, 3, 3/5 Copper	Copper
9555035 - 19	19 - Boss Warchief, 28 Ga, 3, 4, Bismuth	Bismuth
9555035 - 20	20 - Federal Premium Upland, 28 Ga, 2.75, 6, Copper Plated	Lead
9555035 - 21	21 - Boss Wolfram, 28 Ga, 2.75, 9	Tungsten
9555035 - 22	22 - Boss, 410 Ga, 3, 5, Copper	Copper
9555035 - 23	23 - Boss, 410 Ga, 3, 6, Copper Plated non-toxic	Bismuth

1 - Boss, 10 Ga, 3.5, 1 Shot, Copper Plated, non-toxic



2 - Migra, 12 Ga, 3, 1/3 Steel Shot



3 - HeviShot HeviBismuth, 12 Ga, 2.75, 6 Shot



4 - Kent Fasteel, 12 Ga, 3, 3 Shot



**5 - Boss Copper, 12 Ga, 3, 2 Shot**



**6 - Boss Steel Reserve, 12 Ga, 3, 3 Shot, Copper Plated**



**7 - Boss Warchief, 12 Ga, 3, 4 Shot, Bismuth**



**8 - Dynamit Noble Gamester, 12 Ga, 2.75, 7.5**



9 - Federal Ultra Shok Heavyweight, 12 Ga, 3, 6



10 - Boss Wolfram, 12 Ga, 2.75, 9, Copper Plated Tungsten



11 - Boss, 16 Ga, 2.75, 3/5 Copper



12 - Winchester Super Target, 20 Ga, 2.75, 7.5, Lead



### 13 - Winchester Pawling Mountain Club Xtended, 20 Ga, 2.75, 6



### 14 - Boss, 20 Ga, 3, 5, Copper



### 15 - Boss, 20 Ga, 3, 4



### 16 - Boss Wolfram, 20 Ga, 2.75, 9



17 - Boss Unleaded, 20 Ga, 3, 8, Steel



18 - Boss, 28 Ga, 3, 3/5 Copper



19 - Boss Warchief, 28 Ga, 3, 4, Bismuth



20 - Federal Premium Upland, 28 Ga, 2.75, 6, Copper Plated



### 21 - Boss Wolfram, 28 Ga, 2.75, 9



### 22 - Boss, 410 Ga, 3, 5, Copper



### 23 - Boss, 410 Ga, 3, 6, Copper Plated non-toxic



**Test Equipment and Consumables:**

- a) Rotronic Temperature and Humidity Logger (ID 229037)

**Temperature and Humidity Logger**



## Tester Operation Instructions:

Testing was conducted following the following instructions from Boss.  
[Boss Shotshells MkIII Shotshell Tester Instructions Final 11.18.25.pdf](#)

### **Boss Shotshells Mk III Shotshell Tester™ – Know Your Shot. Instantly.**

The Boss Shotshells Mk III Shotshell Tester Version 2 has been redesigned to include a second approved test method for shotshell testing. A rare earth magnet has been added to the base of the unit to serve as an initial inspection method which meets the requirements for 10 of the 14 approved non-toxic shot types. The MK III is a rugged, handheld device engineered to quickly and accurately identify the shot composition inside a loaded shotshell. Whether you're enforcing compliance in the field or verifying loads on the bench, the Mk III uses electrical conductivity to determine shell contents with precision.

A simple contact test delivers results through audible, tactile, and visual outputs so you get immediate, unmistakable feedback in any environment.

The testing is a two-step process whereby the operator tests the shotshell with the rare earth magnet first. If the shotshell is attracted to the magnet, the shotshell is deemed non-toxic. If the shotshell is not attracted, it is then placed in the shell receptacle for the second test. A conductive material like Copper will generate a strong signal. Lead, with its lower conductivity, triggers a weak response (Unless a shotshell contains large lead shot or lead slugs whereby a strong signal can be generated.) Bismuth, being nearly non-conductive, produces no output, providing a clear distinction between non-toxic and toxic shot.


Compact. Accurate. Built for the Field. The Boss Mk III gives law enforcement officials the confidence to verify factory loaded shotshell content on demand, no guesswork.

#### **1. Shotshell Inspection**

##### **Test #1: Magnet Test**

- Check that the magnet is installed on the bottom of the battery cap (see FIGURE 1 inset picture).
- Lay shotshell on its side on a flat surface (see FIGURE 5).
- Place Mk III tester on the same surface, magnet end perpendicular to shot column (see FIGURE 5).
- Slowly move the tester toward the shotshell (see FIGURE 5).
- If the shell rolls toward the magnet (attracted to the magnet) the shot is magnetic and deemed non-toxic and no further testing is required.
- If no attraction is detected, proceed with Test #2.

##### **Test #2: Metal Detection Test**

 Important: Ensure there are no metal objects (e.g., rings, watches, bracelets) within 3" of the orange region of the device during testing. Metal interference may cause false readings.

#### **1. Powering On and Off**

##### **a. Turn ON**

- Momentarily press the black ON/OFF button, located between the LCD display and the orange speaker cover (see FIGURE 1).
- The LED light and LCD display will illuminate (see FIGURE 2).
- Upon startup, the unit will resume the output mode last used before shutdown.
- To toggle output modes (audible only, tactile only, or both), repeatedly press the ON/OFF button.
- Confirm the LCD display and LED light are illuminated (see FIGURE 2).
- To assure it is on, hold brass end of shell at the top of the shell receptacle (see FIGURE 3).

##### **b. Turn OFF**

- Press and hold the ON/OFF button until the LED and LCD display turn off.

##### **c. Turn Device ON**

##### **d. Insert the Shotshell (see FIGURE 4) – Make sure no metal objects are within 3" of the orange region of the device during testing, (e.g., rings, watches, etc.) or false readings will occur.**

- The test receptacle is designed to accept 10 Gauge through .410 shotshells.
  - 10 GA
  - 12 GA / 16 GA
  - 20 GA / 28 GA
  - .410
- Insert the crimped end of the shotshell into the appropriate detent so that it sits flush with the bottom of the receptacle (see FIGURE 4).

### c. Read the Output

- Once the shell is in place, observe the LCD display (see inset shot FIGURE 3), audible beep and haptic response.
- A bar graph will appear, indicating the shot type.

0 Bars = Bismuth

1-2 Bars = Lead

3-4 bars = Copper

5 bars = If a metal does not present as magnetic but yields a high reading of 5 bars when placed into the metal detector end of the MkIII, it can be reasonably deduced that the shotshell may contain lead and further investigation is warranted.

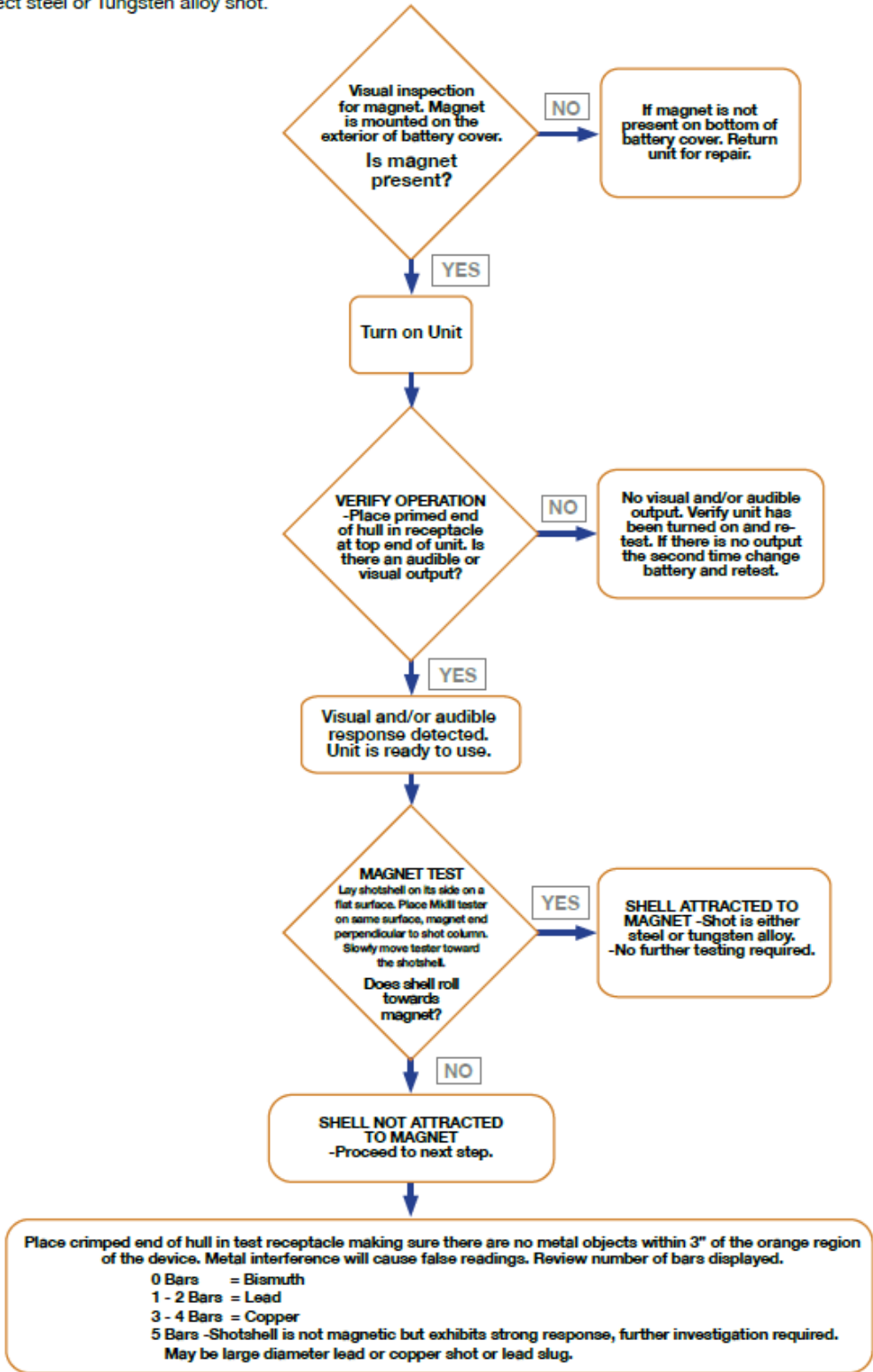
## Boss Shotshells Mk III Shotshell Tester™ - Reference Images

FIGURE 1: Product overview. FIGURE 2: Close-up of LCD screen. FIGURE 3: Holding brass end of shell at top of receptacle to show tester is on. FIGURE 4: Inserting shell with crimped end down to test shell properly. FIGURE 5: Magnet test.



## Boss Shotshells Mk III Shotshell Tester™ - Flow Chart Reference

The MK III V2 has been designed to provide two test methods built into one test device. A rare earth magnet has been built into the base of the unit to provide a quick effective initial analysis of a shell to detect steel or Tungsten alloy shot.



Legal Disclaimer & Warranty Information  
Product: Boss Shotshells Mk III Shotshell Tester  
Manufacturer: Boss Shotshells

#### **Disclaimer of Use and Limitations**

The Mk III Shotshell Tester is designed solely as a supplemental tool to assist in identifying the metal composition of shotgun pellets. Due to the wide variety of commercially available ammunition and the evolving nature of shotshell construction, Boss Shotshells makes no guarantee that the Mk III will accurately detect or identify all types of shot or payload materials under all circumstances.

This tool should not be solely relied upon for making legal decisions, including—but not limited to—citations, arrests, seizures, or prosecution. In cases where potential violations are detected using this device and the results are disputed, we strongly advise that the shell in question be submitted to a certified forensic laboratory for professional analysis. These facilities use highly specialized and calibrated equipment (e.g., XRF analyzers) capable of producing definitive results.

#### **By purchasing and/or using the Mk III Shotshell Tester, you agree to the following conditions:**

1. No Refunds or Returns – All sales are final. Boss Shotshells will not issue refunds or accept returns under any circumstances, including false or inaccurate readings.
2. No Legal Testimony – Boss Shotshells and its representatives will not be summoned or required to appear in any court or legal proceeding to testify regarding the device's accuracy, operation, or usage.
3. No Absolute Readings – The Mk III is not a laboratory-grade instrument and does not provide certified or absolute readings like professional XRF devices.
4. Waiver of Legal Claims – By using this product, you and/or any associated agency agree to waive all legal claims against Boss Shotshells, its owners, and employees. This includes, but is not limited to, claims involving false readings, personal injury, property damage, or loss of equipment.
5. Assumption of Risk – You assume full responsibility and liability for the use of this product, including any consequences arising from its use.

#### **Limited Warranty**

Boss Shotshells warrants the Mk III Shotshell Tester to be free from defects in materials and workmanship under normal use for a period of 90 days from the original date of purchase.

#### **What is Covered:**

- Manufacturing defects
- Component failure under standard use

#### **What is Not Covered:**

- Damage resulting from misuse, abuse, or neglect
- Exposure to water, excessive moisture, or environmental extremes
- Physical impact, tampering, or modification
- Damage deemed by Boss Shotshells to fall outside of normal use conditions

This warranty is non-transferable and valid only to the original purchaser with proof of purchase. Warranty service will be provided at the sole discretion of Boss Shotshells and may include repair, replacement, or equivalent substitution of the product.

To request service under this warranty, contact:

Email: [info@bosshotshells.com](mailto:info@bosshotshells.com)  
Phone: 1-877-410-BOSS  
Website: [BossShotshells.com](http://BossShotshells.com)

**Test Validation Matrix:**

The following matrix was used to confirm the proper operation of the test samples.

Test ID	Test Description	Test Material	Magnetic Result Expected	Conductivity Result Expected	Device Output Range
V1	Magnetic Screening	Steel Shot	Positive Attraction	Not Required	Magnetic Classification
V2	Magnetic Screening	Tungsten - Iron Shot	Positive Attraction	Not Required	Magnetic Classification
V3	Conductivity Screening	Lead Shot	No Attraction	Low Conductivity	1 - 2 Bars
V4	Conductivity Screening	Bismuth Shot	No Attraction	Minimal Conductivity	0 Bars
V5	Conductivity Screening	Copper Shot	No Attraction	High Conductivity	3 - 4 Bars

**Test Description:**

**Repeatability Testing:** Each test condition shall be repeated a minimum of 10 trials per sample.

**Laboratory shall record:**

- Magnetic response
- Display output (bar count)
- Any anomalous readings

**Environmental Test Conditions:** Testing should be performed within the following ranges of field conditions.

- Temperature: 40°F to 100°F
- Humidity: 20% - 90% RH
- Lighting conditions: Indoor / Outdoor Lighting

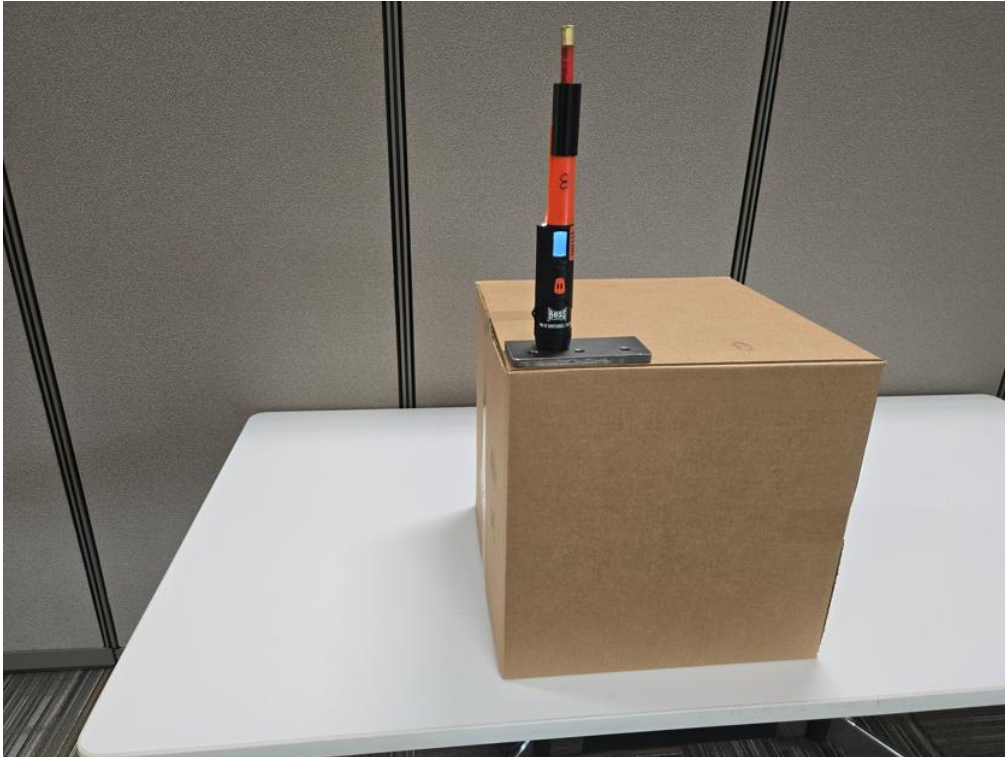
**Validation Success Criteria:** Validation will be considered successful if:

1. Magnetic materials consistently produce positive magnetic attraction.
2. Non-magnetic materials consistently produce no magnetic attraction.
3. Conductivity outputs fall within expected ranges for each material class.
4. Results demonstrate repeatable screening outcomes across trials.

## Test Setup:

Electrical conductivity response measurements were conducted using the following setup:

- The shell tester was placed on a metal plate. This allowed shells to be positioned in the tester without the need to hold the device, thereby eliminating any potential interference from watches, rings, or other metal items.
- A cardboard box was used to raise the test assembly to an appropriate height, ensuring clear visibility of the LED display during measurements.



The magnetic response observations were made on a level and smooth surface.





## Test Results:

The following tests were conducted by Susan Altemeier and Mike Clapper.

**Test Dates:** 03/23/2026 – 03/24/2026    **Room Temperature:** 71°F - 73°F    **Room Humidity:** 23% - 29%

### Test Summary and Observations:

All eight testers evaluated performed as expected across 1,840 individual evaluations.

All magnetic response and conductivity readings met expectations for all tested shotshell types and gauges, achieving 100% accuracy.

One observation was noted with the Winchester Pawling Mountain Club tungsten samples. These samples exhibited a weaker magnetic response compared to other tungsten and steel samples. This reduced response could present challenges in field conditions where testing cannot be conducted on a perfectly level surface and wind-free environments.

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Bismuth	480						480
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Steel					162	158	320
Tungsten		7	153	140	100		400
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### Expected conductivity range for non-magnetic shotshells:

- Bismuth            0 Bars
- Lead                1 – 2 Bars
- Copper            3 – 4 Bars















































Written by:



Mike Clapper, Staff Engineer

Approved by:



Casey Schrock, Engineering Leader

**Intended Use of This Report**

This report is confidential and is intended for the exclusive use of the client named above.

UL Verification Services did not select the samples, determine whether the samples were representative of production samples, witness the production of the test samples, nor were we provided with information relative to the formulation or identification of component materials used in the test samples. The test results apply only to the actual samples tested. UL Verification Services has no vested interest in the results of this testing and hereby certifies the impartial manner in which the testing was performed.

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