NRC FORM 313 (4-2008)
10 CFR 30, 32, 33, 34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 10/31/2008

Estimated burden per response to comply with this mandatory collection request: 4.4 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
612 E. LAMAR BOULEVARD, SUITE 400
ARLINGTON, TX 76011-4125

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S.NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- [x] A. NEW LICENSE
- [ ] B. AMENDMENT TO LICENSE NUMBER _____
- [ ] C. RENEWAL OF LICENSE NUMBER _____

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include ZIP code)*

TriMedia Consultants, Inc.
1002 Harbor Hills Drive
Marquette, Michigan 49855

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

1002 Harbor Hills Drive
Marquette, Michigan 49855

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

George Meister, P.E.

TELEPHONE NUMBER

(906) 228-5125

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES *(See 10 CFR 170 and Section 170.31)*
FEE CATEGORY **1C** AMOUNT ENCLOSED $ **1,100.00**

13. CERTIFICATION. *(Must be completed by applicant)* THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTANED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
Thomas L. Anthes President		3-31-09

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	

PRINTED ON RECYCLED PAPER

Item 5. RADIOACTIVE MATERIAL

a. Element and Mass Number: Cs-137, Cf-252, Am-241-Be

b. Chemical and/or physical form: Sealed Source

c. Maximum amount which will be possessed at one time:
16 mCi +/I 10% Cs-137
120 uCi +/- 10% Cf-252
80 mCi +/- Am-241:Be

Please see the attached Appendix I for the Material Data Safety Sheet and Troxler Model 3440 Specifications.

Item 6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED

TriMedia will use the gauges for the purposes described in their respective SSD Registration Sheets.

Equipment used will be Troxler Model 3440 series portable measuring gauges to measure construction materials.

The maximum depth the density source rod will be lowered is 12 inches.

Please see the attached Appendix II for the Application Brief for Troxler Model 3440, which details use for the instrument.

Item 7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRANING EXPERIENCE

George Meister, PE will be the Radiation Safety Officer (RSO). Before obtaining licensed materials, the proposed RSO will have successfully completed one of the training courses described in Criteria in the section entitled "Individual(s) Responsible for Radiation Safety Program and Their Training and Experience – Radiation Safety Officer" in NUREG-1556, Vol. 1, Rev. 1, dated November 2001.

Item 8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS

Each individual that will operate or frequent restricted areas will complete one of the training courses described in Criteria in the section entitled "Training for Individuals Working In or Frequenting Restricting Areas" in NUREG-1556, Vol. 1, Rev. 1, dated November 2001.

Item 9. FACILITIES AND EQUIPMENT

TriMedia understands that we are not required to submit facilities and equipment information during the licensing phase. Key issues are addressed under Item 10 – *Public Dose* and *Operating and Emergency Procedures.*

Item 10. RADIATION SAFETY PROGRAM

TriMedia will either possess and use, or have access to and use, a radiation survey meter that meets the Criteria in the section entitle "Radiation Safety Program – Instruments" in NUREG-1556, Vol. 1, Rev. 1, dated November 2001.

Routine Cleaning and Lubrication - We will implement and maintain procedures for routine maintenance of our gauges according to each manufacturer's recommendations and instructions.

Non-Routine Maintenance – We will send the gauge to the manufacturer or other person authorized by NRC or an Agreement State to perform non-routine maintenance or repair operations that require the removal of the source or source rod from the gauge.

Transportation – TriMedia understands that we are not required to submit transportation information during the licensing phase, but it will be reviewed during inspection.

Waste Management-Gauge Disposal and Transfer - TriMedia understands that we are not required to submit waste management information during the licensing phase. However, TriMedia is currently developing procedures for gauge transfer and disposal.

Material Receipt and Accountability – Physical inventories will be conducted at intervals not to exceed six months, to account for all sealed sources and devices received and possessed under the license.

Occupational Dosimetry - TriMedia will maintain, for inspection by NRC, documentation demonstrating that unmonitored individuals are not likely to receive a radiation dose in excess of ten percent of the allowable limits in 10 CFR Part 20, or we will provide dosimetry processed and evaluated by an NVLAP-approved processor that is exchanged at a frequency recommended by the processor.

Pubic Dose – TriMedia understands that we are not required to submit public dose information during the licensing phase, but it will be reviewed during inspection.

Operating and Emergency Procedures – Operating and emergency procedures will be developed, implemented, and maintained and will meet the criteria in the section entitled "Radiation Safety Program – Operating and Emergency Procedures" in NUREG-1556, Vol. 1, Rev. 1, dated November 2001.

Leak Test - Leak tests will be performed at intervals approved by NRC or an Agreement State and specified in the Sealed Source and Device Registration Sheet. Leak tests will be performed by an organization authorized by NRC or an Agreement State to provide leak testing services for other licensees or using a leak test kit supplied by an organization authorized by NRC or an Agreement State to provide leak test kits to other licensees and according to the kit supplier's instructions.

Audit Program - TriMedia understands that we are not required to submit our audit program to NRC for review during the licensing phase.

Termination of Activities - TriMedia understands that we are not required to submit Termination of Activities information review during the licensing phase. It is understood, however, that when the license expires or operations cease, NRC Form 314 must be submitted.

Survey Instruments – We will either possess and use, or have access to and use, a radiation survey meter that meets the Criteria in the section entitled "Radiation Safety Program – Instruments" in NUREG-1556, Vol. 1, Rev. 1, dated November 2001.

Item 11. WASTE MANAGEMENT

Disposition of the gauge will be by transfer to either another licensee specifically licensed to possess the radioactive material or to a licensed disposal facility. It is our intent to "recycle" the sealed sources used in our gauges back to the manufacturer. In this manner waste is not created.

APPENDIX I

Material Data Safety Sheet and Troxler Model 3440 Specifications

Troxler Electronic Laboratories, Inc.
3008 Cornwallis Rd. • PO Box 12057 • Research Triangle Park, NC 27709
Phone: +1.919.549.8661 • www.troxlerlabs.com

Material Safety Data Sheet Exemption

Material Safety Data Sheets (MSDS) are not required for Troxler gauges.

Radioactive materials are exempt from coverage under the OSHA's Hazard Communication Standard (HCS) if the only hazard they pose is radiological. Since the only hazard posed by the radioactive sealed sources in Troxler nuclear gauges is radiological (they do not present any other physical or chemical hazards) they are exempt from the HCS. This means that Material Safety Data Sheets are not required for Troxler gauges.

Excerpts from the OSHA regulations which exempt the radioactive sealed sources from MSDS requirements are shown below:

29 CFR 1910.1200, Section (b) "Scope and application."

(b)(1)
This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazard chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers. (Employers who do not produce or import chemicals need only focus on those parts of this rule that deal with establishing a workplace program and communicating information to their workers. Appendix E of this section is a general guide for such employers to help them determine their compliance obligations under the rule.)

(b)(6)
This section does not apply to:

(b)(6)(xi)
Ionizing and nonionizing radiation;

For further information or questions, contact the Troxler Radiation Safety Department.

Products
Service & Repair
Training
Radiation Safety
TLD Badge Service
Sales
Domestic
International
Trade Shows

Model 3440 Specifications

Measurement (U.S. Customary Units)			
Direct Transmission Density (6")	**15 sec**	**1 min**	**4 min**
Precision at 120 pcf	±0.42 pcf	±0.21 pcf	±0.11 pcf
Composition error at 120 pcf	±1.25 pcf	±1.25 pcf	±1.25 pcf
Surface error (0.05", 100% Void)	-1.1 pcf	-1.1 pcf	-1.1 pcf
Backscatter (98%) (4")	**15 sec**	**1 min**	**4 min**
Precision at 120 pcf	±1.00 pcf	±0.50 pcf	±0.25 pcf
Composition error at 120 pcf	±2.50 pcf	±2.50 pcf	±2.50 pcf
Surface error (0.05", 100% Void)	-4.7 pcf	-4.7 pcf	-4.7 pcf
Moisture at 15 pcf	**15 sec**	**1 min**	**4 min**
Precision at 15 pcf	±0.64 pcf	±0.32 pcf	±0.16 pcf
Surface error (0.05", 100% Void) Depth of measurement @ 15 pcf (8.45")	-1.12 pcf	-1.12 pcf	-1.12 pcf
Measurement (S.I. Units)			
Direct Transmission Density-150mm	**15 sec**	**1 min**	**4 min**
Precision at 2000 kg/m3	±6.8 kg/m3	±3.4 kg/m3	±1.7 kg/m3
Composition error at 2000 kg/m3	±20.0 kg/m3	±20.0 kg/m3	±20.0 kg/m3
Surface error (1.25mm, 100% Void)	-17.0 kg/m3	-17.0 kg/m3	-17.0 kg/m3
Backscatter (98%) (100mm)	**15 sec**	**1 min**	**4 min**
Precision at 2000 kg/m3	±16.0 kg/m3	±8.0 kg/m3	±4.0 kg/m3
Composition error at 2000 kg/m3	±40.0 kg/m3	±40.0 kg/m3	±40.0 kg/m3
Surface error (1.25mm, 100% Void)	-75.0 kg/m3	-75.0 kg/m3	-75.0 kg/m3
Moisture	**15 sec**	**1 min**	**4 min**
Precision at 250 kg/m3	±10.3 kg/m3	±5.1 kg/m3	±2.6 kg/m3
Surface error (1.25mm, 100% Void)			

Meas. Depth @ 250 kg/m3 - 212.5mm	-18.0 kg/m3	-18.0 kg/m3	-18.0 kg/m3

Calibration

Accuracy of Density Standards	±0.2%
Accuracy of Moisture Standards	±2.0%
Calibration Range	70-170 pcf (1100-2700 kg/m3) Density 0-40 pcf (0-640 kg/m3) Moisture

Radiological

Gamma Source	8 mCi ±10% Cs-137
Neutron Source	60 uCi ±10% Cf-252 or 40 mCi ±10% Am-241:Be
Source Housing	Stainless Steel Encapsulation
Shielding	Tungsten, lead and cadmium
Surface Dose Rates	20.5 mrem/hr max., neutron and gamma
Source Rod Material	Stainless Steel
Shipping Case	DOT 7A, Type A
Sealed Source Approved for Domestic and International Shipments	Special Form

Electrical

Time Accuracy and Stability	0.005%, 0.0002% / °C
Power Supply Stability	0.01% / °C
Stored Power	30 watt hours
Battery Recharge Time	14-16 hours (automatic cutoff)
Charger	110/220 V ac, 50-60 Hz or 12-14 V dc
Readout	4 x 16 alpha-numeric liquid crystal display

Notes:

Gauge returns to Gauge Ready (power saving mode) after two minutes of inactivity, except in standard, stat test, drift test, and in nomograph programs when a 30-minute delay is provided. After 5 hours of inactivity, gauge performs complete power shut-down.

Battery packs are fully protected against overcharge and overdischarge.Remaining battery voltage is indicated on the display.

Emergency Use - Capable of operation with D size alkaline batteries.

Mechanical

Case	High Impact Plastic 29.5 L x 14 W x 17 T in.
Vibration Test	0.1 in. (2.5 mm) @ 12.5 hz
Drop Test	300 mm on 25 mm diameter steel ball
Operating Temp:	Ambient: 14 to 158°F (-10 to 70°C) Surface: 350°F (175°C)
Storage Temp.	-70 to 185°F (-55 to 85°C)
Gauge Size (no handles)	14.8 x 9.1 x 7.2 in. (376 x 231 x 183 mm)
Gauge Height (with handles)	12": 23.25 in. (591 mm) 8": 19.25 in. (489 mm)
Weight	29 lbs. (13.2 kg)

Shipping Weight	90 lbs. (40.8 kgs) w/case
Available Models	8" or 12" index rod with 1" or 2" increments (200 or 300 mm index rod with 25 or 50 mm increments)

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APPENDIX II

Troxler Model 3440 Application Brief

TROXLER
The Leader in Construction Testing Equipment

3008 Cornwallis Rd. P.O. Box 12057 RTP, NC 27709
1-877-876-9537 919-549-8661 fax 919-549-0761
www.TroxlerLabs.com

Application Brief

TROXLER MODEL 3440

Roadreader™
Nuclear Moisture Density Gauge

September 2007

Introduction

The Troxler Model 3440 Roadreader™ nuclear moisture/density gauge offers two test modes for measuring the density of soil, aggregate, concrete and asphalt materials. The direct transmission mode allows the source to be lowered below the surface in order to test a larger area of material and improve gauge precision. In backscatter mode the source is positioned near the surface of the test material and the top four inches of material are penetrated by gamma rays. Moisture content of the material is also tested in a manor similar to the backscatter mode. The Model 3440 provides many special functions and features in order to achieve the highest level of operator convenience. This gauge prompts the user through the steps of accessing and enabling all functions. This application brief will describe the operation, application and features of the Model 3440 Roadreader™ Surface Moisture / Density Gauge.

Measurement Technology

Surface nuclear gauges use the interaction of gamma radiation with matter to measure density through direct transmission or backscatter. In the direct transmission position the source rod extends through the base of the gauge into a predrilled hole up to 30 cm (*12 in.)* deep in the material being tested. The gamma rays are transmitted from the density source, through the test material and are counted by detectors located within the gauge. The average density between the source and detectors is then determined. The backscatter mode is a rapid and nondestructive means of testing materials that are approximately 10 cm (*4 in.*) in depth. The gamma source and the detectors remain inside the gauge, which rests on the surface of the test material. Gamma rays from the density source enter the test material. Those that are scattered back toward the detectors are counted, determining the density count for the material. This means of testing is usually used on asphalt and concrete. The photons counted is in direct relation to the density of the material; the higher the counts the lower the density, and the lower the counts the higher the density. Calibration constants, acquired in the factory during calibration on blocks of known density or moisture content, are used by the gauge to convert the counts obtained in the field test to a density or moisture measurement.

Moisture content is also measured in a nondestructive test mode. Moisture is determined through the detection of thermalized neutrons ("fast" neutrons which have been slowed by the hydrogen present in the material, normally in the form of water). As the moisture level of the test material increases, neutrons are thermalized at a greater rate so the moisture count increases.

Gauge Operation

The Troxler Model 3440 gauge can measure the moisture content, density and percent compaction of soils, soil-stone aggregates, concrete, asphalt treated bases, asphalt surfacing and other materials that are similar in density and / or moisture content. This gauge offers two modes of operation: soil and asphalt. The direct transmission and backscatter testing positions can be used with each mode.

Soil Mode is designed for measurements of soils, stone or other materials where both density and moisture content are desired. Direct transmission testing typically offers better precision and control of depth of measurement and is the preferred method. The Model 3440 gauge provides the Dry Density, Wet Density, Moisture, Percent Moisture and Percent Proctor when testing in the soil mode.

Surface preparation for soil testing is critical to gauge performance and test results. The scraper plate accessory provided can be used to prepare rough surfaces by moving it back and forth across the test area. Small voids, cracks, or holes can be filled with sand or native fines. This is most critical when testing in the backscatter position.

Asphalt Mode is used on full depth, greater than 100 mm (*4inch*) asphalt. Typically, the source rod is in the backscatter position, slightly above the asphalt, but direct transmission can be used if a hole can be drilled in the asphalt. The Model 3440 gauge provides the Wet Density, Percent Marshall and Percent Voidless values when testing in the asphalt mode.

When performing density tests on coarse asphalt surfaces, or on open graded mixes, the surface voids may be filled with soft sand, cement powder or native fines. However, the asphalt surface should remain bare so that the gauge base makes contact with the surface. It is also important that the gauge sit flat on the asphalt surface and does not "rock".

Offsets

The Roadreader™ Model 3440 gives the user the ability to input offsets to gauge readings to correct for non-standard conditions. In soil mode, the user may apply a correction factor to adjust for the presence of chemically bound hydrogen or neutron absorbers that may affect the moisture count. For example, mica is a mineral that usually contains considerable molecular hydrogen and will cause the readings to indicate a higher moisture content than is actually present. In soil and asphalt mode a density correction factor may be used to correct for material composition or for material density outside of the calibration range. A trench offset may be used in either soil or asphalt mode when testing in a trench or near a large vertical object. Special Calibration is a function that allows the operator to temporarily "re-calibrate" the gauge for measuring materials that do not fall within the range of a normal calibration. These functions are simple to access from the gauge's offset and special function menus, which walk the operator through the processes step by step.

Keypad

The Model 3440 gauge keypad is designed so the operator can easily access any of the gauge's many options. The control panel consists of 22 keys with the numeric keys also representing a second function, accessed by pressing the shift key. The result is a keypad with 32 direct options available. Full access to gauge functions is provided while limiting the menus

to be viewed or keys to be pressed. A "beep" verifies that the keystroke was received by the gauge. Above the keypad is a four line by sixteen character Liquid Crystal Display screen allowing for descriptive menus.

Data Storage

The Model 3440 gauge can store up to 450 test readings for later recall or downloading to a printer or computer. Measurements are stored under specific project numbers and station numbers. In addition to the measurement information, project number and station number, the gauge is capable of storing additional numeric notes. The gauge can also prompt for the information commonly required on U. S. Federal Highway Administration (FHWA) projects when the *Special Rdwy* option is enabled on the *Special* function menu. These prompts are specific to Soil, Stone or Asphalt and include categories such as: FHWA number, lane direction, distance from centerline, lift number, test type, etc.

Batteries and Power Consumption

The Model 3440 gauge runs on a rechargeable NiCad battery. Under normal conditions a fully charged battery will remain operational for approximately 8 weeks. When the "BATTERY LOW" warning appears, there are a few hours remaining before the battery must be recharged. A full charge (16 hours) is recommended at that time, but a 30-minute recharge will provide several hours of use if necessary. Two adapters are included as standard accessories with this gauge: a 115 / 230 VAC (50 / 60 Hz) and a 12 VDC charger. Alkaline batteries (D size) can be used temporarily in the event that recharging is not an option. A separate battery case is supplied for this purpose.

Additional Features

A number of other features are offered by the Model 3440 gauge to provide ease of operation and to ensure that the gauge is performing properly. When in the automatic depth mode, the gauge automatically reads the depth strip on the index rod. The gauge determines the source depth; therefore the operator no longer is required to program in the depth of each test. This gauge also offers a calculator mode which, when enabled, allows the keypad to be used as a four function calculator. The "Auto Station" function will automatically increment the station number of each test by one after an initial station number is entered. The Model 3440 gauge can measure the density of thin layer asphalt or concrete provided the overlay thickness and the underlying material density is entered into the gauge. This feature, called the nomograph mode, is not as accurate as a true thin layer gauge but can produce satisfactory results under many conditions. The first 18 month limited warranty in the industry is offered with the Troxler Model 3440 Roadreader™ nuclear moisture/density gauge. In addition to those options listed here, many more are included on the Model 3440 to assist the operator in the everyday testing of soils and asphalt.

Correct gauge operation is promoted by a number of features. A STAT (statistical stability) test may be performed by the operator to validate the normal operation of the gauge. After a STAT test, a Drift test can check the long term drift of the gauge if a problem is suspected. Standard count comparison, validation and storage is also done by the Model 3440. The last 4 standard counts are stored in the gauge's memory and the average is compared to the new standard count to verify that it is within the specified limits. A precision option is offered in order to achieve a desired degree of precision under certain conditions. Special Calibration can be

enabled to temporarily recalibrate the gauge constants for use in measuring particular materials that do not fall within the range of a normal calibration.

Summary

The Troxler Roadreader™ nuclear moisture / density gauge is used by many contractors, engineers, and highway departments for compaction control of soil, aggregate, concrete and full depth asphalt. The ASTM standard numbers D 6938, D 2950, and C 1040 are met or exceeded by this gauge. Two test modes are available for density determination: direct transmission and backscatter. The operator selects the mode depending on the material type and thickness of the layer being tested. The Model 3440 provides 30 special functions, storage of up to 450 test records, an 18 month warranty and many more options that make it simple to operate and a necessity for all technicians.

Measurement Precision

Model 3440 Nuclear Moisture/Density Gauge

Direct Transmission(*6"* / 150mm)	**15 sec.**	**1 min.**	**4 min.**
Precision at *125 pcf*	*+/-0.42*	*+/-0.21*	*+/-0.11 pcf*
2000kg/m³	+/-6.8	+/-3.4	+/-1.7 kg/m³
Composition error at *125pcf*	*+/-1.25*	*+/-1.25*	*+/-1.25pcf*
2000kg/m³	+/-20	+/-20	+/-20kg/m³
Surface error *(0.05", 100% Void) pcf*	*-1.1*	*-1.1*	*-1.1pcf*
(1.25mm, 100%Void) kg/m³	-17	-17	-17kg/m³
Backscatter (98%) (*4"* / 100mm)			
Precision at *125 pcf*	*+/-1.00*	*+/-0.50*	*+/-0.25pcf*
2000kg/m³	+/-16	+/-8	+/-4kg/m³
Composition error at *125 pcf*	*+/-2.5*	*+/-2.5*	*+/-2.5pcf*
2000kg/m³	+/-40	+/-40	+/-40kg/m³
Surface error *(0.05", 100% Void) pcf*	*-4.7*	*-4.7*	*-4.7pcf*
(1.25mm, 100%Void) kg/m³	-75	-75	-75kg/m³
Moisture			
Precision at *15 pcf*	*+/-0.64*	*+/-0.32*	*+/-0.16pcf*
250kg/m³	+/-10.3	+/-5.1	+/-2.5kg/m³
Surface error *(0.05", 100% Void) pcf*	*-1.12*	*-1.12*	*-1.12pcf*
(1.25mm, 100%Void) kg/m³	-18	-18	-18kg/m³
Depth of measurement at *15 pcf = 8.5 "*			
250 kg/m³ = 212.5 mm			

UPS Internet Shipping: View/Print Label

1. **Print the label(s):** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the dotted line.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers without a Daily Pickup
   - Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   - Hand the package to any UPS driver in your area.
   - Take your package to any location of The UPS Store®, UPS Drop Box, UPS Customer Center, UPS Alliances (Office Depot® or Staples®) or Authorized Shipping Outlet near you. Items sent via UPS Return Services℠ (including via Ground) are also accepted at Drop Boxes.
   - To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.

   Customers with a Daily Pickup
   - Your driver will pickup your shipment(s) as usual.

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