RDM-3P

Paper Moisture Meter Addendum

This addendum is to be used in conjunction with the Owner's Manual for the RDM-3 Wood Moisture Meter. The Owner's Manual details the various functions of the RDM-3 meter, including the optional PC interface. This addendum contains information specific to the paper, paper core, baled paper and corrugated applications. ***We recommend the user read the Owner's Manual and addendum completely, before using the RDM-3P.***

Changes to the RDM-3 Wood Moisture Meter that are reflected in the RDM-3P include:

- All wood species have been deleted from the meter and replaced by 3 scales for the paper applications. PAPER (5.3% - 23%), RELATIVE (0 - 100) scale, and BALED PAPER (8% - 40%). **NOTE**: Displayed readings outside of this nominal range should be taken as a "no reading". They are included in statistical calculations to provide a more complete profile of the moisture distribution.

- The wood temperature compensation feature has been eliminated.

TESTING PAPER, PAPER CORES, AND CORRUGATED PRODUCTS

- **Set the meter scale** for **PAPER**. Check that the contact pins are firmly hand tightened.

- **Push the contact pins** into the paper product to their full penetration if possible.

- **Press the SELECT** button to read %MC when in **TRIGGER** mode. In **CONTINUOUS** mode, press **SELECT** to start readings and press **SELECT** again to store a reading.

Since the readings are the result of an “average” calibration, if a high degree of accuracy is required, the meter should be checked on the specific material and corrections determined by the user.

Meter readings indicate moisture content of material under test at room temperature of approx. 70º F/21°C Meter readings will be affected by lower or higher temperatures. Lower temperatures cause readings to be higher than actual MC; higher temperatures cause readings to be lower than actual MC. If a temperature correction is desired, the attached Temperature Correction Table may be used as a guideline.

The meter tends to read the highest moisture content that is in contact with both pins. If thick samples are not well equalized, it may be necessary to make tests at different depths to determine the degree of uniformity of moisture distribution in the sample.

If the meter is used on stock so thin that the full length of the pins is not entirely embedded in the thickness of the sample, the readings tend to indicate a lower than actual MC. This can be overcome by testing more than one sample in stacks.

USING THE 0 –100 RELATIVE SCALE

This scale is used to test the moisture content of hygroscopic materials for which a calibration is not available. Depending on the material, a special application external electrode, instead of the integral contact pins may be required. Increasing readings on the 0 - 100 reference scale indicate higher levels of moisture content. These readings can be translated into *percent moisture content* once a calibration has been developed.

- **Set the meter scale** to **REL 0 - 100**. If necessary, attach an external electrode to the meter.
- **Push the contact pins** into the material or apply the external electrode.
- **Take readings** as described above.

The readings may also be used for comparative tests, after meter readings have been related to given conditions for the materials involved. When the meter is used as a gauge for comparative tests, readings should be taken on samples considered to be at “safe’ levels or in satisfactory condition. These readings are then used as the “standard” against which subsequent readings on the same material are evaluated.

The “standard” for any given material is related to safe storability or any other property which is important for further production processing.

TESTING BALED SCRAP PAPER

- **Set the meter scale to BALED PAPER**. Attach an external electrode to the meter.
- **Push the external electrode** into the material being tested.
- **Take readings** as described above.

The level of accuracy of meter readings depends on a number of factors: similarity between the material tested and samples on which the calibration was made; moisture distribution; and chemical application or processing which may affect the electrical properties of the paper product.

The required electrode is the H-4 with a 830-series prod. (10in or 18in). A sharp steel rod to open the hole for the prod may be helpful if the bale is very dense.

A few meter readings in a limited number of specific areas of a large mass can hardly be projected to indicate an average moisture content of an entire bale. The readings can be very helpful in providing an indication of the *overall moisture condition* inside the bale and to detect areas of excessive moisture.

Meter readings may be used as an arbitrary guideline in determining whether or not to accept or reject the material. Since checking the moisture condition of bales is performed when buying and selling, the specific value of the meter readings remains an element to be agreed upon between buyer and seller. Such an agreement should consider not only a specific “range” of readings, but the number and location of where they are taken.

The following ranges can be used as a guideline and may help to interpret the readings:

- Readings of 8% - 12%, with EMC to 60% RH are usually considered “dry”.
- Readings from 12% - 20% with EMC to 95% are usually considered “acceptable” but should be taken with some reservation.
- Readings of 20% - 40% are considered “wet” and unacceptable.

METER CALIBRATION CHECK

When using the MCS-2 external standard to check the meter's calibration, the RDM-3P meter should be set to the PAPER scale and indicate **6.2% and 9.6% +/-0.2**. If the meter reads out of tolerance, replace the battery with a fresh one. If the meter is still out of tolerance, return it to Delmhorst per website instructions.

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WOOD TEMPERATURE CORRECTION TABLE

			METER READINGS										
°C	°F		6	7	10	15	20	25	30	35	40	50	60
-20	0		9	11	15	22	*31*	*38*	*45*	*53*			
-10	20		8	10	14	20	28	*34*	*40*	*47*	*55*		
5	40		7	8	12	18	24	30	*36*	*42*	*48*		
15	60		6	7	11	16	21	27	*32*	*38*	*43*	*54*	
30	80		6	7	9	14	19	23	28	*33*	*38*	*47*	*55*
40	100		5	6	8	12	17	21	25	29	34	42	50
50	120		5	5	7	11	15	19	22	26	30	*38*	*44*
60	140		4	5	7	10	14	17	20	23	27	34	*40*
70	160		4	4	6	9	12	15	18	21	24	30	*36*
80	180		3	4	5	8	11	13	16	19	22	27	*33*
95	200		3	4	5	7	10	12	14	17	19	24	28
105	220		2	3	4	6	9	11	13	15	17	21	26

Moisture content values shown shaded are only qualitative, since they are above the fiber saturation point in wood.

The temperature correction values shown in this chart have been rounded for easy reference.