

DETERMINATION OF MOISTURE CONTENT OF NYLON –
VACUUM OVEN METHOD

Application

This procedure is used to determine the moisture content of nylon resins in the form of molded parts having moisture contents in the range of .2 - 10 %.

Apparatus Required

Weighing Container

Air tight, for weighing the specimen or specimens before and after drying. The weighing bottle may be of either high or low form with a ground glass stopper.

Analytical Balance

Sensitive to 0.001 g.

Desiccator

Utilized for cooling and maintaining equilibrium of specimen container and specimens after drying. It is recommended that anhydrous alumina (Indicator grade) be used as a desiccant.

Vacuum Oven

Standard vacuum oven capable of maintaining a temperature of 175 +/- 5 °F and vacuum control of 27 to 29 inches of mercury.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Date	Action	Revisions
2001 03 27	Revised	Editorial – no technical change A. Cockman
1992 07 28		

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Procedure

1. Determine the tare weight of the oven-dried weighing container as follows: Heat the open container in the vacuum oven at 175 +/- 5 °F and 29 inches of vacuum for 2 h. At the end of that period, quickly close the container, remove it from the oven, and place it in the desiccator to cool for 1 h. Remove the closed container from the desiccator, momentarily loosen the cover to equalize pressure and then weigh the container.
2. Transfer approximately 5 g of the test specimen or specimens to the tared weighing container and close the container immediately. Great care must be taken to avoid change in moisture content during the transfer and handling of the sample. When the part shows variations in thickness, then representative sampling should be taken to produce an average condition.
3. Weigh the closed container with the test specimen. The weighing container should not be touched with the fingers during these manipulations.
4. Place the closed container in the vacuum oven. Remove the stopper of the weighing bottle and expose for 96 h at 175 +/- 5 °F and 29 inches of vacuum.
5. Replace the cover on the weighing bottle and remove the bottle from the vacuum oven and cool to 23 +/- 2 °C in the desiccator.
6. Remove the stopper momentarily to equalize the pressure, then weigh.
7. Expose the specimen or specimens to an additional drying time of 24 h in the vacuum oven and subsequently cool and reweigh. This process should be continued until the difference in weight between two successive weighings does not exceed 0.1 % of the original weight of the specimen.
8. Make all weighings to the nearest 1 mg.

Calculation

$$\% \text{ moisture} = \frac{W_1 - W_2}{W_1} \times 100$$

Where: W_1 = original weight of the specimen and
 W_2 = weight of specimen after vacuum oven drying

Chemicals, materials, parts, and equipment referenced in this document must be used and handled properly. Each party is responsible for determining proper use and handling in its facilities.