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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Practice for Molding and Machining Tolerances for PTFE Resin Parts[1]

This standard is issued under the fixed designation D 3297; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice defines tolerances applicable to parts molded and free sintered from PTFE resins and to machined parts produced from basic shapes of compression-molded or ram-extruded resins.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *This standard does not purport to address all of the safety standards, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Document

2.1 *ASTM Standard:*
D 883 Terminology Relating to Plastics[2]

3. Terminology

3.1 *Definitions*—Definitions of terms applying to this practice appear in Terminology D 883.

4. Summary of Practice

4.1 This practice provides minimum practical dimensional tolerances for PTFE parts that are molded and free-sintered or machined from stock shapes. Dimensional values are most reproducible when the parts are measured at a stabilized temperature between 22 and 25°C (72 and 77°F) using agreed upon measuring equipment and procedures.

5. Significance and Use

5.1 The tolerances are applicable to conventional measuring equipment under controlled environmental conditions. Because parts of PTFE resin deform easily, care must be taken during the measuring process. In certain instances, considering cross-section to diameter, the part must be supported without distortion by a suitable fixture while being measured. Measuring procedures, gages, and fixtures should be agreed upon between the purchaser and the seller.

6. Interferences

6.1 Stabilized temperatures of molded or machined parts at time of measurement shall be between 22 and 25°C (72 and 77°F). Difficulty is experienced between 18 and 21°C (64 and 70°F) due to a critical transition zone characteristic of PTFE resins. Figure 1 illustrates this effect.

7. Conditioning

7.1 Condition the parts at the established inspection temperature for a minimum of 24 h. A shorter period of conditioning may result in erroneous measurements.

7.2 The maintenance of constant relative humidity is not required unless, in filled materials, the filler may be affected by moisture absorption. In this case, the standard laboratory atmosphere of 50 ± 5 % relative humidity shall apply.

8. Procedure

8.1 Molded part configurations and tolerances shall be as shown in Table 1.

8.2 Machined part tolerances for customarily used machining methods shall be as shown in Table 2.

9. Keywords

9.1 machined parts; molded parts; plastics; PTFE; tolerances

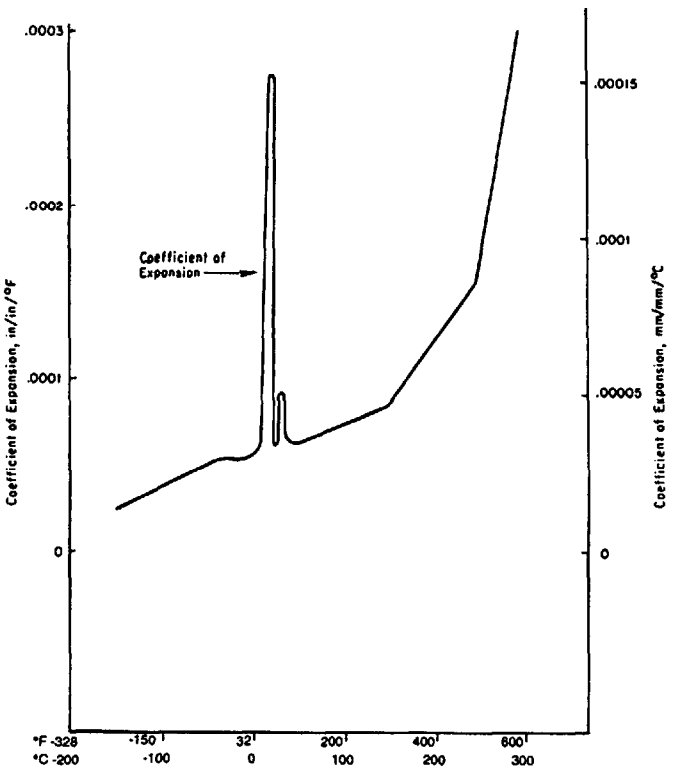

FIG. 1 Thermal Expansion of PTFE Resin

[1] This practice is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials (Section D20.15.12).

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[2] *Annual Book of ASTM Standards*, Vol 08.01.