This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

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# Standard Tables for Body Measurements for Mature Big Men Type, Size Range 46–64[1]

This standard is issued under the fixed designation D8077/D8077M; 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.

## INTRODUCTION

These body measurement tables were developed from evaluation of data currently used in the apparel industry.

These tables were developed from data published by the U.S. Department of Commerce; the Caesar Study; the Size USA Study; current U.S. industry; and studies, scans, and documentation from Alvanon Inc.[2] These tables take into consideration mature big men at a standard height of 178 cm (5 ft 10 in.) (65 % of average U.S. population) taking into account the decrease and increase in body weight that shift a person from one size to another, while this person does not gain in height. Major evaluation was done and reviewing the incremental growth at different major body points has been addressed and defined identifying increase and decrease at different rates in specific areas: chest/bust, waist, high-hip, and hip/seat. Additionally, to serve the industry better, incremental movement between sizes was reviewed ensuring smooth transition between sizes. To verify the proposed body measurements, a three-dimensional avatar was created in the mature big men size range 46 through 64 by Alvanon Inc. for a visual reference.

## 1. Scope

1.1 These tables list body measurements of mature big men figure type sizes 46–64. Although these are body measurements, they can be used as a baseline in designing apparel for big men in this size range when considering such factors as fabric type ease for body movement, styling, and fit.

1.2 These tables list body measurements for the complete range of big men sizing.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard.

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

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*[3]

D123 Terminology Relating to Textiles

D5219 Terminology Relating to Body Dimensions for Apparel Sizing

2.2 *ISO Standard:*

ISO 3635 Size Designation of Clothes, Definitions, and Body Measurement Procedures[4]

[1] These tables are under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.55 on Body Measurement for Apparel Sizing.

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[2] Caesar: Summary Statistics for the Adult Population (Ages 18-65) of The United States Of America, June 2002; Size USA North America Sizing Survey, 2004; 2000 CDC Growth Charts for the United States: Methods and Development, National Center for Health Statistics, Vital Health Stat, Series 11, No. 246, 2002; CDC Advance Data No. 361, 7/5/2005; and Anthropometry of Infants, Children's and Youths to Age 18 for Product Safety Design, May 31, 1977.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

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## 3. Terminology

3.1 *Definitions:*

3.1.1 For definitions relating to body dimensions, refer to Terminology D5219.

3.1.2 For definitions of other textile terms used in this standard, refer to Terminology D123.

## 4. Significance and Use

4.1 The use of the body measurement information in Tables 1 and 2 will assist manufacturers in developing patterns and garments that are consistent with the current anthropometric characteristics of the population of interest. This practice should, in turn, reduce or minimize consumer confusion and dissatisfaction related to apparel sizing. (Also refer to ISO 3635.)

4.2 Three-dimensional avatars depicting each of the big men sizes on certain measurements were created by Alvanon, Inc. and included in these tables to assist manufacturers in visualizing the posture, shape, and proportions generated by the measurements charts in Figs. 1-3.

## 5. Apparatus

5.1 *Tape Measure,* dimensionally stable and approximately 1.5 cm [½ in.] wide and graduated accurately in centimetres [1⁄16 in.].

5.2 *Plastic Goniometry,* to measure the radian (degree) of shoulder slope.

5.3 *Scale,* standard, calibrated, body weight type.

5.4 *Metal Ruler.*

## 6. Procedure

6.1 *General:*

6.1.1 For all vertical and most horizontal measurements, the subject is to be standing erect without shoes and with feet approximately 15 cm [6 in.] apart.

6.1.2 Take measurements over regular undergarments normally worn.

6.1.3 Take all measurements from the same side of the body for consistency.

6.1.4 Refer to Terminology D5219 for the location of all points to be measured.

6.2 *Body Measurements*—A body measurement is a standardized distance between two specified points on the human anatomy.

NOTE 1—Body measurements generally are based on standardized values from statistical studies of large populations.

6.2.1 *Body Weight*—The weight as measured on a calibrated scale taken with the subject in undergarments.

6.2.2 *Head Girth*—Measure the maximum horizontal circumference of the head above the ears.

6.2.3 *Neck Base Girth*—Measure the circumference of the neck taken over the cervicale at the back and the top of the collarbone at the front.

6.2.4 *Mid-Neck Girth*—Measure the horizontal circumference of the neck taken approximately 25 mm (1 in.) above the neck base level.

6.2.5 *Shoulder Girth*—Measure the horizontal circumference around the shoulders taken at the front breakpoint level with the arms down.

6.2.6 *Upper Chest/Bust Girth*—Measure the horizontal circumference around the torso taken under the arms and above the fullest part of the chest/bust including the lower portion of the shoulder blades.

6.2.7 *Chest/Bust Girth*—Measure the horizontal circumference around the torso taken under the arms and across the fullest part of the chest/bust apex including the lower portion of the shoulder blades.

6.2.8 *Under Chest/Bust Girth*—Measure the horizontal circumference around the torso under the arms and bust.

6.2.9 *Waist Girth*—Measure the minimum horizontal circumference around the body at waist height.

6.2.10 *Preferred Waist Girth*—Measure the circumference around the torso as identified as the waist by the wearer as applicable to bottom garments.

6.2.11 *High-Hip Girth*—Measure the maximum horizontal circumference around the torso taken at a specified distance below the waist level including abdominal extension.

6.2.12 *Hip/Seat Girth*—Measure the maximum horizontal circumference around the torso taken at the greatest protrusion of the buttocks as seen from the side.

6.2.13 *Thigh Girth*—Measure the maximum horizontal circumference of the upper leg taken close to the crotch.

6.2.14 *Mid-Thigh Girth*—Measure the maximum horizontal circumference of the upper leg taken midway between the hip/seat girth level and the midpoint (or crease) of the knee.

6.2.15 *Knee Girth*—Measure the maximum horizontal circumference of the knee taken over the kneecap with the leg straight.

6.2.16 *Calf Girth*—Measure the maximum horizontal circumference of the lower leg taken between the knee and the ankle.

6.2.17 *Ankle Girth*—Measure the maximum horizontal circumference of the ankle taken over the greatest prominence of the anklebones.

6.2.18 *Armscye Girth*—Measure the circumference taken from the shoulder joint through the front breakpoint, the armpit, the back breakpoint, and to the starting point with the arms down.

6.2.19 *Upper Arm Girth*—Measure the maximum circumference of the arm taken midway between the elbow and the shoulder joints with the arm down.

6.2.20 *Elbow Girth*—Measure the maximum circumference of the elbow taken over the outer prominence of the elbow bone with the arm bent 1.57 rad (90°).

6.2.21 *Forearm Girth*—Measure the maximum circumference of the arm taken between the elbow and wrist.

6.2.22 *Wrist Girth*—Measure the maximum circumference of the wrist taken over the inner and outer prominence of the wrist bones.

6.2.23 *Hand Girth*—Measure the maximum circumference of the hand around the knuckles excluding the thumb taken with the fingers together.

6.2.24 *Trunk Length (Total Vertical Girth)*—Measure the circumference taken from a point on the right shoulder midway

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between the neck base and the shoulder joint down the back through the crotch and up over the prominence of the right chest/bust apex to the starting point avoiding constriction at the crotch.

6.2.25 *Height*—Measure the vertical distance from the crown of the head to the floor taken with the subject standing and without shoes.

6.2.26 *Head and Neck Height*—Measure the vertical distance from the crown of the head to the cervicale taken with the head erect and the neck unbent.

6.2.27 *Scye Depth*—Measure the vertical distance from the cervicale to the back breakpoint level taken with the arms down.

6.2.28 *Cervicale Height*—Measure the vertical distance from the cervicale to the floor taken with subject standing and without shoes.

6.2.29 *Cervicale to Crotch Height*—Measure the vertical distance from the prominent point of the seventh or lowest neck vertebra at the back of the torso to the lowest point of the torso where the legs separate.

6.2.30 *Cervicale to Knee Height*—Measure the vertical distance from the cervicale to a point level with the midpoint of the back of the knee (or crease).

6.2.31 *Waist to Hip/Seat Height*—Measure the vertical distance from the waist level to the seat/hip girth level taken plumb.

6.2.32 *Waist to Knee Height*—Measure the vertical distance from the waist level to knee girth level, point level with the midpoint of the back of the knee (or crease), taken plumb.

6.2.33 *Waist Height*—Measure the vertical distance from the waist girth level to the floor (plumb) taken with the subject standing and without shoes.

6.2.34 *Front Preferred Waist Height*—Measure the vertical distance from the front preferred waist girth to the floor taken with the subject standing and without shoes.

6.2.35 *Back Preferred Waist Height*—Measure the vertical distance from the back preferred waist girth to the floor taken with subject standing and without shoes.

6.2.36 *High Hip Height*—Measure the vertical distance from the high hip girth level to the hip girth level along the side of the body (plumb) taken with the subject standing and without shoes.

6.2.37 *Hip/Seat Height*—Measure the vertical distance from the hip girth level to the floor along the side of the body (plumb) taken with the subject standing and without shoes.

6.2.38 *Crotch Height*—Measure the vertical distance from the midpoint of the crotch to the floor taken with the subject standing and without shoes.

6.2.39 *Rise Height*—Measure the vertical distance from the waist level at the side of the torso to the crotch level taken with the subject standing.

6.2.40 *Knee Height*—Measure the vertical distance from the midpoint of the back of the knee (or crease) to the floor taken with the subject standing and without shoes.

6.2.41 *Ankle Height*—Measure the vertical distance from the prominence of the outer ankle bone to the floor taken with the subject standing and without shoes.

6.2.42 *Center Front Waist Length*—Measure from the center front neck baseline to the center front waist level (contour).

6.2.43 *Center Back Waist Length*—Measure from the cervicale to the center back waist level taken along the spine (contour).

6.2.44 *Side Waist Length*—Measure the distance from the mid underarm point of the armscye to the waist level taken along the side of the body (contour).

6.2.45 *Crotch Length (Total)*—Measure the distance from the waist level at the center front through the crotch and to the waist level at the center back avoiding constriction at the crotch.

6.2.46 *Shoulder Length*—Measure the distance from the side of the neck base to the top of the shoulder joint taken with the arm down.

6.2.47 *Shoulder Slope*—Measure the degree of difference between the shoulder slant and the horizontal line that originates at the side neck base taken with a goniometer positioned on the shoulder and moved until the baseline is parallel to the floor.

6.2.48 *Shoulder Drop*—Measure the vertical distance from the side of the neck base to the top of the shoulder joint level.

6.2.49 *Across Front Shoulder Width*—Measure the horizontal distance across the front from the top of one shoulder joint to the top of the other shoulder joint taken with the arms down.

6.2.50 *Across Back Shoulder Width*—Measure the horizontal distance across the back from the top of one shoulder joint to the top of the other shoulder joint taken with the arms down.

6.2.51 *Upper Front Chest Width*—Measure the horizontal distance across the front of the chest at the midpoint between the top of the shoulder joint and the front breakpoint taken with the arms down.

6.2.52 *Upper Back Width*—Measure the horizontal distance across the back at the midpoint between the top of the shoulder joint and the breakpoint level taken with the arms down.

6.2.53 *Front Chest Width*—Measure the horizontal distance across the chest from the front breakpoint taken with the arms down.

6.2.54 *Back Width*—Measure the horizontal distance across the back from the back breakpoint to the back breakpoint over the shoulder blades taken with the arms down.

6.2.55 *Chest/Bust Point to Chest/Bust Point*—Measure the horizontal distance from the chest/bust apex to the chest/bust apex taken with the arms down.

6.2.56 *Neck to Chest/Bust Point*—Measure the distance from the side of the neck base to the chest/bust apex (contour) taken with the arms down.

6.2.57 *Chest/Bust Point to Chest/Bust Point (Halter)*—Measure the horizontal distance from the chest/bust apex around the neck base to the bust apex (contour) taken with the arms down.

6.2.58 *Cervicale to Wrist Length*—Measure the distance from the cervicale over the top of the shoulder joint, along the outside of the arm, over the elbow to the prominent wrist bone, taken with the arm bent 1.57 rad (90°) and the hand placed on the hip.

6.2.59 *Shoulder and Arm Length*—Measure the distance from the side of the neck base across the shoulder joint and

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