



Designation: D7331 – 07

## Standard Practice for Sewn Products Marker Data Interchange<sup>1</sup>

This standard is issued under the fixed designation D7331; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice describes a format for transferring marker data from a CAD marker software system to another or to a CAM software system.

1.2 This practice does not support curve interpolation or definitions. All curves are represented by discrete vectors and are dependent on the resolution of the CAD software.

1.3 This practice is concerned in limiting differences when processing the same data on different CAD systems.

1.4 This practice is not intended to represent the dimension relationships between pattern pieces or between pattern sizes, or the correspondence between 2D or 3D sewn product pattern piece geometries.

1.5 This practice does not specify the file format for the marker data exchange.

1.6 A consistent XML implementation of this practice is recommended.

1.7 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 ASTM Standards:<sup>2</sup>

D6963 Terminology Relating to Sewn Products Automation

### 3. Terminology

3.1 For all terminology related to Sewn Products Automation, see Terminology D6963.

3.2 The following terms are relevant to this standard: drill hole, grainline, line, notch, style.

3.3 The following terms are new terms related to Sewn Products Automation:

3.3.1 *absolute pattern matching, n*—nesting specification where the nested piece position shall have a specified position in regard to a repeat line.

3.3.2 *bundle, n*—set of nested pieces that are intended to be processed together because they are issued from the same graded style and are parts of the same end user's product.

3.3.2.1 *Discussion*—All bundle pieces are to be cut on the same material.

3.3.3 *bundle group, n*—set of bundles that are used to define constraints.

3.3.3.1 *Discussion*—A bundle may be part of several bundle groups for several different constraints. Example: pockets from the jacket and the trousers of a suit may have a mutual rotation constraint.

3.3.4 *constraint, n*—description of the behavior that one or several nested piece of the marker should follow during marker processing.

3.3.5 *efficiency, n*—area of the produced pieces located on the up side of the fabric, including blocking, versus area of the marker, defined by its length and its width.

3.3.5.1 *Discussion*—Pieces area inside fusing blocks is considered when calculating efficiency. Fusing blocks area is not considered.

3.3.6 *fabric category, n*—identifies the category to which the fabric belongs.

3.3.6.1 *Discussion*—The category allows the definition of fabric groups that will be used for pattern matching constraints definitions.

3.3.7 *fabric type, n*—characteristic of a pattern piece used to identify the material type the piece has to be made of.

3.3.8 *flip, n*—transformation of a geometry that gives the symmetry of the graded piece geometry either across the X axis or across the Y axis or across both, that is equivalent to a 180 degrees rotation.

3.3.8.1 *Discussion*—The X and Y axis to consider are those from the graded piece referential.

3.3.9 *graded piece, n*—explicit description of one or more specific sizes of a pattern piece, and related information used to produce it.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.66 on Sewn Product Automation. Current edition approved Dec. 1, 2007. Published January 2008. DOI: 10.1520/D7331-07.

<sup>2</sup> 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.

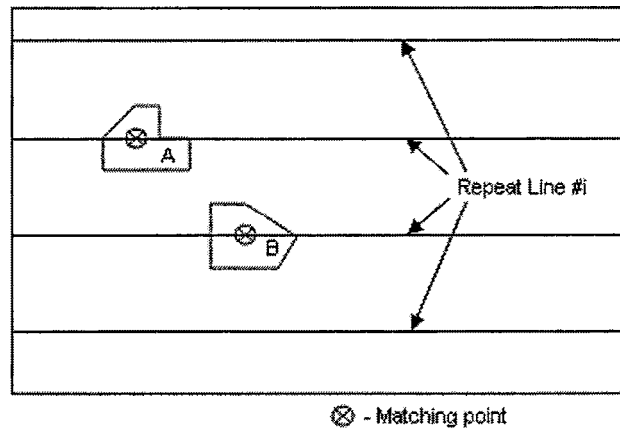


FIG. 1 Absolute Matching

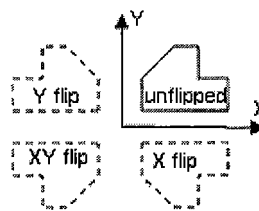


FIG. 2 Unflipped and Flipped Geometries

3.3.10 *graded piece repetition*, *n*—instance of a graded piece in a graded style.

3.3.10.1 *Discussion*—A graded piece may have several graded piece repetitions if its geometry is repeated several times in the graded style. A graded piece repetition can be:

3.3.10.2 *unflipped*—the repetition geometry is the graded piece geometry.

3.3.10.3 *X flipped*—the repetition geometry is obtained by an X flip of the graded piece geometry.

3.3.10.4 *Y flipped*—the repetition geometry is obtained by a Y flip of the graded piece geometry.

3.3.10.5 *XY flipped*—the repetition geometry is obtained by a Y flip and an X flip of the graded piece geometry.

3.3.11 *graded style*, *n*—explicit description of one or more specific sizes of a style, and related information used for production.

3.3.11.1 *Discussion*—A graded style is composed of graded pieces.

3.3.12 *marker*, *n*—main object that can be exchanged using this practice and that contains all the theoretical information needed to process nesting and production of a set of nested pieces on a flat material.

3.3.13 *markerOrder*, *n*—set of data containing all necessary information to nest a set of bundles.

3.3.14 *material*, *n*—description of the material structure. It includes material geometric information and optional repeat lines description.

3.3.15 *mutual constraint*, *n*—constraint that applies to several nested pieces in such way that all these nested pieces must respect this constraint in the same way.

3.3.16 *nested piece*, *n*—the smallest entity that can be nested. Can be nested or not.

3.3.16.1 *Discussion*—A nested piece is an instance of a graded piece repetition and contains geometrical description and positioning parameters.

3.3.17 *pattern piece*, *n*—design level description of an elementary part of a sewn product.

3.3.17.1 *Discussion*—The Pattern piece is a design entity, not suited for production. It is not included in the marker.

3.3.18 *plaid fabric*, *n*—fabric which has repeat lines in both the X and Y directions.

3.3.19 *plot line*, *n*—internal line intended to be plot.

3.3.20 *repeat line*, *n*—line that is a characteristic of a structured fabric and that is periodically repeated at a known increment throughout the whole material.

3.3.20.1 *Discussion*—An X repeat line is parallel to the X axis and is repeated along the Y direction. Similarly, a Y repeat line is parallel to the Y axis and is repeated along the X direction.

3.3.21 *relative pattern matching*, *n*—nesting specification where nested pieces positions are mutually constrained to have the same offset (non-symmetrical matching) or opposite offset (symmetrical matching) in regard to a repeat line.

3.3.22 *shrinkage*, *n*—dimensional reduction that a material will undergo in the part of the processing that will follow the cutting phase.

3.3.22.1 *Discussion*—Two-dimensional anisotropic shrinkage is modeled by two one-dimensional coefficients (X shrinkage and Y shrinkage) that represent respectively the reduction factor that will later apply along each of the X and Y directions.

3.3.23 *splice mark*, *n*—geometrical information requested to start the spreading process over again at correct position after it has been interrupted due to material physical defect processing.