PRECO-MIWA	MATERIAL or METHODS Specification	NO. 10003

TITLE: **White I Shape Underfilm (0.762mm (30 mils) wide x 5.842mm (230 mils) long x .229mm (9 mils) thick)**

REVISION DATE: **18-Jun-09**	MEMO:	ISSUE:	PAGE: **1 of 7**

ISSUE:	MEMO:	ORIGINATOR	DETAIL SPEC CHANGES:	DATE:

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1. SCOPE

This document contains general Preco-Miwa requirements, and those specific mechanical requirements for this part.

2. DESCRIPTION AND APPLICATION

2.1 DESCRIPTION: This specification covers the material and packaging requirements for the black "I shaped" underfilm material.

2.2 APPLICATION: The film, which is machine placed prior to the BGA, helps to secure the edges of the BGA package during reflow thereby reducing the stress on the solder bumps during drop testing.

3. MATERIAL REQUIREMENTS

3.1 MATERIAL PROPERTIES

Physical Property	**Typical Properties**
Hardness	95 Shore A
Tensile Properties	
Tensile Stress @ 100% Elongation	1600psi 11.0MPa
Tensile Stress @	3500psi

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300% Elongation	24.1MPa
Tensile Strength	8000psi 55.2MPa
Elongation at break	450%
Tensile Set @ 200% E	17%
Tear Strength	600pli
Abrasion Resistance	2.6mg loss
Typical Melt Temperature	185-192C
[X]Thickness	.009" ± .001" (.229mm ±.025mm)
Color	White

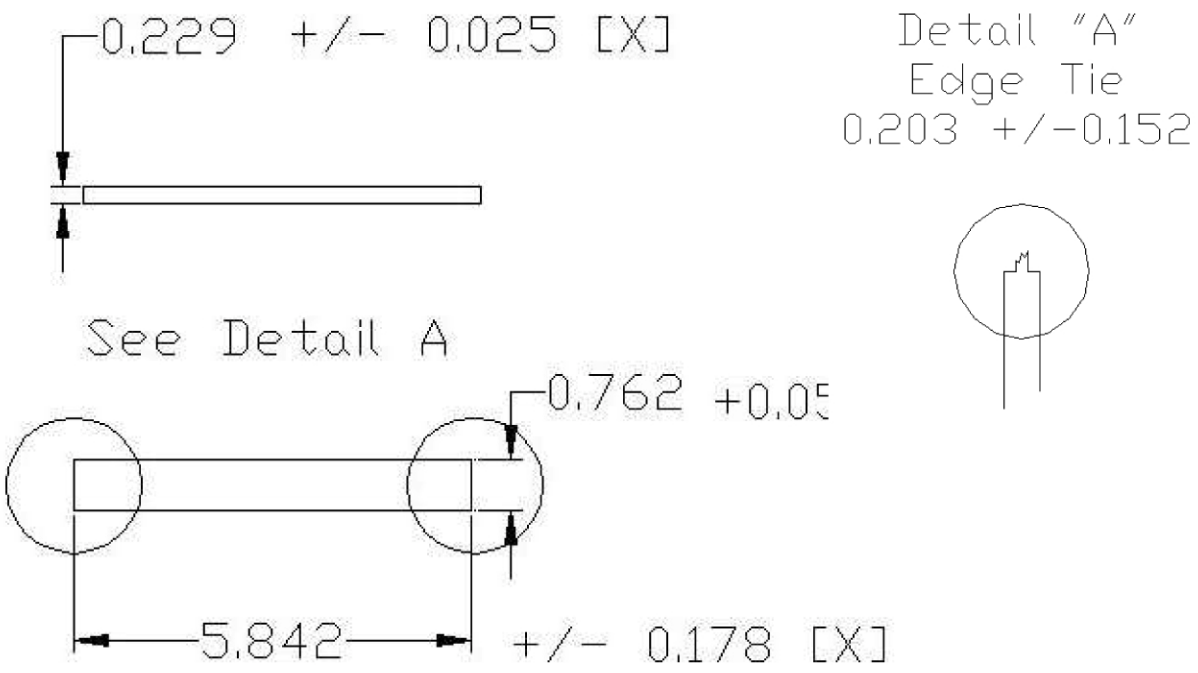
3.2 CONVERTED FILM REQUIREMENTS

3.2.1 Film must not be discolored due to excessive heat from the laser conversion process.

3.2.2 Film must be protected to prevent excessive dust particles.

3.2.3 Film must meet size requirements as indicated below:

SED



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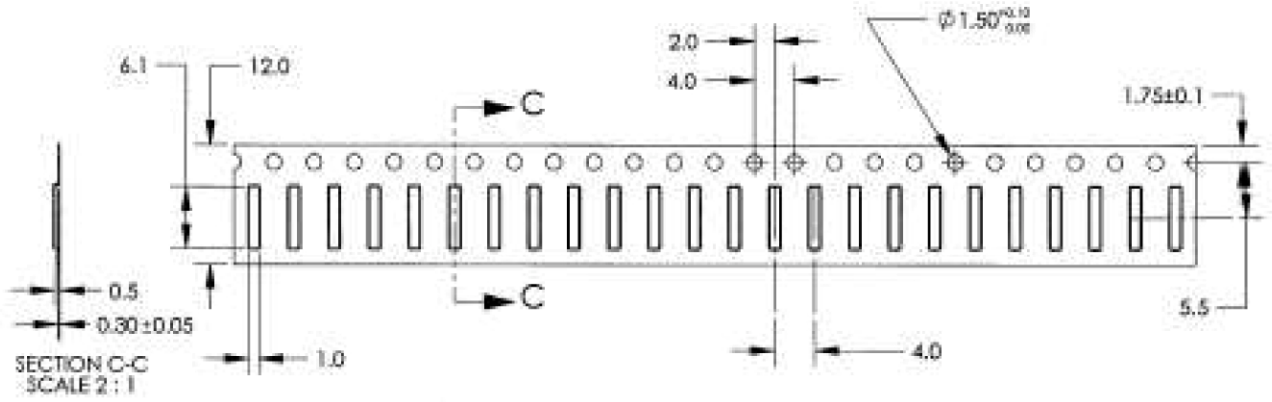
3.3 FACTORY AUTOMATION AND IDENTIFICATION

Tape and Reel Packaging with the following conditions:

3.3.1 Tape Width: 12 mm

3.3.2 Tape Pitch (part to part): 4mm

3.3.3 Component Orientation: Film must be orientated into the tape pocket with the laser cut side (laser entry) facing the bottom of the pocket to prevent the material from sticking to the placement nozzle. The company converting the film material will identify the laser cut side with a label.



All dimensions in mm

3.3.4 Reel Diameter: 178mm (7 inch)

3.3.5 Must use conductive tape cover with PSA.

3.4 MATERIAL STORAGE, PACKAGING AND SHIPMENT

3.4.1 Material must be stored at 25°C (±5°C) and with relative humidity between 40 - 60%.

3.4.2 If these parts are to be packaged in tape and reel per Preco-Miwa specification , components must be sealed prior to shipment so as to prevent contamination and damage while en route to Motorola. Damaged containers will be documented by Preco-Miwa Receiving and follow up action with the carrier or supplier will occur when appropriate. I

3.4.3 Any data should be correlated to the material received and be enclosed with the parts inside the packing container. When multiple packing containers are shipped as one lot, the box with the data should be marked "DATA IN THIS CONTAINER".

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3.4.4 The product will be supplied to Preco-Miwa in approved packaging. This will be in order of preference:
a. Reusable packaging
b. Packaging made from recycled material
c. Packaging made from recyclable material

3.4.5 Toxic, ESD generating or non-degradable material should not be used. .

Any packaging should be designed in collaboration with Preco-Miwa Engineering and manufacturing to maximize "design for manufacture". If possible, packaging should improve assembly techniques and reduce cycle times.

3.5 USER MANUFACTURING ENVIRONMENTS

All components must fully conform to electrical and mechanical specifications in Sections 6.3 and 6.4 after exposure to the manufacturing environments listed below for a minimum of three times. This maximum shall be determined by Preco-Miwa on a part-by-part basis, depending on whether or not the parts are to be reclaimed.

3.5.1 Component Handling: All necessary special handling techniques shall be adopted in order to avoid contamination of metallization / terminations. Examples include use of finger cots, plastic tweezers, etc.

3.5.2 Part Placement: A placement force of up to 500 grams is applied (using a 2.00 mm or a 0.080 inch diameter rod) to the center of the part while remaining in its tape carrier.

3.5.3 Lead Free Processing: Small Body component requirements unless otherwise determined.

Condition	Exposure
Average ramp-up rate (25°C to 217°C)	Less than 3°C /second
150 to 200°C	Between 60-180 seconds
> 217°C	Between 60-150 seconds
Time within 5°C of Peak	20-40 seconds
Peak Temperature	250°C +0/-5°C
Cool-down rate (Peak to 50°C)	Less than 6°C /second
Time from 25°C to Peak	No greater than 480 seconds

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