Unofficial Translation

Thai industrial standard
For
Cling Film

1. Scope

1.1 This standard covers types, dimensions and tolerances, materials, requirements, packaging, marking and labelling, sampling and criteria for conformity and tests for cling film.

1.2 This standard covers only cling film which made from Polyvinyl chloride and Polyethylene but does not include cling film to be use in automatic machine.

2. Definitions

For the purpose of this standard, the following definitions apply:

2.1 Cling film : Plastic film which is able to be stretched and fastened the material required to be wrapped and is self-binding.

3. Types

3.1 Cling film shall be classified according to plastic types into 2 types.

3.1.1 Polyvinyl chloride

3.1.2 Polyethylene

4. Dimensions and tolerances

4.1 Width and tolerances

The width of cling film shall be complied with those specified in labelling with tolerances in accordance with table 1.

Compliance is checked by testing of clause 10.2.1.

Table 1. Tolerances for width

(clause 4.1)

Width cm	% Tolerances
≤ 30	± 2
> 30	± 1

4.2 Length

The length of cling film shall not be less than those specified in labelling.

Compliance is checked by testing of clause 10.2.2.

4.3 Thickness and tolerances

The thickness of cling film shall be complied with those specified in labelling with tolerances not more than ± 15%.

Compliance is checked by testing of clause 10.2.3.

5. Materials

5.1 Types of plastic used for making cling film shall be complied with those specified in labelling .

Compliance is checked by the methods specified in TIS 656: Standard methods of analysis for plastics used for food contact .

6. Requirements

6.1 General requirements

6.1.1 Cling film shall be slightly elastic and self-binding.

6.1.2 Cling Films shall be freed from defects such as rents, joints, scratches, and any foreign matters.

6.1.3 In case printing is made at the core, cling film shall not be stained with ink.

Compliance is checked by unrolled the cling film for inspection.

6.2 Odour

Plastic shall not produce strong odour.

Compliance is checked by testing of clause 10.3.

6.3 Physical requirements

Physical requirements shall be in accordance with table 2.

Table 2 Physical requirements

(clause 6.3)

Item	Characteristic	Requirement		Test method
		Polyvinyl chloride	Polyethylene	
1	Tensile strength, Mpa, not less than			ASTM D 882
	-parallel with machine	4.0	3.3	
	-transverse with machine	2.2	2.5	
2	Elongation at break, percentage, not less than			ASTM D 882
	-parallel with machine	60	90	
	-transverse with machine	120	190	
3	Tear resistance, mN, not more than			ASTM D 1922
	-parallel with machine	800	200	
	-transverse with machine	500	150	
4	Haze, percentage, not less than	91	89	ASTM D 1003 Procedure A

6.4 Safety requirements

6.4.1 Safety requirements on migration

Extractable matter contents shall be in accordance with table 3 and the following conditions.

6.4.1.1 For all solvents except heptane at 95^{0} C : 30 min.

6.4.1.2 For heptane at room temperature : 1 h.

Compliance is checked by the methods specified in TIS 656.

6.4.2 Safety requirements on material

Safety requirements shall be in accordance with table 4.

Table 3 Extractable matter content

(clause 6.4.1)

Items	Characteristics	Solvent	Requirements
1	The quantity of potassium permanganate, required for reactoin, mg/dm^3 of solution, not more than	Water	10
2	Heavy metal (calculated as Lead), mg/dm^3 of solution, not more than	Acetic acid 1+24	1
3	Residue from volatilation, mg/dm^3 of solution, not more than	Water	30
		Acetic acid 1+24	30
		ethanal 1+4	30
		heptane	150

Table 4 safety requirements on material

(clause 6.4.2)

Items	Characteristics	Max. requirements, mg/kg		Test method
		polyvinyl chlloride	polyethylene	
1	Lead	100	100	
2	Cadmium	100	100	
3	Dibutyl tin compounds	50	-	TIS 656
4	Ester of cresol phosphoric acid	1 000	-	
5	Vinyl chloride monomer	1	-	
6	Di-2- ethyl hexyl phthalate	Nil	-	clause 10.4

7.Packaging

7.1 The roll of cling film shall be covered with suitable material to prevent scratches or any defects impair further use.

8. Marking and labelling

8.1 On covered material of each roll of cling film shall at least bear number, letter or mark indicating legibly and clearly the following information:

(1) Name of product.

(2) Type.

(3) Width × length × thickness in centimetres × metres ×micrometres.

(4) Month and year of manufacture .

(5) Warnings

- Should not be used to wrap food when cooked in microwave oven (except for warming or for ice melting)
- Do not come in touch with highly oiled food or fat, and food with alcohol.

(6) Name of manufacturer or factory or registered trade mark.

8.3 In case foreign language is used, the meaning shall correspond to that in Thai.

8.4 Any person who manufactures products complying with this standard may use the Standard Mark in connection with his products only after having received a license from the Industrial Product Standards Council.

9. Sampling and criteria for conformity

9.1 Lot : Cling film of the same type and dimension which made from the same process, manufactured or delivered or purchased at the same time.

9.2 Sampling and acceptance shall conform to the sampling plan given below or its technical equivalent.

9.2.1 Sampling and acceptance for test on dimensions, general requirements, packaging and marking and labelling

9.2.1.1 Three rolls shall be drawn at random from the same lot.

9.2.1.2 Provided all samples meet the requirements of clause 4, clause 6.1, clause 7 and clause 8, the lot shall be deemed to comply with the requirements.

9.2.2 Sampling and acceptance for test on materials and safety requirements.

9.2.2.1 One roll shall be drawn at random from the same lot.

9.2.2.2 Provided all samples meet requirements of clause 5 and clause 6.4, the lot shall be deemed to comply with the requirements.

9.2.3 Sampling and acceptance for test on odour and physical requirements.

9.2.3.1 Three rolls shall be drawn at random from the same lot .

9.2.3.2 Provided the samples meet the requirements of clause 6.2 and clause 6.3, the lot shall be deemed to comply with the requiremen

9.3 Provided the samples meet the requirements of clause 9.2.1.2, clause 9.2.2.2 and clause 9.2.3.2, as applicable, the lot shall be considered as conforming to this standard.

10. Testing

10.1 Test condition

Sample shall be kept at 27± 2 ^{0} C and 65±5 % relative humidity for not less than 40 h, then conduct tests in this condition. If testing in this condition cannot be done, testing shall be performed immediately after the samples have been removed from such condition. Test on dimentions and general requirements the test shall be conducted in room temperature.

10.2 Dimensions

10.2.1 Width

10.2.1.1 Apparatus

Metal ruler with 1 mm in accuracy .

10.2.1.2 Procedure

Width of sample, while in the roll, shall be measured at four different positions on the outer side of the roll.

10.2.1.3 Report

All values shall be reported.

10.2.2 Length

10.2.2.1 Apparatus

Counter of direct touch roller type with 1 mm accuracy in accordance with fig 1, or equivalents.

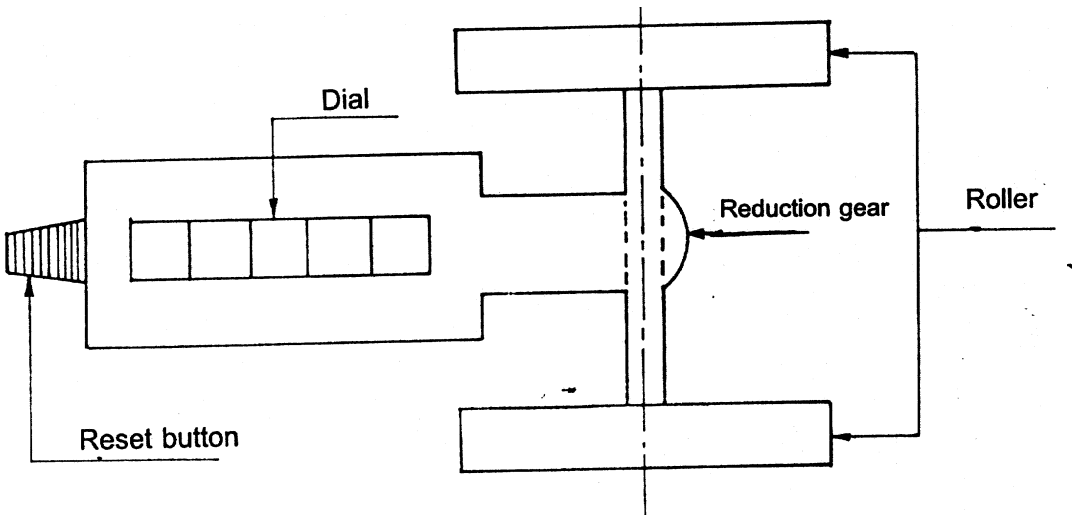

Fig 1 Apparatus test on length

(clause 10.2.2.1)

10.2.2.2 Procedure

Reset the dial. The counter shall be placed so that length of both roller come in touch with sample at the starting point of the cling film. Unroll the cling film and allow the rollers to come in touch and move along with sample until the end is reached. Read the length from the dial which is equal to the length of perimeter of the rollers multiply by number of rounds.

10.2.3 Thickness

10.2.3.1 Apparatus

Measuring apparatus with 1 mm in accuracy .

10.2.3.2 Procedure

Cut sample perpendicular to the length to be made as test specimens 0f 200 mm width. Total number of test specimens shall be five. Thickness shall then be measured at ten different positions for each test specimen.

10.2.3.3 Report

All vaues shall be reported.

10.3 Odour test

10.3.1 Apparatus

Glass bottle 250 ml with tight stopper.

10.3.2 Preparation of test specimens

Cut sample to be used as test specimens to approximately 0.5 m^2 of area.

10.3.3 Procedure

Squeeze test specimens with hand and put into the flask, then close with stopper. Stand for 24 h, then check whether it produces strong odour.

10.4 Determination of di-2-ethyl hexyl phthalate

10.4.1 Apparatus

Gas Chromatograph, with the following conditions:

(1) Column, 2 m by 3 mm inside diameter glass tube packed with 20% PEG on 20 mesh Chromosorb W

(2) Column temperature 165^0 C.

(3) Injection port temperature 220^0 C

(4) Hydrogen flame ionization detector that can be used at 220^0 C.

10.4.2 Reagents

10.4.2.1 Carbon tetrachloride, analytical grade

10.4.2.2 Methnal, analytical grade

10.4.2.3 Ethanal, analytical grade

10.4.3 Preparation of standard solution

Weigth 100 mg of purity of di-2-ethyl hexyl phthalate to acquire the actual weight and transfer to a 100 ml volumetric flask. Dilute to the mark with ethanal and shake to mix.

10.4.4 Preparation of sample solution

Cut sample to be used as test specimens. Each of the test specimen shall be in square shape with 1 cm^2 in area. Mix up the test specimens, weight approximately 10 g to acquire the actual weight and tranfer to 100 ml Erlenmeyer flask. Add 100 ml of carbon tetrachloride and 50 ml of methanal and mixwell. Connect the reflux condenser to the flask and immerse into waterbath at the temperature 80^0 C for 3 h for refluxing . Remove the flask from water and allow to cool. Filter through Watman No1 filter paper. Dry the

filtrate by rotary evaporator. Dissolve the residue into small quantity of ethanal and make up to 5 ml with ethanal.

10.4.5 Procedure

10.4.5.1 Inject 0.003 ml of standard solution into Gas Chromatograph. The chromatogram of standard solution is shown.

10.4.5.2 Inject 0.003 ml of sample solution into Gas Chromatograph. The chromatogram of sample solution is shown.

10.4.5.3 Compare the chromatogram of standard solution with sample solution. The position of peak in chromatogram of standard solution shall not be the same as the position of peak in chromatogram of sample solution.
