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Creasing (using steel rules) of paperboard for water vapor transmission (WVTR) testing

Scope

This method is intended to provide a standard creasing procedure using male/female steel rules for coated or laminated paperboard samples prior to a water vapor transmission rate (WVTR) test to evaluate the creased barrier. Samples of appropriate size for WVTR testing may be creased by this procedure in either machine or cross direction over a wide range of thicknesses.

Safety precautions

There are no specific additional safety precautions for this method.

Apparatus

1. *Creasing assembly*, consisting of five flat, polished steel tracks or bearers 19 × 300 mm (0.75 × 11.8 in.), separated 82.5 mm (3.25 in.) and mounted on a 19-mm (0.75-in.) thick seasoned laminated plywood base. Midway between each pair of steel tracks a set of male rule and female channel creasing matrixes is mounted. The female ends are secured by bending the matrix channels over the male rules into a restricted slot in the plywood die base (see Fig. 1). The top surface of all the male creasing rules is in the same flat plane as the steel tracks. Each of the male rules is 300 mm (11.8 in.) long. Creasing rules Nos. 1 and 2 are 0.71 mm (0.028 in.) wide, while creasing rules Nos. 3 and 4 are 1.07 mm (0.042 in.) wide. Female channel creasing matrix dimensions mounted over the male rules are listed by position in Table 1.
2. *Hand roller*, polished steel or aluminum, 152 mm (6 in.) wide by 51 mm (2 in.) in diameter, with handle and bracket to roll creases into samples.
3. *Flat straightedge*, at least 25 mm (1 in.) wide by 300 mm (11.8 in.) long.

Approved by a Working Group of TAPPI in accordance with the Useful Method Guidelines

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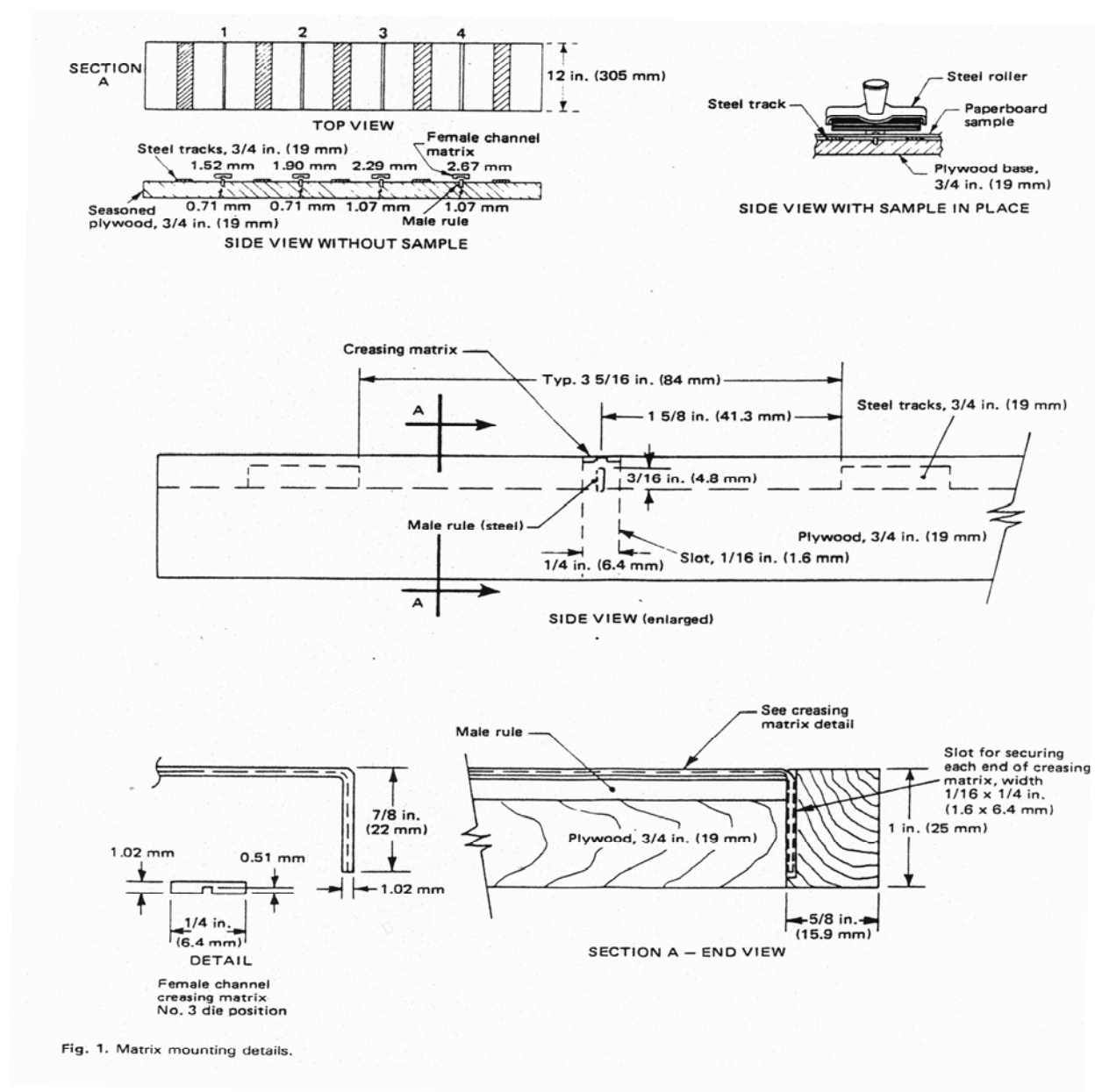


Table 1. Dimensions of creasing assembly

	Die position number			
	1	2	3	4
Width:				
Male, mm (in.)	0.71 (0.028)	0.71 (0.028)	1.07 (0.042)	1.07 (0.042)
Female, mm (in.)	1.52 (0.060)	1.90 (0.075)	2.29 (0.090)	2.87 (0.105)
Paperboard caliper range, mm (in.)	0.35-0.44 (0.014-0.017)	0.45-0.57 (0.018-0.022)	0.58-0.70 (0.023-0.027)	0.71-0.82 (0.028-0.032)
Female depth, mm (in.)	0.38 (0.015)	0.38 (0.015)	0.51 (0.020)	0.64 (0.025)