

Dual size footwear

the issues, advantages and disadvantages of producing dual-size marked footwear.

by Mike Wilson



The phrase 'dual sizing' refers to the practice adopted by some manufacturers and retailers of providing their customers with a choice of only half the number of footwear sizes that would normally be available. Thus, for example, instead of making six different UK or US sizes (such as 4, 5, 6, 7, 8 and 9), the sizes would be paired up, and only three sizes would be produced: 4/5, 6/7 and 8/9.

This is most commonly seen in children's footwear, but is also found in some men's and women's shoes. Table 1 shows data taken from a South American footwear brand owner's website indicating how this company groups sizes for the different genders in three different shoe sizing systems (US, Brazilian and European). Other manufacturers may disguise their dual sizing approach by, for instance, simply marking their footwear as 'small', 'medium' or 'large'.

Table 1: A South American company's dual sizing groups for different genders

	USA	Brazil	Euro
Women's	5/6 7/8 9/10 11/12	35/36 37/38 39/40 41/42	37/38 39/40 41/42 43/44
Men's	7/8 9 10/11 12/13	39/40 41/42 43/44 45/46	41/42 43/44 45/46 47/48
Children's	11/12c 13c 1/2c 3/4c	27/28 29/30 31/32 33/34	29/30 31/32 33/34 35/36

Dual size marking should be considered only for the limited range of footwear for which good fitting properties are not critical, such as slippers and beach or shower sandals. This usually means unstructured footwear and/or mule styles without backs. These are the most accommodating types of footwear in terms of being potentially acceptable to wearers with a wide range of foot lengths.

Pros and cons

Clearly, the commercial advantage of dual size marking is the appreciably reduced production costs – achieved by halving the number of sizes of upper and bottom patterns, moulds and lasts required, depending

on the construction method. Retailers also benefit from the requirement of less merchandising space, thus enabling them to provide customers with a range of style choices they would otherwise be unable to offer.

The potential commercial disadvantage is a reduced number of sales, as the population coverage is likely to be reduced when compared to providing every whole size. Those lost sales would be from customers who find the dual sized footwear either too big or too small, leading to disappointment and the decision to shop elsewhere. In addition, there are possible safety and foot health risks to the wearer to be considered, as discussed below.

Foot length and width

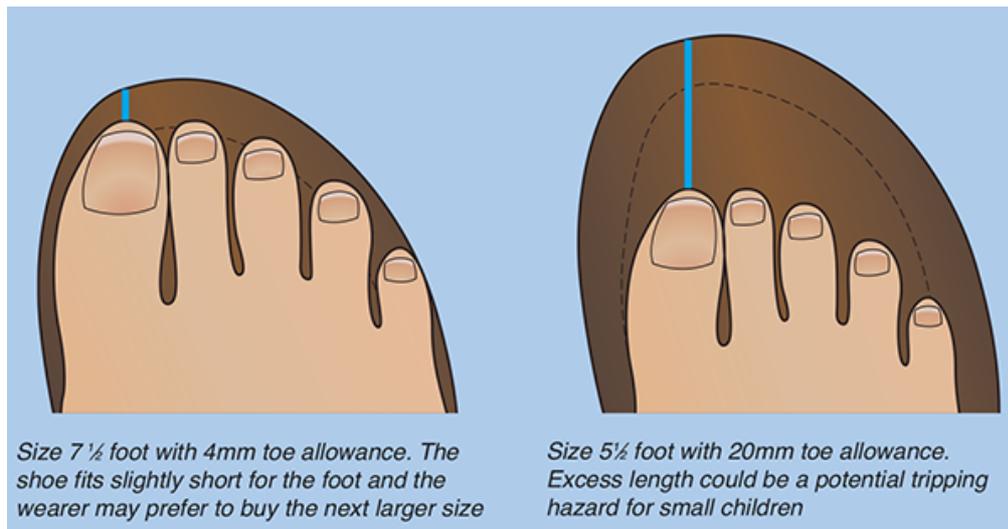
To better understand the challenge of designing dual sized footwear, we need to consider the length of feet that must be accommodated. On the UK and US sizing systems, the interval between whole shoe sizes is 8.47mm. Thus, a child's UK size 6 shoe would be expected to accommodate feet ranging from approximately 134mm to 142mm in length. However, the range doubles for dual size marked footwear in size 6/7, which is then aiming to accommodate feet from about 134mm to 150mm long – a spread of 16mm (see table 2).

Table 2: Dual sizing in terms of children's foot length

UK size	4	5	5	6	6	7	7	8	8	9	9	10
	1/2		1/2		1/2		1/2		1/2		1/2	
Foot length (mm)		130	134	138	142	146	150	153	157	161	165	169
Dual sizes				6/7				8/9				

When a toe allowance of at least 8mm is added to the foot length to estimate the insole length, we see that the shoe might be at least 20mm longer than the smallest foot expected to be accommodated by the footwear. This amount of material in front of the toes might then be considered to present a tripping hazard – particularly for small children (figure 2).

Figure 2: Illustration of two different feet ranging in size from 5 1/2 to 7 1/2 UK fitting in a dual 6/7 shoe



The effect is not so great in the European sizing system, because the length interval between sizes is smaller – 6.67mm. Thus, a European dual size range shoe is expected to accommodate a spread of foot lengths which varies by up to 13mm.

A comparable analysis of foot width (joint girth) dimensions shows that a UK size 6/7 is expected to accommodate feet differing in girth by up to 12mm (two width fittings), or 10mm if a continental dual size. Clearly, this is very difficult to achieve unless the shoe upper incorporates an elasticated or adjustable strap fastening system.

Fitting standards

At SATRA, we generally fit footwear to accommodate the largest size foot expected to wear the product. We do this on the basis that if the footwear is too small, undue pressure will be exerted on the foot, leading to potential discomfort and, particularly in the case of children's delicate developing feet, potential injury. A slightly more generous fit, while possibly feeling less secure, will not normally cause discomfort.

In the case of dual size marked footwear, this means, for example, satisfactorily accommodating a size 7 foot in a size 6/7 shoe. The size 6 foot will almost inevitably find the shoe generous and the wearer might consider trying size 4/5, but will most probably find this too close fitting.

Design considerations

Backless shoes, such as mules and toe post sandals can work tolerably well when marked in dual sizes, because they stay on the foot only by virtue of the wearer having to push his or her toes into the front of the shoe. There must be a change of gait and foot function away from 'normal' gait in order to wear this type of product without it falling off the foot. This can cause small children to walk with a 'sliding' foot action.

Because the foot must push forward in a backless shoe, the toe clearance at the front of the shoe will effectively be the same, irrespective of the length of the wearer's foot. The difference in foot length is seen at the heel, where excessive length causes relatively few problems for most people.

A soft bootie slipper can also work reasonably well, because the ankle closure holds the shoe on the foot. As long as the ankle section opens sufficiently to permit ingress of the largest size foot and has a functioning fastening system, fit over the foot itself is not essential to the footwear staying on the foot.

Ballerina-type children's slippers are quite commonly seen in dual size markings. However, these are not ideal styles for dual size marking. In order to stay on the foot, they rely on clamping the foot between the box toe and back curve, and having the correct topline length. A degree of pressure on the foot from the topline is, therefore, required. If the topline is, for example, just 10mm too long, feet will 'walk out'. Thus, it is highly likely that size 6 feet in a size 6/7 shoe will be an unacceptable fit. In this case, sales are likely to be lost, or children's foot health further compromised by squeezing into the size smaller shoe.

Increasing topline height and vamp length to increase foot coverage by the upper on ballerina styles improves security and enables pressure at the topline to be reduced. Better still, adding an instep strap can take considerable pressure off the topline and toes and give far greater accommodation of a broad range of foot dimensions. Indeed, these points are both valid, whether dual size or whole sizes are available.

Finally, with any dual size product, it will be advantageous to use a thin, flexible sole. This will reduce the pressure on the upper side of the foot, and reduce the likelihood of heel slip and the foot walking out of the product.

In conclusion

Although SATRA does not recommend dual sizing due to the potential foot health implications (particularly for children), and potential lost sales over all genders, we can advise and help members to optimise the fitting properties where they decide that dual sizing is commercially advantageous.

How can we help?

Please email SATRA's footwear testing team (footwear@satra.com) for further details on the dual sizing of footwear.

Publishing Data

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