STANDARDS

2. STANDARDS TO ACHIEVE

A supplier may have ITTF approved balls differing in:

- colour i.e. white and orange
- material i.e. chemical composition, which must be celluloid-free
- seam type i.e. with and without
- brand and ball name which must be different when material or seam type differ

2.1 PRODUCT AND BRAND

The Approval of the ITTF, the country or the expression "made in ....." are not considered to be part of the product or brand name. The product or brand name must be unique and may not be used for another type of ball, especially not for an unapproved one.

All balls from a brand with the same product name must have the same quality. An ITTF approved ball may lose its approval if the company markets another non-ITTF-approved ball with the same or similar appearance as the ITTF approved one, with which it could be confused.

The ITTF will make its best effort to ensure that the brand name does not infringe on the already existing brands. The ITTF is not responsible for any illegal use of registered trademarks. Verifying the correct and legal use of trademarks is not part of the ITTF approval procedure.

2.2 MATERIAL

The Laws do not prescribe the material, leaving manufacturers free to experiment in order to optimize it. Note however that, to ensure the quality of ITTF approved balls, the options for manufacturing are limited to a certain extent. In any case, the chemical composition must be non-flammable, especially celluloid-free.

The performance and the specifications for celluloid-free balls are as identical as possible to the former ones for celluloid, with slight adjustments that proved reasonable to support the task of inventing a new material. Our goal is that balls of any material shall have the same good level of quality and stable properties, which must not change, except a regular ageing, which should be kept at a minimum. Permanent indentations or stress whitening as well as a flimsy or battered appearance must be clearly avoided, as they affect the playing properties of the balls.

2.3 MANUFACTURING

Only the following options are allowed for manufacturing an ITTF approved ball:

a. the ball is completely produced by company **A** (i.e. only *one* manufacturer)
b. the halves are made by injection moulding at company **A**, glueing and final steps at **B**
c. balls are produced through version a) or b) and sent to a final agent to make the final quality control under the obligation that all good balls will be stamped as ITTF approved quality (for example "3 star") and for a predefined brand, and that all failed balls will be treated differently (for example stamped as "1 star" or "2 star").

The following options are NOT allowed:

a. to involve more than 2 manufacturers, for example halves produced in company **A**, glued in company **B**, final steps in company **C**, quality control in company **D**
b. to send balls to an agent who decides on his own which quality will be stamped in which way and/or to which brand it is delivered.
c. to mix balls from different producers into the same ITTF APPROVED product from one brand
d. to mix balls of different colour tones in the same packaging and with same date code.

New materials, new manufacturing processes or a change of the producer, what could result in different properties, need to be announced to ITTF and require new testing.

2.4 APPEARANCE

The ball shall be white or orange, and matt. Balls of the same brand shall be identical in appearance, except that the same name may be used for white and orange balls.

A ball must appear to be uniform. In particular there must appear maximum one seam. After the two halves of the ball have been jointed in manufacturing, the ball may be subsequently treated for finishing. Note however that the ball must be smooth on the seam. Also, if the equator of the ball - i.e. the joint - is not coplanar with the line of separation of the two halves of the mould, another line will be formed, looking like a second seam. This is not acceptable.

2.5 SPECIFICATIONS

The following tables will show for each tested property the minimum and maximum value that is still acceptable ("conformity") as well as the maximum acceptable standard deviation ("regularity"). In some cases, a small amount of balls is allowed to be outside the ranges ("allowed failures") and balls with extreme, likely erroneous, results are completely disregarded ("outliers"). For further explanations please refer to the testing procedures.

WEIGHT

Law spec: 2.7 g	Lower Limit	Upper Limit
Single ball tolerance	2.67 g	2.77 g
Sample mean tolerance	2.69 g	2.76 g
Sample standard deviation	**---**	0.03 g
Allowed failures	1 ball	
Outlier when outside of	2.60 g	2.85 g

SIZE

Law spec: 40 mm	Lower Limit	Upper Limit
Single ball tolerance	40.00 mm	40.55 mm
Sample mean tolerance	40.00 mm	40.40 mm
Sample standard deviation	**---**	0.04 mm
Allowed failures	0 balls	
Outlier when outside of	39.70 mm	40.75 mm

LACK OF SPHERICITY

Difference between maximum and minimum diameter of the same ball

	Lower Limit	Upper Limit
Single ball tolerance	---	0.24 mm
Sample mean tolerance	---	0.17 mm
Sample standard deviation	---	0.04 mm
Allowed failures	0 balls	
Outlier when outside of	---	0.30 mm

BOUNCE

Rebound height of ball bottom after being dropped from 305 mm on a standard steel block

	Lower Limit	Upper Limit
Single ball tolerance	240 mm	265 mm
Allowed failures	0 balls	

VEER

Deviation from center line after rolling 1000 mm; each ball rolled 3 times

	Lower Limit	Upper Limit
Single roll tolerance	---	175 mm
Single ball tolerance (3 rolls)	2 rolls	---
Allowed failures	2 balls	

HARDNESS

Indentation under force

Balls with seam	Lower Limit	Upper Limit
Single ball tolerance at poles	0.68 mm	0.81 mm
Allowed failures	1 ball	
Sample mean tolerance at poles	0.69 mm	0.81 mm
Sample mean tolerance at seam	*0.69 mm*	*0.81 mm*
Within ball variation	---	0.15 mm
Sample mean within ball variation	---	0.08 mm
Sample standard deviation at poles	---	0.04 mm

Balls without seam	Lower Limit	Upper Limit
Single ball tolerance	0.70 mm	0.90 mm
Allowed failures	1 ball	
Sample standard deviation		0.04 mm