

# The new plastic balls



## Questions and Answers

**by Dr. Torsten Kühneth**

Equipment Committee

Member in charge of ball approvals

July 2014

## Q How can I know if a ball is ITTF Approved and the type (material, seamless/with seam)?

- A
- The ITTF regularly updates the **List of ITTF Approved Balls**, which should be your **only official source of reference** and can be found on [ITTF.com>Equipment>Balls](https://www.ittf.com/Equipment/Balls).
  - A pdf printable version of this list is always available on the right side column of the link above.
  - All balls on the list have a note, indicating whether they are:
    - **Celluloid**
    - **Plastic with seam**
    - **Plastic seamless**
  - A new ball can enter the above mentioned list any time of the year.
  - If a ball is suspended for any reason, we give a 6-month notice for customers to change brand.

**Q** Which manufacturers already have ITTF Approved plastic balls? What type of ball (with or without seam)?

**A** 5 manufacturers

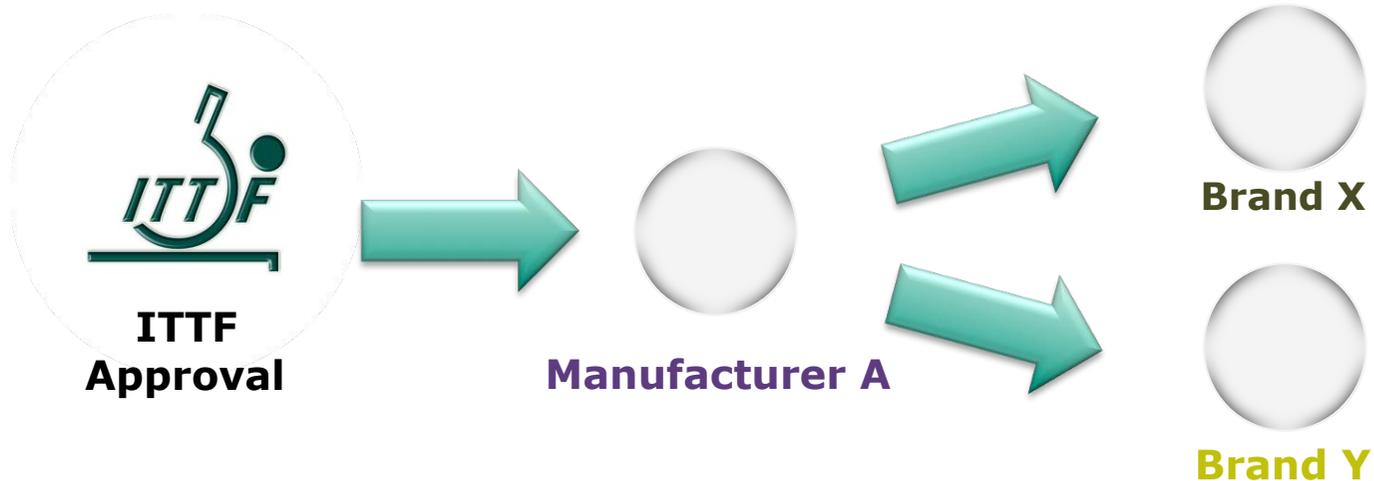
Ball Manufacturer	Country *	Type	Date of approval
Double Happiness / DHS	China	With seam	24.01.14
Double Fish	China	With seam	24.01.14
Xushaofa	China	Seamless	24.01.14
Nittaku	Japan	With seam	25.03.14
Weener	Germany	With seam	Test passed 29.05.14 / Final approval pending

\* *Company's Headquarter*

**Q** Then why on the list of ITTF Approved Balls there are more than 5 brands of new plastic balls?

**A** Simple explanation:

- Plastic balls of **different brands** can have the **same manufacturer**.
- They are just **branded differently** and carry the stamp of each company.
- The brand's owner is conducting **individual quality management, market distribution, service etc.**
- These balls are **approved under the simplified procedure**, guaranteeing the quality, compared to the source manufacturer and will be tested by ITTF randomly (procedure explained later – slide 11).



**Q** How do I distinguish a plastic from a celluloid ball, when in doubt?

**A** A simple observation of the stamp can give you this information. Just check for the below:

- All plastic balls are carrying „40+“ on the stamp.
- All celluloid balls are carrying „40“ (without +) on the stamp.



Plastic Ball



Celluloid Ball

- This is a **requirement for the stamp** but **not for the brand name** (the name which appears on the list of ITTF Approved Balls). For example: Brand **A 40+\*\*\*** and Brand **B\*\*\*** can both be plastic balls).

**Q** Will ITTF make plastic balls obligatory for all events and leagues in the world?

**A** NO. Facts are:

- ITTF will be using the plastic balls for **all World Title and ITTF Sanctioned events.**
- **All other events** (international, national etc.) are **free to choose the type of ball** they wish to use. It's up to each Organizer or National Association (NA) to choose.
- **ITTF is not intending to withdraw celluloid balls** from the list of ITTF Approved Balls, as long as manufacturers continue to produce them and renew the approval.
- ITTF is just expecting that celluloid balls will continuously disappear from the market without regulation, because their production, storage etc. will no longer be profitable compared to plastic balls.

**Q** Couldn't there be disadvantages in matches, when one event is played with celluloid, but another with plastic balls?

- A**
- Tolerances between celluloid balls are as big as between celluloid and plastic! **Uncertainty is the same as before.**
  - **There are no „new“ technical disadvantages.**
  - Example:

Today	Future
<b>Club A: Celluloid ball X</b>	<b>Club A: Celluloid Ball X</b>
Weigh: 2.67 gr	Weigh: 2.67 gr
Hardness: 0.70mm (hard)	Hardness: 0.70 mm (hard)
Rebound: 259 mm	Rebound: 259 mm
<b>Club B: Celluloid Ball Y</b>	<b>Club B: Plastic Ball Z</b>
Weight: 2.77 gr	Weight: 2.75 gr
Hardness: 0.80 mm (soft)	Hardness: 0.81 mm (soft)
Rebound: 241 mm	Rebound: 241 mm

**Q** In autumn 2013 I tested a plastic ball, of which the sound and properties were not good. Will the approved balls be different from prototypes?

- A**
- **Yes**, in some properties significantly!
  - **First balls approved: 24th January 2014.**
  - **The samples you tested maybe have been older samples:**
    - In 2013 we had up to 4 test runs per manufacturer, under the ITTF testing.
    - The ITTF did not compromise with the specifications therefore the manufacturers worked step by step towards these demands and **improved the first samples** to meet the ITTF requirements (e.g. rebound, hardness).
    - Also, the **sound improved** due to testers' feedbacks and there is no longer a significant sound difference from celluloid.
  - **The approved balls are representing significant improvements**, compared to all prior plastic balls. They are not comparable to balls available in autumn 2013.

**Q** Will there also be orange plastic balls?

**A** Possibly yes:

- **ITTF did not change the admitted colours** (matt white, matt orange).
- Due to the intensive research and testing needed, manufacturers have first concentrated on white balls. They may add orange when the time has come.

**Q** Which properties are tested for the approval and what are the differences between celluloid and plastic balls?

**A** Look at the table below for details

Property	Tolerance range (single ball)			Remark
	Celluloid	Plastic with seam	Plastic seamless	
Weight	2.67 - 2.77 g	2.67 - 2.77 g	2.67 - 2.77 g	Plastic = Celluloid
Diameter	39.5 - 40.5	40.0 - 40.6	40.0 - 40.6	Plastic more precise, Max slightly bigger
Roundness <sup>1)</sup>	< 0.35 mm	< 0.25 mm	< 0.25 mm	Plastic is better
Rebound <sup>2)</sup>	240 - 260 mm	240 - 260 mm	240 - 260 mm	Plastic = Celluloid
Veer <sup>3)</sup>	Max. 2 out of 24 balls may fail >1x			Plastic = Celluloid
Hardness <sup>4)</sup>	P: 0.68 - 0.81 S: 0.72 - 0.83	P: 0.68 - 0.81 S: 0.72 - 0.83	R: 0.70 - 0.90	Plastic with seam = Celluloid
Colour	Maximum deviation from a defined „white“-Value			Plastic = Celluloid

1) Difference between max and min diameter measured on the same ball

2) When dropped onto a specific steel plate from 305 mm of height

3) Failure = exceeds 175 mm of deviation from center line within 1m of rolling; 3 times rolling per ball

4) Indentation of the ball at a force of 50 Newton (P: both poles, S: seam, R: random spots)

**Q** What is the specific material (polymer) the new plastic balls are made of?

- A**
- There is **no specification for the exact polymer** to be used and also **not for the production process**.
  - As long as the materials are **not dangerous for health** and the **general advantage compared to celluloid is ensured** (for example, easier storage and transport due to lack of inflammability), manufacturers will test different production processes to end up with the best product.
  - **Material may be different** from manufacturer to manufacturer, provided that all required specifications for the ball are respected.

**Q** How will ITTF ensure that the specifications, which were met in the approval test, will also be met in mass production? Will balls become even better after approval?

- A**
- 1. Quality control is done through the ITTF random testing:**
- Balls will be bought directly in retail shops by ITTF, randomly and anonymously, and will be tested in an ITTF laboratory.
  - Repeated failure to meet the tolerance ranges is resulting in suspension of the approval.
  - Starts summer 2014 for plastic balls and is implemented on a 2-year basis (was always in place for celluloid balls).

**2. Support**

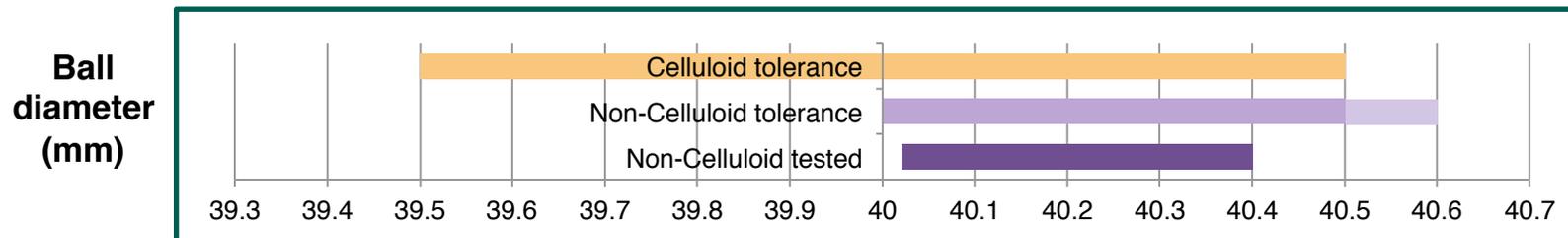
- ITTF is communicating lab results in detail to manufacturers.
- Critical values are explicitly pointed to, and recommendations are made accordingly.

**3. Competition**

- Manufacturers interested to further optimize their product.
- Material research still „young“ therefore it will be continued.
- Lower ball quality = competitive disadvantage.

# Q Why did the ITTF change the diameter specification? Will the new ball fit all existing robots?

- ## A
- ITTF's goal: 40mm diameter → set symmetrical range
  - Previous balls testing showed:
    - Celluloid balls not 40.00 on average, rather smaller (motivation: production process, playing properties).
    - 1mm of tolerance is unnecessary, diameter is one of the best controllable properties during industrial production.
  - **The ITTF does not change any rule but improves the requirements:**
    - **Diameter tolerance** for single ball changes from 39.50-40.50mm to **40.00-40.60 mm**.
    - Real, measured diameters of the approved plastic balls are between 40.02 and 40.40 mm
    - This is within the maximum tolerance range of celluloid.
  - **Therefore, all ball robots of 40mm celluloid balls should be able to fit all approved plastic balls as well.**



**Q** All fine, but technical properties are not everything. Important for me as a player are also speed, spin and durability of the balls.

**A** Establishing the technical properties is only the first of several steps.

The following two pages will show the **complete scheme of the plastic balls introduction process.**

Introducing the plastic balls combines technical quality assurance with the feedback of players and manufacturers.

## Q Introduction workflow of plastic balls in 2014 (1)

A **Step 1:** Manufacturers must first be able to establish the **technical** properties of the ball. Before that, it is useless to test the **playing** properties of the ball, because it would be different by definition.



**Step 2:** Validation of the non-technical properties by the players:  
Speed, spin, durability



„To achieve the best quality of the balls, it is a good idea to give more space to the manufacturers. Increasing the weight might help to improve the quality.“ (*Vladimir Samsonov, Chairman of the Athletes Commission*)

„If we temporarily adjust three tolerances, we can guarantee immediate mass production while research on materials will continue in order to establish the original tolerances with further improved playing properties.“ (Manufacturers' representatives)

## Q Introduction workflow of plastic balls in 2014 (2)

A Players and manufacturers: „Minor temporary adjustment of tolerances is not a deficiency and is helping the introduction process a lot.“

↓

**Step 3:** ITTF Board Of Directors decision, Tokyo, 2nd of May 2014: **Minor adjustment of tolerances** for weight, rebound and hardness, immediately until January 1st, 2016 (Updated Technical Leaflet T3)

↓

**Step 4: Mass production** for use from July 1st, 2014, together with **ongoing research and optimization** of material.

↓

**Goal:** Until January 1st, 2016, getting back to original tolerances. **Plastic balls with completed technical and playing properties.**

**Q Why did ITTF then not just extend the deadline for the introduction of plastic balls? It was already delayed once, from 2012 to 2014. And why is it done at all?**

- A**
- **Because a project without deadline will never be finished!**
    - Lack of economic motivation for manufacturers
    - Lack of testing motivation for players
    - Priority and attention of all stakeholders (associations, media, ...)
  - **Other than in 2012, the technical properties are now feasible!**
    - Every transition has its small troubles at the beginning.
    - Reacting to such troubles is the crucial point, and this is done: ITTF reacting to availability, answering any questions etc.
    - Conditions are equal for everybody.
  - **Producing plastic balls was inevitable: To ignore increasing regulatory restrictions for celluloid (production, import, storage, transport) would be irresponsible!**

## Q Who is ITTF actually?

### A ITTF:

- Is the **controlling** and **governing authority** for table tennis throughout the world.
- Consists of the **affiliated National Associations**.
- **Decision-making bodies** are the **AGM** (Annual General Meeting), **EC** (Executive Committee), **BoD** (Board of Directors), **DCC** (Development & Continental Council)
- **Committees and Commissions** (ie. Equipment Committee, Rules Committee, Umpires & Referees Committee, Athletes Commission etc.)
- The **Committees and Commissions** are **working out proceedings in contents** and taking care of **consulting** in their expert area.
- The **decision making bodies** are **deciding about proposed proceedings and are running ITTF** business politically, legally and financially.
- **The introduction and specifications of plastic balls was worked out by expert panels and decided by the AGM and the BoD.**

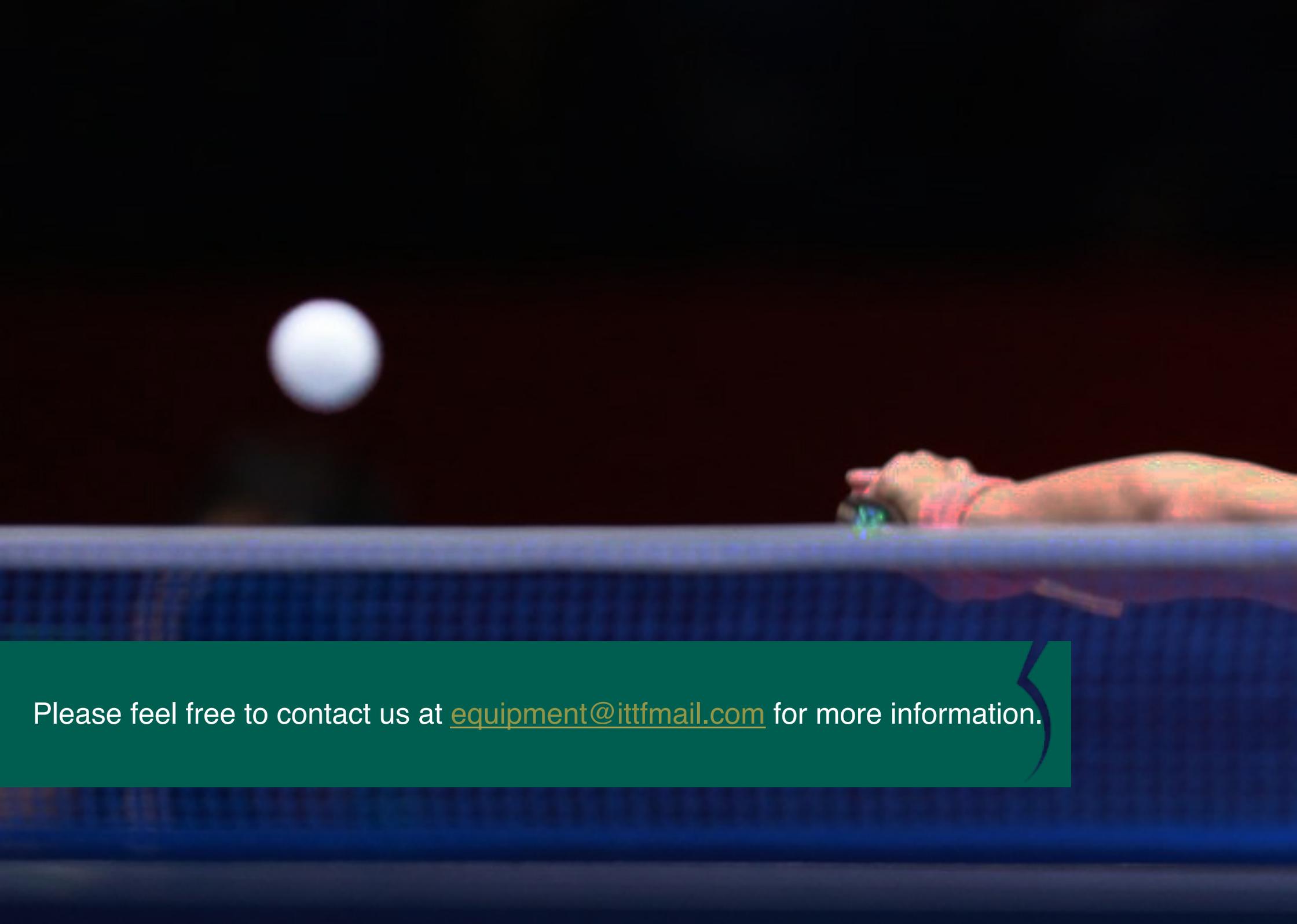


## Definitions for terms used in this document

**Plastic balls:** described as balls not made from celluloid.

**Manufacturers:** described as the companies producing balls.

**Brands:** described as all different companies/brand names, under which balls are ITTF approved.



Please feel free to contact us at [equipment@ittfmail.com](mailto:equipment@ittfmail.com) for more information.



**ITTF.com**