

The International Table Tennis Federation

Racket Coverings Technical Leaflet T4



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Introduction

Most table tennis equipment is provided by club or competition organisers, and over the years it has remained fundamentally unchanged. Although the racket is the choice of the player himself, it too remained unchanged during the ITTF's first decades. But it then appeared that a modification in the characteristics of the racket could mean the difference between victory and defeat. The subsequent decades have accordingly seen continual development, some of it not salutary.

In order to ensure that any future changes are to the benefit and not the detriment of the sport, a system of ITTF authorisation of racket coverings has been introduced, and important changes have been made to the Laws of Table Tennis and the Regulations for International Competitions.

This leaflet sets out the current Laws and Regulations, defines some of the terms used and lists some additional criteria for ITTF authorisation of racket coverings and thereafter entering the List of Authorised Racket Coverings (**LARC**).

Laws

The racket must comply with paragraphs 2.4. and 3.2.1.3 in the [ITTF Handbook](#), under the *The Laws of Table Tennis* and the *Regulations for International Competitions*, respectively.

Definitions

"4.0 mm" maximum thickness of sandwich **rubber** ([The Law 2.4.3](#)), and **"2.0 mm"** maximum thickness of pimped **rubber** ([The Law 2.4.3](#) and [2.4.3.2](#)) will be interpreted statistically to mean 4.0 and 2.0 mm respectively; implying that these limits are absolute values, and on no part of the playing surface on a racket covering should these measurements be extended. These thicknesses refer to the total of the racket covering including any reinforcement in the rubber (for instance textile) and any glue / adhesive used to attach it to the blade.

"Supplier" and **"Brand"** ([The Law 3.2.1.3](#)) refers to the supplier name and brand name, respectively, as they appear in the rubber mould and the LARC.

"Bright red" ([The Law 2.4.6](#)) is defined on the Munsell system by three co-ordinates:

Hue:	4.0 - 6.5 R
Value:	min. 3.1
Chroma:	min. 7.5

measured on a white background; ref. Konica no.1864-721 (CM-A101W).

“Cellular rubber” (The Law 2.4.3.2) is also known as sponge.

“Continuity” (The Law 2.4.5) implies that each layer shall be continuous; for instance, a blade consisting of one type of plywood in the centre and another type at the edge would not be considered to be continuous. It is accepted that the veneers of plywood are normally made by edge-gluing pieces together to make a continuous sheet; the resulting joints may appear in the blade, but joints in more than one direction are not permitted, and neither are joints that extend from one face through to the other.

“ITTF logo” (The Law 3.2.1.3) is to be used on all authorised racket coverings, and within a frame for new and changed racket coverings. Ref. C. and D.4. below.

“ITTF number” (The Law 3.2.1.3) is the unique identification for new racket coverings.

“List” (The Law 3.2.1.3) is the List of Authorised Racket Coverings (**LARC**). It has a validity period specified in the header.

“Matt” (The Law 2.4.6) implies that the rubber will be considered to be unacceptable if the gloss of “pimples-in” rubber or of either the base of “pimples- out” rubber or the tops of the pimples are so high as to permit the shape of a light-source to be distinguished in its reflection. See B.1.4.

“Natural wood” (The Law 2.4.2) implies **continuity** throughout the blade; this permits plywood but not, for example, particle-board, flake-board and other composites.

“Racket covering” refers to the rubber, with or without a sponge under, used to strike a ball.

“Rigid” (The Law 2.4.1) is intended to apply to the blade and the handle taken as a whole. Flexibility is not permitted in a racket except in the racket covering.

“Rubber” (The Law 2.4.3.1 and 2.4.3.2) implies any material that can be stretched at room temperature to twice its original length, and that, after being held in the stretched state for one minute, retracts within one further minute to less than 1.5 times its original length.

“Top sheet” refers to the sheet of pimples rubber when used over a sheet of sponge.

A. Qualitative Criteria

1. General Appearance

The racket consists of blade, adhesive, and racket covering(s) with or without sponge.

1.1. Blade

A very thin layer of lacquer is permitted on the blade, only for the purpose of anchoring wood fibers, thereby facilitating replacement of the racket covering. Anything more than this will be deemed to constitute a layer of plastic, and will not be permitted. This layer may be no more than 0.1 mm thick, and should not hide the wood from sight or touch. It is considered to be part of the blade, rather than part of the thickness of the racket covering.

1.2. Adhesive

The use of a thick layer of adhesive is NOT permitted either within the blade (The Law 2.4.2), or between the blade and the racket covering.

The manufacturers should be aware that the practice of "re-gluing", i.e. removing the racket covering, adding adhesive and re-applying the racket covering immediately before a match, might cause rubber / sponge to expand. When the resulting thickness is measured by an umpire it may be found to be illegal.

1.2.1. Solvents

To remove volatile solvents which the manufacturers utilise during their processes they should expose rackets or sandwich-rubber combinations to air before packing them, and players should similarly air their rackets - for up to 72 hours - that could contain some of the solvents left over from the production process or their own gluing. Refer to our Technical Leaflet T9 for Racket Control, to be applied at ITTF events.

1.2.2. PSA (Pressure-Sensitive Adhesive sheets)

Apart from adhesives, a PSA may be used for fixing the rubber to the blade. Some of these are water-based systems.

PSA may not be more than 0.1 mm thick and may not be cellular. It may consist of two layers of adhesive supported on the two sides of a plastic film or a cellulosic paper, or may be one solid layer of film. The packaging should carry the trade name and instructions for use.

1.3. Sponge

The use of sponge (i.e. cellular rubber) is governed by [The Law 2.4.3](#).

Translucent red racket coverings may not be used over dark sponges or dark blades, and translucent black ones may not be used over light sponges or light blades.

1.4. The racket covering

The rubber surface of the racket coverings should be uniform and without coating.

In addition to the requirements of [The Law 2.4.3.1](#).

1.4.1. Pimples

All pimples should be equal. Each pimple must have a circular symmetry, with its axis perpendicular to the plane of the base layer. At any height above the base it shall be no wider than at any point closer to the base. This permits cylinders, cones (but not inverted cones) and combinations thereof.

Pimples must be evenly spaced along three sets of parallel lines at 60 degrees to each other.

The surface of the pimple top must be parallel to the base of the sheet, but may be smooth or roughened (up to 0.1 mm), though not to an extent that would constitute hollowness in the pimple.

For pimples-in racket coverings some deviation from an ideal shape is acceptable, like irregularities on the side of the pimple, or a "hat shape" on the pimple tops – when this is not a general trend, but is found on individual pimples. For the pimples-out racket covering, deviation from an ideal shape is not acceptable.

1.4.2 Ordinary pimples rubber

"Ordinary pimples rubber" may carry pimples on one side only; the other side must be smooth, although it may be bonded to a thin layer of fabric, which should not be visible on the playing side and should not add to the total thickness.

1.4.3. Sandwich rubber

More than one layer of cellular rubber (sponge) is not permitted, even if the layers are of the same composition.

However, if the top sheet is translucent, then the layer underneath must be uniformly coloured; it is not permitted for a manufacturer's logo on the lower layer, or on the blade, to show through.

B. Quantitative Criteria

1. The racket covering

It should be noted in particular that:

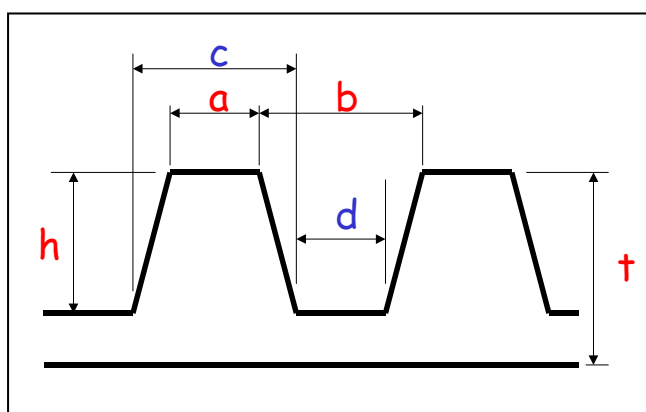
Authorisation is given to the top sheet plus the top sheet / sponge combination. Red and black top sheets with the same supplier and brand name must have the same geometry, properties, and text (wording and numbering). The surface colours must be uniform. Red and black top sheets of the same brand do not require separate authorisation fees.

1.1. Pimple dimensions

In LARC the racket coverings are categorised in four types:

- In = pimples-in (determined by the text in the mould),
- Anti = pimples-in (this term may be applied on supplier demand),
- Out = pimples-out (determined by the text in the mould),
- Long = pimples-out (when the aspect ratio – see below - is > 0.89).

Covering type	Pimple diameter on top = A	Distance between pimple tops = B	Pimple height = H
In and Anti	min. 1.0 mm	min. 0.5 mm	min. 0.5 mm
Out and Long	1.0 – 2.2 mm	1.0 - 2.0 mm	min. 1.0 mm



Dimensions "c" and "d" are indicated here, since they may be reported in the Form which accompanies applications for new racket coverings.

1.2. Rubber thickness

T = max. 2.0 mm

1.3. Aspect ratio

I.e. pimple height / pimple diameter, shall not be > 1.10 for pimples-out rubbers.

1.4. Gloss (shininess)

An acceptable surface is one whose gloss, measured with an EEL gloss meter at 45° head setting, is not > 6%; corresponding measurements of 60° specular gloss using ASTM procedure D523 must give values not > 24%.

1.5. Friction for pimples - out

The minimum friction level is 25 mN (Milli Newton).

1.6. VOC (Volatile Organic Compounds) testing.

This test is performed with the maximum limits according to the latest decision by the Executive Committee.

1.7. Player's responsibilities

It is the player's responsibility to limit the total thickness of his racket covering to no more than **4.0 mm**, including top sheet, sponge and adhesive. Without sponge, not more than **2.0 mm**.

It is also his responsibility to ensure that a red top sheet does not become too dark when affixed to the sponge, or a black top sheet becoming too light.

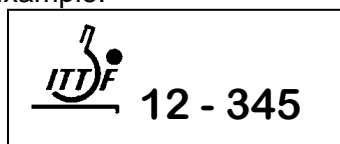
C. Rubber identification

The ITTF number or the combination of supplier name / brand name is the identification of the racket covering. Hence it must be unique and should not create confusion in relation with other racket coverings. It will found in the rubber mould as well as in the LARC.

New racket coverings submitted for authorisation, and existing rubbers that undergo changes in text design, must have the ITTF logo, an ITTF number, and a supplier and a brand name in the rubber mould.

- The ITTF logo should be min. 10 x 10 mm.
- The ITTF number should be adjacent to the ITTF logo, (over, under, or on one side), consisting of 5 or 6 digits with:
 - A. 2 or 3 first digits being the supplier number - to be supplied by ITTF - followed by a dash.
 - B. 3 next digits being a brand number, usually starting with 001 and in regular succession, normally without gaps - controlled by the supplier.
- All digits on same line, min. 5 mm height, font Arial normal.
- Letter height min. 0.2 mm above rubber base.
- The ITTF logo and ITTF number should be enclosed by a single frame of any shape, with nothing else inside.

Example:



SUPER SUPPLIER

MEGA BRAND

In addition a racket covering may carry the name of a country or that of the Association in that territory, or both.

All letters, logos, ornaments, etc. should all be placed in the text area i.e. extending max. 25 mm into the playing surface and positioned towards the same edge of the top sheet.

It is possible to have two pictures of the text area at any time for one brand on the ITTF web site.

The Equipment Committee will give advice on the layout of any text area when submitted.

The supplier and brand names and the frame - with the ITTF logo and ITTF number (when applied) - must be visible on the racket covering when it is mounted on the blade ([The Law 3.2.1.3](#)).

When an ITTF number is withdrawn, it cannot be used again for 10 years.

D. Administrative Procedure

1. Submitting racket coverings for testing

New suppliers interested to be included in LARC, should first contact the ITTF Equipment Coordinator or the person in charge for racket coverings, at the address given on the ITTF web site:

www.ittf.com / [Home Page](#) / [Main Page](#) / [Equipment](#) / [Racket Covering](#) / [Contact person](#)

A new supplier will be provided with an ITTF number and, if required, be explained step by step the procedures to follow for having a racket covering authorised and included in LARC, ref. below.

Racket coverings, to be tested, should NOT be sent to the ITTF Headquarters or other ITTF addresses, but to the address given on the ITTF web site of the person in charge of racket covering authorisation procedures, after contacting this person, for example by e-mail.

The supplier should - in summary (more details below):

1. Submit samples.
2. Submit the descriptive form.
3. Submit an image file of the text area.
4. Pay the appropriate testing fee to ITTF.

As soon as the results from the laboratories are available, and after reception of the payment for the test, the results will be given to the supplier.

The received samples will be stored for future reference.

If there exists a special version for sale without sponge and equipped with a reinforcement (for instance of textile), this / these should also be submitted (these are sometimes named OX).

The use of another table tennis supplier name as part of a brand name requires a written statement from the supplier in question to be submitted to ITTF when applying for authorisation.

Any supplier / manufacturer wishing to have racket coverings measured may send them to the Equipment Committee as given above, with the testing fee to be paid when invoiced.

2. The detailed procedure of obtaining authorisation

A racket covering which is included in the LARC is considered having an authorisation for the period in given in the header.

2.1 General

The time the entire procedure may take is uncertain. A laboratory normally can use about 6 – 8 weeks; in addition the time for transport, Customs and administration, is normally covered by approximately 2 weeks. However, under special circumstances it may take longer. In general, the procedure runs smoothly, but the ITTF declines all responsibility if there are delays and other unforeseen complications.

The racket coverings that have been tested and found acceptable 2 weeks before the publishing of the LARC (see 2.2, Para. 9 below) - using either the Normal or the Simplified method - will be included.

The samples that are submitted to the ITTF for testing are taken to be representative for the normal production, and our decisions are based on that.

Any supplier / manufacturer wishing to have racket coverings tested may send them to the Equipment Committee as given below, with the testing fee to be paid when invoiced.

2.2 Normal procedure

1. The supplier should submit the following:

one top sheet sample of **each** colour- with no sponge,
one complete racket covering – any colour - with the thickest sponge to be marketed; packed as it will appear in the market (for VOC test, ref. C.10),
one extra sample for pimples-out (to save time, ref. Para. 11 below) any colour, with no sponge,

to the address given under “Contact Person” on ITTF web site. Please ensure that all charges are paid before shipment.

2. Include a Form duly filled for each supplier / brand combination. This Form and the instructions for this are available on our website.
3. Include an image file (preferably in .jpg format) showing the text area for each supplier / brand combination - for the ITTF web site. A black & white version is recommended.
4. Ship the samples, free of any charge and declared as “sample for inspection, no commercial value”. If a value must be stated, do not set it to more than \$20, nor less than \$1 on the paperwork which follows. If any additional costs must be paid, which is rare, the supplier will be charged.

5. After the samples have been received, unless other agreements, they will be sent to a laboratory for testing. The supplier will be informed and given a reference number.
6. A testing fee invoice carrying the reference number will be sent from the Lausanne headquarters to the supplier. Each new required test will generate a new fee invoice.
7. When the test results are available, the supplier will be informed about the result, provided the test fee has been paid.
8. If the racket covering is according to our Technical Leaflet T4 and therefore can be authorised, it will be included in the next issue of the LARC. A fee per year will be invoiced from our Lausanne office.
9. LARC is updated 1. October (valid from 1. January) and 1. April (valid from 1. July) only. New racket coverings are valid from the publishing date; see information in the LARC header.
10. When submitting racket coverings for repeated tests or the ten year re-test, paragraphs 2 and 3 above are not required.
11. For pimples-out only: Racket coverings will be subject to the special friction test which may take additional time and will be invoiced additionally. An extra sample may then reduce time. An authorisation is not valid before also this test is passed.

2.3 Simplified procedure

When time is short, this procedure may help.

- A. Submit according to paragraphs 2 and 3 in the Normal procedure to the address given under "Contact Person" on ITTF web site.
- B. Attach a message with a promise not to do any marketing of this brand before the racket covering has been authorised.
- C. The brand will be included in the next LARC, and the fee will be invoiced.
- D. A complete sample set equipped with text in the rubber mould should be submitted by the supplier within 4 months after the printing of the LARC following paragraph 4 in the Normal procedure. If not, the brand will be omitted.
- E. Paragraphs 5 – 7 and 11 in the Normal procedure to be followed.

2.4 Further remarks

Parcels with racket coverings arrive via ordinary mail, by delivery companies, or as registered letters to be collected at the post office. Sometimes the Customs Clearance withholds a parcel, asking for invoice or the content, and then also charging fees and value added tax. Such fees may be paid back if applied for, but taxes are not, so then a refund will be invoiced to the supplier.

If the suppliers submit parcels with "ITTF" - or the full name - in front of the address given, the Customs tends to treat the parcel in a - for the receiver - simpler and better way, thereby helping to avoid a delay.

However, time cannot be guaranteed in this process, so it is advisable to be early. Remember that all such incidents may require extra time. If time is essential, please consider the Simplified procedure.

All racket coverings received will be regarded and tested as new ones and any reference to other similar and previously authorised racket coverings is of limited interest.

The received samples will be stored for future reference.

3. The List of Authorised Racket Coverings (LARC)

LARC is issued only twice per year. The publication / printing is normally 1. April and 1. October. New racket coverings in LARC – marked as **bold** - are valid from that day. The other racket coverings are valid half a year from 1. July and 1. January, respectively.

The authorised racket coverings at any time are those in the valid version of the LARC, for the specified period, see header. The Internet version may be corrected for errors during the season. Information will be given on the ITTF web site. It is not permitted to use racket covering outside the valid periods given in the LARC.

It is recommended that new samples for testing should be submitted at least two months ahead of the publication date in order to be in time for the coming season's LARC. The ITTF may not be held responsible for any delays occurring at customs, during transport or in the laboratory.

There should be no marketing of new racket coverings before the authorisation has been published. If a racket covering is marketed before the racket covering appears in LARC, the authorisation is void. However, the racket covering may appear in sales brochures etc. provided the validity date is clearly mentioned.

The LARC now omits all reference to sponge colours.

4. The use of ITTF logo

This logo is the property of the ITTF. Hence, the suppliers may use the ITTF logo only on equipment that is properly authorised, i.e. here only the racket covering itself. It is considered illegal to use the main ITTF logo in connection with an assembled product like an assembled racket etc. However, the ITTF has made some logos that may be utilised for assembled rackets.

See also "Guidelines for ITTF logo" at the ITTF web site, also under Equipment, or <http://www.tmsin.com>

5. Fees

There is a **testing** fee, which must be paid before the results of any actual tests are published. The testing fees are subject to changes year by year. The ITTF Equipment Coordinator may be contacted for information about testing fees. This is also the case for any extra tests made for suppliers and for the retesting of racket coverings after a period of ten years. If more frequent testing is considered necessary by the Equipment Committee, the supplier will have to pay the fee. The fees will be invoiced from the ITTF Headquarters in Lausanne.

An **authorisation** fee is paid for being included in the LARC (on the paper version and on Internet, including the image files). Lack of payment will mean withdrawal from the next LARC.

The authorisation fees are paid for LARC, which are published in April. In October only new racket coverings entering LARC for the first time are subject to the additional fee / racket covering.

When a new supplier is entering LARC in October for the first time, it is subject to the authorisation fee, half the amount for the first racket covering and full amount for each additional racket covering, according to the list of fees, and will be invoiced again in April next year.

If a racket covering is removed from the LARC for technical or financial reasons, there will be no refund.

If it is desired to re-authorise a known racket covering that has been removed from the LARC for whatever reason, it will be treated as a new brand with new test and authorisation fees.

6. Changes in racket coverings

The ITTF authorisation applies to a racket covering as originally submitted and tested; its subsequent alteration, by a supplier, a player or anyone else, is not permitted ([The Law 2.4.7](#)).

Changes from the original design will normally not be permitted. However, changes to the text area only may be allowed, and must be confirmed with samples and image files submitted.

7. Supplier's responsibilities

It is the responsibility of the suppliers to keep their brands on the LARC by paying the fees and maintaining the original properties of the racket covering as authorised, without alterations. In addition a Contract with ITTF must be adhered to.

8. Withdrawal of authorisation of racket coverings

It should be noted:

1. that the Equipment Committee has been instructed to deny authorisation to any racket covering that it deems detrimental to the sport,
2. that Board of Directors (BoD) has the right to withdraw the authorisation of any racket covering at any time, if it finds it detrimental to the sport ([The Law 3.2.1.1](#)),
3. that not paying the yearly fee or requested test fees will result in a deletion from the LARC and a notice on the ITTF web site if required.

Only red and black racket coverings are permitted in ITTF events and have the right to carry the ITTF logo. All other racket coverings of any other colour are illegal.

9. Re-testing of racket coverings

Racket coverings will be re-tested approximately every ten years after having been included on the LARC. The suppliers will be notified to submit samples, and there is no additional information required. The test fee will be invoiced from the ITTF Headquarters.

When comparing two rubbers of the same brand at different times – for instance when making the 10-year test - the sum of the pimple diameter on top (A) plus the distance between the pimple tops (B) must be the same within 20% for these to be accepted to be the same brand. If not, they will be considered to be different brands.

10. Extended testing of racket coverings.

ITTF is making an effort to reduce the use of VOC (volatile organic components) due to the health risk involved. This work is also fully supported by IOC and United Nations.

The Law 2.4.7. says “*The racket covering shall be used without any physical, chemical or other treatment.*” Our reference point here is the authorisation. However, there have been criticisms that ITTF does not authorise the complete racket covering, only the rubber itself (top sheet). Hence, to remove any doubts, we are enlarging the testing.

We are doing racket controls at ITTF events, and this testing will be increased. By collecting the information from these events we will be able to compare with data from this testing. We will start concentrating on VOC and thickness which have shown to be the most important areas here. These will then be our main reference points for comparison.

We are asking for one thing here: one complete racket covering (a complete racket covering of any colour) with the thickest available sponge of each brand on LARC, in a parcel as it is presented to the market – in a plastic bag or similar. This will be our reference sample for our testing of VOC and thickness.