

Minutes of Meeting

FINA Swimwear Approval Committee Meeting with the Manufacturers

**08th December 2018
Hangzhou, China**

Meeting lead by: Jan-Anders Manson, FINA SAC Chairman

Minutes preparation by: Bruna Di Napoli, AISTS Sports Technology Senior Manager

Meeting FINA Swimwear Approval Committee Meeting with the Manufacturers

Date 08.12.2018

Time 10:00 h

Location Intercontinental Hotel, Hangzhou CHN

Participants	Jan-Anders Manson	FINA SAC Chairman
	Bruce Mason	FINA SAC Member
	Maha Zaoui	FINA SAC Member
	Jean-Pierre Morand	FINA Legal Council
	Bruna Di Napoli	AISTS Testing Centre
	Dominik Latzel	Adidas
	Greg Steyger	Arena
	Umberto Dalla Pozza	Arena
	Luca Moroni	Arena
	Yuta Suenaga	Descente (Arena)
	Yasuhiro Yoshinaga	Descente (Arena)
	Mizu Yamada	Descente (Arena)
	Martin Fahnemann	FINIS
	Max Gilde	Mad Wave Europe
	Kenji Otake	Mizuno
	Hiroyuki Tanaka	Mizuno
	Jonathan Higham	Speedo
	Rob Blenkinsopp	Speedo
	Toshiko Sano	SWANS
	Naoya Matsuo	SWANS
Franck Horter	TYR Sport	
Jan-Anders Manson	FINA SAC Chairman	

Invitees

Emma Mason	WFSGI Representative
Kevin Boyd	FINA Sports Medicine Committee
David Gerrard	FINA Sports Medicine Committee

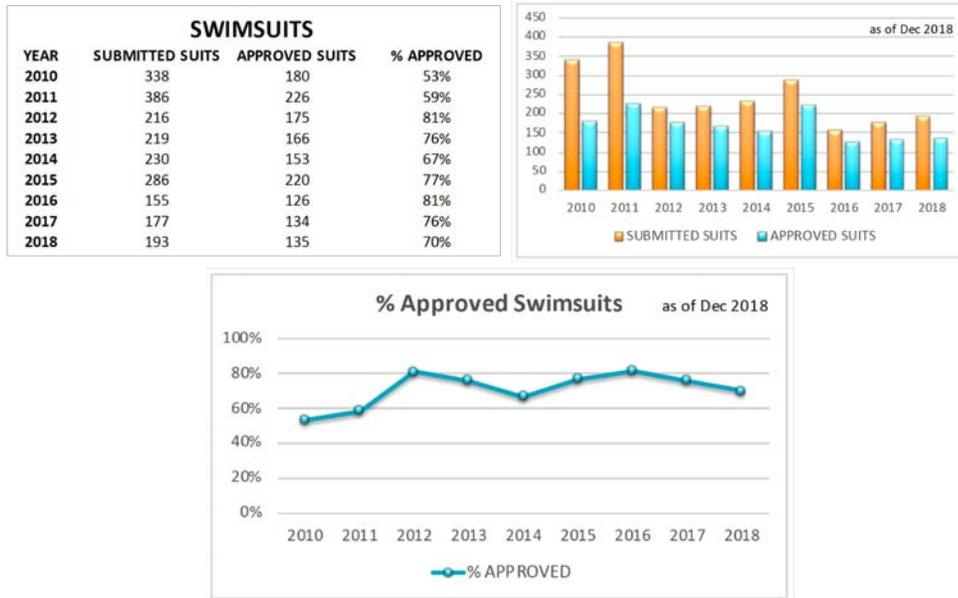
Agenda

1. **Welcome & Introduction**
2. **Information and discussion on main issues from the last submissions – year 2018**
 - Pool-suits
 - Width of seams and Parallel seams
 - Seams count
 - Permeability
 - Wetsuits
 - Thickness of material and coverage
 - Tolerance for the tests and results
 - Injuries caused by use of wetsuits
 - Caps & Goggles
3. **Submission procedure during 2019 & pre-avis service**
4. **Follow-up on the issues from last meeting and points suggested by WFSGI Aquatics Committee**
 - Improved Approval Process
 - Improved Communication of changes to FRSA
 - Long-term solution for submission and approval dates
 - Wetsuits safety
 - Wetsuits approval
 - Permeability measurement
 - "FINA Approved Label" on caps
 - Zipper, clips and/or fasteners on female poolsuits
 - Goggle box
 - PFCs / PFAs
5. **Q&A**
6. **Closing**

1. Welcome & Introduction

Statistics from 2018 submissions were presented as below:

Pool-suits: Submitted / Approved



Wet-suits: Submitted / Approved



Comments:

We should be able to reach 85/90% in regard to percentage of swimsuits submitted and approved. It has been noticed that some manufacturers seem to be submitting more suits than they actually wish/need to be approved, to be completely sure at least one passes the tests. This may explain why a rate of 100% approval is not reached, whilst one should expect the manufacturers to submit models which they should have normally designed to be compliant.

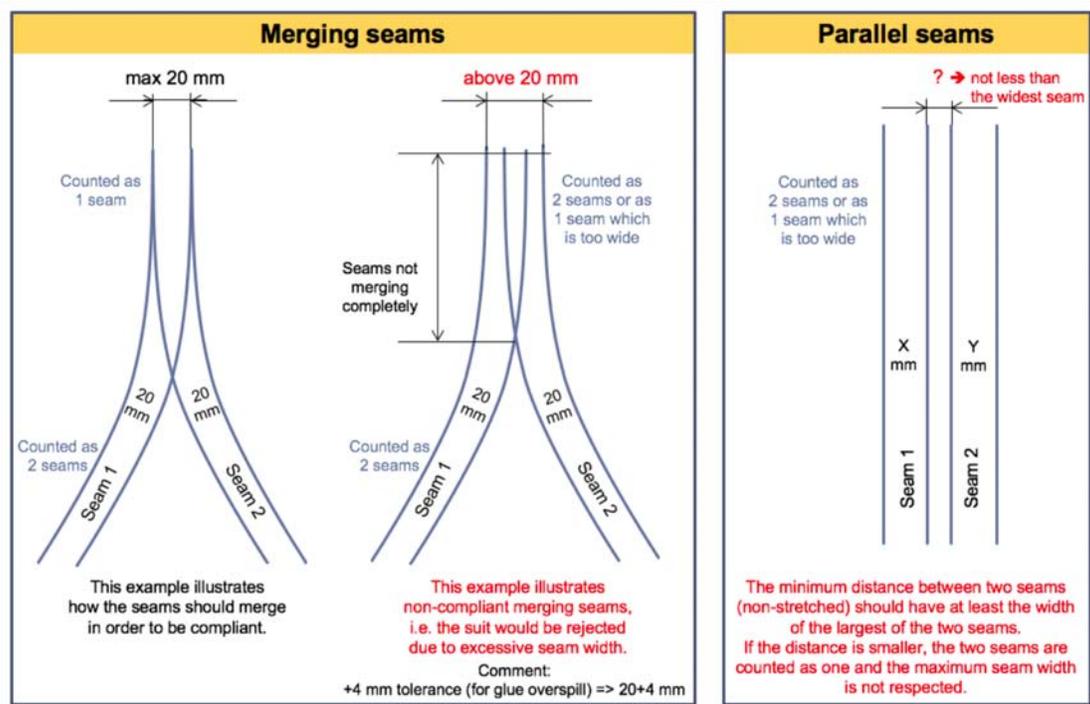
2. Information and discussion on main issues from the last submissions – year 2018

- Pool-suits
 - Width of seams and Parallel seams
 - Seams count / Functional seams
 - Permeability

It is brought to the attention of the manufacturers that sketches should be more precise and reflect exactly the suit being submitted. It is very time-consuming for the approval staff to interpret certain submissions. Samples of best practice sketches will be provided to manufacturers (best practice vs. extremely bad practice).

The definition of parallel seam is explained again, as below. It is found to still be a common issue during submissions.

Width of seams and Parallel seams



Functional Seams are also explained. A seam is considered functional when it combines two different suit parts and/or two fabrics. The definition is taken into account, to prevent a seam running across the same fabric simply to reinforce this material.

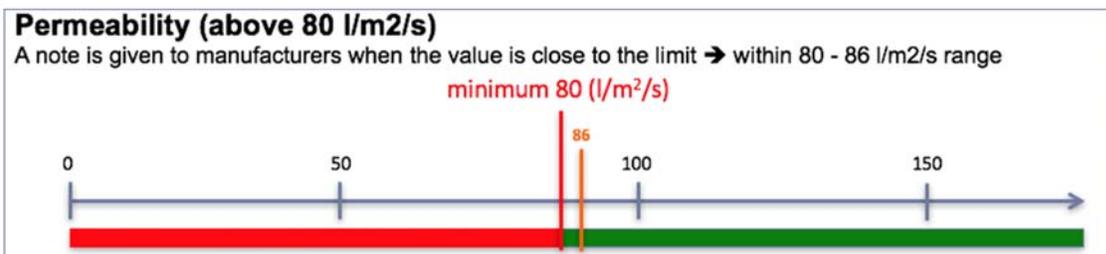
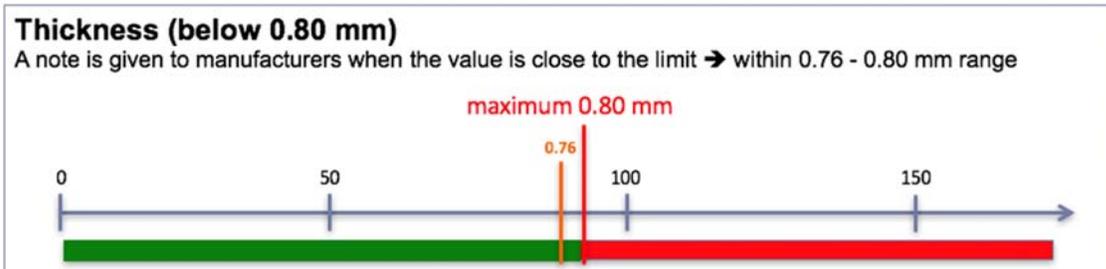
Edge seams are not counted in the overall count of seams, however should follow edge seams rules (max. width). This includes the seams at the edge of women’s open back suits.

Comments:

Submitted suits should go through the responsible for design, rather than being sent for testing directly from the producer. This could avoid many failed submissions.

Tolerances are discussed and explained as below:

PROPOSITION	REASONING	COMMENTS
Tolerance limit to be adjusted	Clearer understanding of the limit to be respected.	The tolerance margin should not serve to lower the minimum test value but to cover the measurement uncertainty . Tolerances should be maintained for the margin of test checks on effective products.



Comments:

All fabrics must be within the maximum/minimum thickness/permeability at approval level. Tolerances will **only** be taken into consideration post-approval and post-production (i.e. at control in competition or from the market).

- **Wetsuits**
 - **Thickness of material and coverage**
 - **Tolerance for the tests and results**
 - **Injuries caused by use of wetsuits**

As for swimsuits, and particularly so for wetsuits which are a lot more complex in composition, it is brought to the attention of the manufacturers that technical drawings should be more precise and reflect exactly the suit being submitted. A clear indication of the location and the thickness of each panel used in the construction of the wetsuit is required.

It was further brought to the attention of the manufacturers that the vast majority of wetsuits are not failing because of their design, but rather due to thickness of the materials. The below reference chart, as presented in the last SAC Meeting with the Manufacturers, could serve as a support when acquiring the fabric to produce wetsuits. The nature of such material does not allow for exact precision.

Chosen Nominal Material thickness (mm)	Fabrication tolerances (+/--%)	Upper / Lower bound (mm)	Measurement tolerances (+/-mm)	Upper-Upper / Lower-Lower bound (mm)	Rounded limit values (mm)	Reached limits
	10		0.2			
For max 5.0mm						
			Upper/Upper bound	4.60	5.0	Max thickness OK
	Upper bound	4.40				
			Upper/Lower bound	4.20		
4.00						
			Lower/Upper bound	3.80		
	Lower bound	3.60				
			Lower/Lower bound	3.40		
For min 3.0mm						
			Upper/Upper bound	4.05		
	Upper bound	3.85				
			Upper/Lower bound	3.65		
3.50						
			Lower/Upper bound	3.35		
	Lower bound	3.15				
			Lower/Lower bound	2.95	3.0	Min thickness OK
For min 1.0mm						
			Upper/Upper bound	1.85		
	Upper bound	1.65				
			Upper/Lower bound	1.45		
1.50						
			Lower/Upper bound	1.55		
	Lower bound	1.35				
			Lower/Lower bound	1.15	1.2	Min thickness OK

The maximum/minimum values regulating the approval of wetsuits remain unchanged.

Manufacturers are struggling to produce different suits for open water swimming and for triathlon competitions.

Further studies are needed in order to verify the need for wetsuits and at which temperatures. For this reason, two members of the FINA Sports Medicine Committee were called to give their insights on such safety concerns.

As an introduction, the FINA mandatory coverage rules are explained. These were put in place as a consequence of one study stating that athletes swimming in waters under 20°C were at risk. The suit was therefore meant for thermal protection, and not to provide performance advantages (as pool-suits). FINA had no choice but to act.

Kevin Boyd, FINA Sports Medicine Committee Honorary Secretary

16°C has been set as the minimum temperature allowed for competition. This has come from a study from Portsmouth University on lower temperature limits, which however has many limitations. The study is briefly discussed, and it is explained that it was performed with full-body (triathlon) suits and meant to regulate competitions which last about 15 minutes, compared to the 6 hours FINA ultra-endurance events.

Issues to be followed-up:

Shoulders' injuries due to wetsuit constraining movement
Overheating due to use of wetsuits and its possible consequences.

David Gerrard, FINA Sports Medicine Committee Vice-Chairman

Lower and upper temperature limits studies were performed by two different Universities.
David was involved in the latter research: 5-10 km distance, without suits, upper temperature limit.

A few years have passed, and it is now possible to run easier and more precise field studies. These will now be completed with the help of capsules which can be swallowed and are able to measure time and temperature much more precisely, from inside the body, and throughout longer distances.

Issues to be followed-up:

Neck injuries (rubs against skin causing irritation) was an issue at the first event were FINA introduced the wetsuit rule.

Heat loss from head (mandatory caps could help).

Comments:

No regulation nor limit will remove the need to remain constantly vigilant (always: pre/during/post-competition).

Further comments

Training of officials (and coaches) present at events is crucial to observe and act in case of cold shock effect (at event start) and/or as athletes continue to cool-down even long after the end of their competition.

Athletes can train to deal with cold shock, not for cooling throughout longer races.

The discussion goes further into details of possible further research to have better facts and figures on the influence of water temperature on athletes. A few points that were brought up are:

- most valuable data would come directly from in-competition testing;
- a large number of athletes would be needed;
- ingesting capsules would be the best way available at the moment;
- details and parameters of the study would need to be defined by all parties (i.e. FINA athletes, medical, and manufacturers);
- collaboration is essential and costs could be shared by a number of entities – all parties are interested in the health of athletes (3 main parties: athletes, industry and federation);
- many ethical issues (i.e. bringing athlete above/below a certain temperature).

Comments:

Ferry Weertman and Britta Kamrau (both part of the FINA Athletes Committee), are two athletes who would be very interested in participating in the study.

The priority is rather to study the upper temperature limit, as there is a bigger void in publications in this respect.

Protection from other factors

Other common issues with open-water swimming come from jellyfish type animals (stingers). Over exposure to these animals can be very dangerous. Open-water suits, rather than wetsuit, could be the solution in such cases.

Comments:

Bidding process from FINA should include factors including - quality of water, temperature and presence of the above-mentioned animals.

Decision - outcome:

There is a mutual respect for the efforts and costs already invested to address the issues linked the effects of water temperature and the use of suits. However the common agreement is that there is a need for further studies. A proposal for a study needs to come from the various Commissions along with the industry and be submitted to FINA.

Ms. Nuria Puig from The Olympic Studies Centre could be contacted to evaluate funding for studies.

- **Caps & Goggles**

Are discussed at a later point.

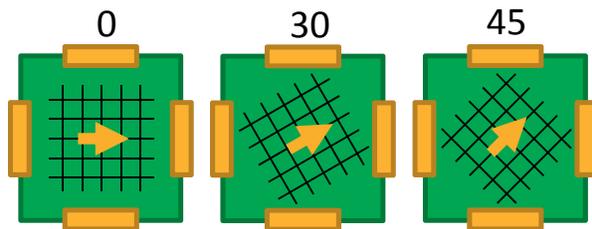
3. Other points of discussion – R&D Highlights

Orientation effect on permeability

With the help of Purdue University an extensive study on the influence of fabric orientation on permeability has been performed.

Comments:

A more detailed result of this research will be presented at the next Meeting.



New stretching device

As it has been found that the orientation of weaves is critical to the measurement of permeability on stretched fabrics, and the current stretching method requires large fabric samples, a new stretching device is being developed and tested.

This device aims to facilitate testing directly on swimsuits, without the need for cutting the material, as it will require a much smaller area and will not damage the fabric. Further, it will allow for a uniform multidirectional stretch.

It is foreseen that studies will be performed throughout the next year (2019), with the aim of using the new device for submissions in 2020.

Manufacturers agree that such research can be published, provided no specific value/company information is revealed.



Permeability equipment

A new version of the testing equipment is being reviewed, from the same manufacturer. Currently there is an issue with its accuracy at minimum values (below 60 l/m²/s), which should be solved soon.

The above-mentioned machine will be necessary for the new stretching device which is being developed.

New Permeability Equipment



FX 3340 MinAir

Mobile Air Permeability Tester with many benefits

The most compact Air Permeability Tester of TEXTEST inspires by its small dimensions, its low weight and its attractive price. The MinAir is suitable for measurements of the air permeability and the pressure drop when used in laboratory but also in mobile applications. The instrument works in accordance with ASTM D 717, DIN 53887, EN ISO 9237, ISO 75.1 and many other national and international test standards.

Benefit thanks to compact design
The MinAir is the smallest Air Permeability Tester available. It requires little table-top space and on the move, it can be transported in the supplied case.

Benefit thanks to memory and evaluation options
The MinAir can store up to 100 test results in the internal memory. With an optional evaluation software the data can be transferred into a PC, where it can be stored, statistically evaluated and documented.

Benefit thanks to flexibility
The easily replaceable test heads expand the measuring range and thus allow the measurement of most standard materials. The optional battery makes the MinAir independent of a stationary power source.

Accessories
FX 3340-S Test head 5 cm²
FX 3340-EVA PC-Evaluation Software
FX 3340-BL Battery for operation without mains connection

Technical specifications FX 3340 MinAir

Measuring range (air permeability): 10 - 6,000 mls/m² (12 - 1,200 l/m²/s) at 5 cm²
15 - 1,000 mls/m² (17 - 300 l/m²/s) at 20 cm²

Test pressure: 20 - 500 Pa

Measuring range (pressure drop): 0.060 - 6.0 mPa (12 - 1,200 l/m²/s) at 5 cm²
0.015 - 1.5 mPa (17 - 300 l/m²/s) at 20 cm²

Air velocity: 5 and 20 cm/s (20cm² included, 5cm² optional)

Test area: 5 cm² and 20 cm² (20cm² included, 5cm² optional)

Units of measure: mls/m², l/m²/s, cm³/m²/s, m³/m²/s, m³/m²/min, m³/m²/h, m³/m²/day, m³/m²/year, Pa, cmH₂O

Measuring accuracy: ± 3 % of the displayed value

Production (charging) time: 100 min

Sample thickness: Max. 8 mm

Drive type: 1000 2.0

Power requirements (power adapter): 100 - 240 VAC, 50 - 60 Hz, 100 W

Dimensions (L x W x H): 19 x 24 x 20 cm

Net weight: 4.9 kg

Technical data also subject to change

TEXTEST AG
Dachsteinstrasse 72
CH-8023 Schönenbuch
Switzerland

Tel: +41 (0)84 321 21 41
info@textest.ch
www.textest.ch

Recycling

It is suggested that a study could be developed with old submitted suits. Manufacturers agree that it is a good initiative and that such suits may be used for this purpose.

Swimsuit recycling



4. Submission procedure during 2019 & pre-avis service

Submissions dates will be maintained for 2019.

Decision - outcome:

The date manufacturers can expect to receive a confirmation of approved/not-approved will be communicated in advance.

5. Follow-up on the issues from last meeting and points suggested by WFSGI Aquatics Committee

- **Improved Approval Process**
- **Improved Communication of changes to FRSA**
- **Long-term solution for submission and approval dates**
- **Wetsuits safety**
- **Wetsuits approval**
- **Permeability measurement**
- **"FINA Approved Label" on caps**
- **Zipper, clips and/or fasteners on female poolsuits**
- **Goggle box**
- **PFCs / PFAs**

Most points in this section were covered throughout the meeting.

- **Improved Communication of changes to FRSA**

Regarding the communication on changes to the FRSA, it has been agreed that better efforts will be made to establish responsibilities between all parties involved and improve the communication.

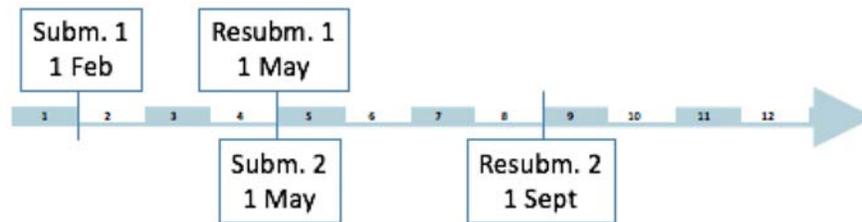
Decision - outcome:

It will be improved.

- **Long-term solution for submission and approval dates**

The calendar will be maintained for the 2019 submissions, to avoid confusion on pre-Olympic year.

The submission windows for approval of poolsuits are the following:



Submissions for approval of wetsuits will remain open during the entire year.

Decision - outcome:

The manufacturers shall organise a working group to discuss timeline of submissions for the future and present its proposal to FINA/SAC. It should aim to have all parties involved: athletes, coaches, industry, etc.

- **“FINA Approved Label” on caps**

Decision - outcome:

For World Championships and Olympic Games only, a “FINA Approved” label will be introduced, starting from 2021 (submission of 2020). This will have to be printed on the cap. Further discussion will be conducted to define the position of the label.

FINA is to release the artwork. The timeline for this will be communicated in the next months.

- **Zipper, clips and/or fasteners on female poolsuits**

To be re-discussed for after Tokyo 2020 Olympic Games, if needed.

- **Goggle box**

The use of the box is no longer in discussion.

To rely only on self-certification through ISO standards is not possible either, as they do not cover design issues, only safety aspects.

Decision - outcome:

FINA is asked to consider possible adaptation of costs involved in the approval process of goggles, as there is nothing on the goggles stating that it has been approved.

- **PFCs / PFAs**

The importance of Perfluorinated Chemicals is ongoing. It remains an important point of discussion and an opportunity for our industry to show global responsibility.

The next SAC Meeting with the Manufacturers will be planned for the 4th quarter of 2019. The exact date and place of the meeting will be communicated to all manufacturers in due time.

The meeting ends at: **14:00**

Hangzhou, 08.12.2018