

# The Techeiles Revolution

## Review Packet and Practical Guide

By Rabbi Ike Sultan

Presented by



Dedicated by

**Tomer and Shari Haik**

**in honor of our children**

ריבונו של עולם מלא כל מישאלות לבנו לטובה בבריאות בהצלחה  
וכל טוב. ויתגדל כבוד שמך הגדול וכבוד תורתך על ידינו ועל ידי  
זרענו וזרע זרענו תמיד. אמן כן יהי רצון.

# Background and History

One of the cherished mitzvot that *klal yisrael* lost for centuries was the mitzvah of wearing *techeiles* strings as part of the tzitzis. *Techeiles* is described in *tanach* as a beautiful and royal dye that was used in the *mishkan* and the kohanim's clothing.<sup>1</sup> In this packet we're going to summarize the opinions about the modern day rediscovery of *techeiles* and translate that into practice of how it should be worn.<sup>2</sup>

In the days of the gemara they still had *techeiles* but by the days of the geonim and *rishonim* it disappeared. Why? The destruction of the temple and exile from Israel for the vast majority of the Jewish people could easily have led to the loss of the identification or even the means of producing the *techeiles*.<sup>3</sup> Another historical reason is that in the fifth century the Romans outlawed selling or even owning purple or *techeiles* garments on the pain of death.<sup>4</sup>

In 1887, Rav Gershon Henoch Leiner, the Radziner Rebbe, undertook the project of restoring *techeiles*. After researching the topic, visiting an aquarium, and discussing with a chemist, he concluded that the cuttlefish was the true *chilazon*. Until this day, chasidim of the Radziner sect follow the Radziner Rebbe's conclusion and use that type of *techeiles*. The Radvizner's work is collected in three

major volumes on the topic of *techeiles* which thoroughly analyzes all the primary sources of *chazal* and *rishonim* on the topic as well as includes the responds he received from rabbis of his day.

In 1913 in working on a doctorate on *techeiles*, Rav Yitzchok Isaac Halevi Herzog, later to be the chief rabbi of Israel, showed that the Radziner's *techeiles* was untenable. After asking for the entire process of how it was produced he



investigated with chemists only to find that the blue color was Prussian blue chemicals and not from the cuttlefish at all. Rav Herzog himself was intrigued by the possibility of the *chilazon* being the murex trunculus based on the works of secular scientists but rejected it because he was only able to produce deep purple from the murex.

In 1980, Prof. Otto Elsner of Shenkar College of Engineering and Design, in Israel, conducted an experiment with the murex trunculus and was successful in producing deep blue. By hashgacha this discovery happened by accident. Usually the experiments were done in the lab far from natural sunlight, but as a result of the stench, he was requested by colleagues to go outdoors. When



Works of the Radziner

<sup>1</sup> Shemot 25:4

<sup>2</sup> Rav Elyashiv, Rav Schachter

<sup>3</sup> Teitelbaum p. 262

<sup>4</sup> Sterman p.83, Shimel p. 14

he moved his project outside he saw that the murex dyes in fact turned from purple to blue. Only a few years later, Rav Eliyahu Tavgar pioneering the project and started to produce *techeiles* for tzitzis

using the murex dyes exposed to the sunlight. Based on Rav Tavgar's direction, starting in 1991, the Ptil Tekhelet company produces *techeiles* using the murex trunculus.

## Proofs from Archeology, Linguistics, and *Chazal*

### *Crete Island*



*Murex Piles*

Archeological evidence from the Minoan civilization on the Greek Island, Crete, as early as 1750 BCE (the days of the Yehoshua) were using the murex trunculus for dyes as large mounds of whole and crushed shells were found all along the coast. On the same island, in a tablet that discussed royal textiles the word *po-pu-re-jo* appears which has to do with purple dyes.<sup>5</sup> Possibly this is what Yechezkel<sup>6</sup> was describing when he said that the production of *techeiles* was on the Islands of Italy.

### *Qatna Garment*



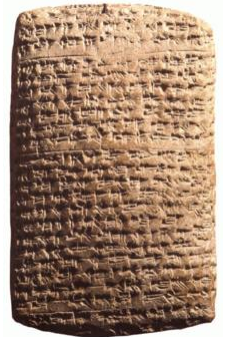
*Qatna Building*

Because garments decay quickly there are no artifacts of the remnants of *techeiles* or any tzitzis for that matter. Yet, in the basement of the palace of the Amorite kingdom, Qatna, in Syria dating back to 1600 BCE (the days of the shoetim) a few patches of garments were discovered and some were dyed with murex dyes.<sup>7</sup> Other garments with murex dyes were found in Siberia from 500 BCE as well as Masada from the first century.<sup>8</sup>

### *Techeiles in Ancient Text*

The earliest mentions of the terms *techeiles* and *argamon* ("takhilti" and "argamannu") outside of the Torah were found

on more than 350 tablets describing the gifts for the royal union between the Syrian kingdom of Mitanni and Egypt around 1350 BCE (the days of Dovid Hamelech).<sup>9</sup>



*Amarna Tablet*

### *Pits of Dor*



One of the most relevant discoveries was made in Israel. In the city of Dor (Yehoshua 12:23) which is located along the coast of Israel between Chaifa and modern day Tel Aviv in the area of Menashe, a *techeiles*

<sup>5</sup> Sterman p. 20

<sup>6</sup> 27:7 as per Targum Yonatan, Ri Kara, and Radak

<sup>7</sup> Sterman p. 24

<sup>8</sup> Sterman p. 46, 79

<sup>9</sup> Sterman p. 25

factory was discovered. In fact, they found several pits, a meter in depth and diameter, lined with stones, with remnants of dried purple dye, thousands of murex shells in another pit, and one pit that was watertight, which could have been used for dying. Nearby were rectangular pools with shells of murex abound. The pits and other discoveries date back to the second and third century BCE, the second temple period.<sup>10</sup> Over time between 30 and 40 places along the Israel coast were found with dying pits with murex shells.<sup>11</sup>

## Jerusalem

From Mount Zion, facing the temple mount, a murex trunculus shell from the first century BCE was found. It isn't clear what its purpose was there because it very unlikely that they industrially manufactured *techeiles* in Yerushalayim so far from the coast, but it is possible that it was brought for advertising the sale of *techeiles* or showing the authenticity of real *techeiles* that the kohanim used for bidegi kehuna.<sup>12</sup>



## Royal Use

Ramban<sup>13</sup> states that no one would dare to use *techeiles* besides royalty. According to the Ramban, it is very easy to understand how murex dyes were reserved for the royalty as they were the same snails used for Tyrian purple, albeit produced in a slightly different manner. Evidence of the fact that snails were used to produce royal purple can be gleaned from the above archeology as well as the numerous Roman coins that contained an image of the murex.

*Coin with Hercules Dog Discovering a*



Murex

## Chazal

Rashi<sup>14</sup> describes the *chilazon* as a *limotz* in French which means snail. Aruch<sup>15</sup> and Tiferet Yisrael<sup>16</sup> concur. Ran<sup>17</sup> seems to subscribe to this definition. This could be supported from the Midrash that its shell grows with it.<sup>18</sup> This isn't a definite proof since they could be referring to any snail and does not specify the murex.<sup>19</sup>

## Language

The Ravyah<sup>20</sup> in fact writes that *techeiles* is *purpura*, which in the ancient world was used to refer to the murex.<sup>21</sup> Raavad (Comm. to Sefer Yetzira, Intro ch. 8) and Mekor Chaim of Chavot Yair (OC v. 1 p. 99) also have this definition. In ancient Greek the word *pupora* was used to refer to the murex snail.<sup>22</sup> Rav Herzog believed that the *chilazon* was the murex snail as archeology and the Ravyah evidenced but ultimately rejected it because he couldn't produce a blue dye. While secular scientists concluded that the *chilazon* was the murex

## Tyrian purple

From Wikipedia, the free encyclopedia

**Tyrian purple** (Ancient Greek: πορφύρα *porphúra*; Latin: *purpura*), also known as **Phoenician red**, **Phoenician purple**, **royal purple**, **imperial purple**, or **imperial dye**, is a reddish-purple natural dye; the name Tyrian refers to Tyre, Lebanon. It is a secretion produced by several species of predatory sea snails in the family Muricidae, rock snails originally known by the name 'Murex'. In ancient times, extracting this dye involved tens of thousands of snails and substantial labor, and as a result, the dye was highly valued. The main chemical is '6,6'-dibromoindigo.



Tyrian Purple

<sup>10</sup> Stermann p. 53

<sup>11</sup> Or Yisrael v. 10 p. 136

<sup>12</sup> Stermann p. 67

<sup>13</sup> Shemot 28:2

<sup>14</sup> Avoda Zara 28b s.v. mishakdi, manuscript, oz vhadar fnt. 16

<sup>15</sup> Entry *Chilazon*

<sup>16</sup> Introduction to Moed

<sup>17</sup> Shabbat 107a s.v. *hasadan*

<sup>18</sup> Devarim Rabba 7:11, Shimel p. 50

<sup>19</sup> Shimel p. 51

<sup>20</sup> Brachot siman 25

<sup>21</sup> Mendel Singer (RJJ v. 40,

"Understanding the Criteria for *Chilazon*") questions this proof.

<sup>22</sup> Teitelbaum p. 263 based on Aristotle, Pliny the Elder, The Iliad



though *techeiles* was purple and not blue, for Rav Herzog that was impossible. The story has a happy ending because in the 1980s it was discovered that the murex dyes do produce a blue dye when exposed to the sun.<sup>23</sup>

A: The evidence that the non-Jews used murex for dyes is overwhelming, however, that could have been a form of counterfeit *techeiles*, and only the Jews knew the secret of the *chilazon*.<sup>24</sup>

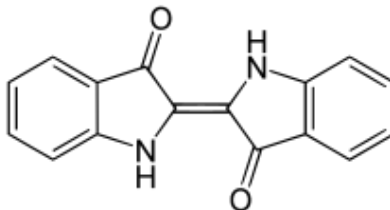
A: Menachot 43a indicates that there was only one type of counterfeit *kela iylan* and when you buy *techeiles* you need to rule out that possibility but there was no other known dye that would make that color.

A: perhaps really there were three dyes that could produce the same color but apriori the gemara ruled out the murex

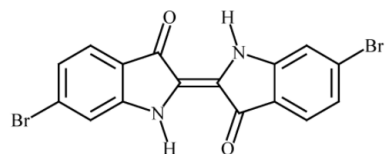
because no one would use it since it was banned by the Romans on the pain of death.<sup>25</sup>

R: If so, then the Rambam who didn't live under the edicts of Rome shouldn't have quoted this test. Also, Tosefta Menachot 9:5 indicates that there weren't other alternative dyes.

### Indigo



Plant Indigo



Murex Dye before Exposure to Sun

The Gemara emphasizes the importance of buying *techeiles* from a reliable source because it is impossible to tell the difference between real *techeiles* and *kela iylan*. *Kela iylan* is identified by the Aruch<sup>26</sup> and Nemukei Yosef<sup>27</sup> as indigo. Also, Menachot 43a is clear that there was no other alternative counterfeit dye for *techeiles* besides *kela iylan*. Rav Herzog inferred that if the counterfeit *techeiles* was indigo the real *techeiles* had to be the same color.



## What's the Counterargument?



### Chazal's Tests Fail



The chemical tests of *chazal* (Menachot 43a) are supposed to make authentic *techeiles* look brighter but they have no effect on the murex dye.

*Chazal* say that the tests make *kela iylan* fade. According to many *rishonim*, *kela iylan* is indigo and the tests have no effect on indigo. Perhaps we're missing information about how to apply the tests. (Teitelbaum pp. 121-4)

<sup>23</sup> Or Yisrael v. 10 p. 137

<sup>24</sup> Shimel p. 63

<sup>25</sup> Shimel p. 67 quoting R Shlomo Fischer

<sup>26</sup> Entry *Kela iylan*

<sup>27</sup> Bava Metsia 34a s.v. *kela*



## *It Is Impossible for the Tests to Work*



After the reduction and sun hits the murex dye what is left is chemically identical to plant indigo. Murex can't be correct since the mere fact that *chazal* gave us tests to distinguish between them when they look identical indicates that chemically they are different. (Singer in RJJ v. 40)

After the chemical processing the murex dye has some other added compounds not found in indigo, even though they are in very small quantities and perhaps *chazal's* test were meant to check for that. Those impurities in the murex dye or plant indigo could have affected the fastness of the dyes. (Serman p. 230 fnt. 55, R' Chaim Twersky in RJJ v. 34)

## *They Add Chemicals*

The Ptil Tekhelet adds chemicals and also the dyes changes from clear to yellowish-green to blue. How do know that this is real thing?

While it is true that they add chemicals but it is what the Gemara Menachot 42b says to do. Although it does not specify any of the chemicals or how it is supposed to be done, both Rashi s.v. vsimanim and Rambam Tzitzis 2:2 emphasize that it is done as the normal way the dyers would make a dye. (Nodeh Byehuda 1:1, Igrot Moshe YD 2:133:1) Also, the chemicals do not change the color, they merely reduce it with a base in order to allow it to bind to the water and become an insoluble dye. (Tavgar p. 258) When the dyes are added to the solution it becomes yellowish-green and then naturally, the murex mucus changes from yellowish-green to blue when it oxidizes in the wool. Even if no chemicals were added if it was exposed to the sun and air it would turn blue and the chemicals have no impact on that. (Singer)

## *Body Like the Sea*

The Chilazon's body is supposed to be like the sea and the murex's body is clear.

Perhaps *chazal* were talking about the shape of the body or that it blends into the sand of the ocean bed where naturally they can be found.

## *Chilazon Is a דג*

Many rishonim (Rashi Shabbat 74b s.v. sidei, Rambam Tzitzis 2:2) identify the *chilazon* as a דג, fish, while the murex is a snail not a fish.

דג might include any water creature. Also, Rashi (A"Z 28b), Aruch, and Ran (fnts. 14-18) indicate that that *chilazon* was a snail.



## *It Is Similar to a Fish*



*Chazal* (Menachot 44a) claim that the *chilazon* is like a fish. Is that the case of the murex?

*Chazal* just mean it is a water creature. (Tavgar p. 37) Its general shape is like a fish. (Levush Haaron p. 63, Shimel p. 22)



## *Body Is Like the Sea*

*Chazal* (Menachot 44a) state that the *chilazon*'s body is like the sea. The murex isn't?

Some explain that the murex's shell is layered like the waves of the sea. Alternatively, it blends into the seabed where it lives. (Rav Tavgar p. 36, Shimel p. 20)

## *Once in 70 Years*

*Chazal* (Menachot 44a) remark that the *chilazon* comes out of the sea once every seventy years. Murex surely isn't like that?

*Chazal* meant that it gets washed up on the shore very rarely. (Levush Haaron p. 64)

## *Dye Better While Alive*

*Chazal* (Shabbat 74a) explained that the dye is better if extracted while it is alive. How is that true of the murex?

If the shell is broken and left out for an hour before being used to dye, the dye oxidizes and can be washed out easily. (Levush Haaron p.

## *Trapping on Shabbat*

*Chazal* (Shabbat 74a) described that trapping a *chilazon* is a violation of trapping on Shabbat, but there's no relevance to trapping a snail in its shell since it generally is immobile?

Some say that the gemara only meant that it is trapping while it is in the sea and hard to get because of the water movement, but if it washed ashore it wouldn't be trapping.

# Why Not? What's the Downside?

## *We Can't Restore A Mesorah*



We need a *mesorah* to define a halachic term.<sup>28</sup>



Multiple sources *chazal* and *rishonim* indicate that we archeological proofs to recover old practices.<sup>29</sup>

## *Our Parents Didn't Do It*



The Bet Halevi<sup>30</sup> writes that we have a *mesora* that the Radziner *techeiles* is incorrect since our parents could have used cuttlefish and did not.



The argument does not apply to the murex since that was not readily available and the methods of productions were certainly lost.

## *Neophobia*



The rabbis can abolish a mitzvah passively in order to

prevent larger developments and changes to the *mesora*.<sup>31</sup>



This can be refuted by the fact that rabbis of every generation can't abolish a mitzvah forever.<sup>32</sup>

## *Minhag*



It is not the minhag.<sup>33</sup>



We should change the minhag to fulfill a biblical mitzvah.<sup>34</sup>

## *Maybe It Is Wrong?*



The Rambam<sup>35</sup> indicates that using counterfeit *techeiles* is invalid.



From context and the gemara, he means that it is invalid for the mitzvah of *techeiles* but wearing counterfeit *techeiles* absolutely fulfills the mitzvah of tzitzis and you lose nothing.<sup>36</sup>

## *Awaiting Mashiach*



*Chazal*<sup>37</sup> and the Arizal<sup>38</sup> indicate that *Techeiles* was hidden until mashiach comes.



It is possible to respond, that we see that this Midrash was not accepted as the later Amoraim like Abaye (*Menachot* 42b) still had *techeiles*. Also, the Midrash might just mean that the identification of the *chilazon* was lost and not that Hashem ordained that it be lost.<sup>39</sup> Also, we see from many *rishonim* and *achronim* that took the possibility of finding *techeiles* seriously that this Arizal isn't halachically binding.<sup>40</sup>

<sup>28</sup> Rav Soloveitchik

<sup>29</sup> Rav Schachter, Rav Elyashiv

<sup>30</sup> Ayin Hatecheiles p. 7

<sup>31</sup> Mesheyakir 5776

<sup>32</sup> Vehaya Lachem Tzitzis 12:74

<sup>33</sup> Rav Yitzchak Yosef

<sup>34</sup> Rav Schachter

<sup>35</sup> Tzitzis 2:1-4

<sup>36</sup> Aseh Lecha Rav 8:1

<sup>37</sup> Midrash Bamidbar Rabba ch. 17

<sup>38</sup> Shaar Hakavanot 4

<sup>39</sup> Radziner Sefunei Temunei Chol ch. 1

<sup>40</sup> Shimel p. 76



# View of Some Gedolim

## *In Favor*

Rav Hershel Schachter  
Rav Yisroel Belsky  
Rav Zalman Nechemya Goldberg  
Rav Kalman Epstein  
Rav Moshe Tendler  
Rabbi Aryeh Lebowitz  
Rav Moshe Lichtenstein  
Rav Berel Wein  
Rav Shlomo Riskin  
Rav Nachum Rabinovitz  
Rav Yaakov Medan  
Rav Yosef Tzvi Rimon  
Rav Moshe Mordechai Karp  
Rav Meir Mazuz  
Rav Yaakov Yosef  
Rabbi Avraham J. Twerksi  
Rav Ben Zion Halberstam  
Rav Tzvi Hirsch Weinreb  
Rav Dovid Tendler  
Rabbi Norman Lamm<sup>41</sup>  
Rav Eliyahu Ben Chaim  
Rav Amram Oppenheim  
Rav Chaim Pinchas Sheinberg<sup>42</sup>  
Rav Avraham Dov Auerbach  
Rav Gamliel Rabinowitz

Rav Moshe Mordechai Farbstein  
Rav Gershon Meltzer

## *Against*<sup>43</sup>

Rav Elyashiv (Kovetz Teshuvot 1:2)<sup>44</sup>  
Rav Chaim Kanievsky  
Rav Asher Weiss (Minchat Asher 2:3)<sup>45</sup>  
Rav Yitzchak Yishaya Weiss<sup>46</sup>  
Rav Yitzchak Yosef<sup>47</sup>  
Rav Moshe Shternbuch<sup>48</sup>  
Rav Mordechai Eliyahu<sup>49</sup>  
Rav Shlomo Miller  
Rav Yisrael Reisman  
Rav Daniel Osher Kleinman

## *Abstain*

Rav Shlomo Zalman Auerbach<sup>50</sup>

<sup>41</sup> [Rabbi Lamm](#)

<sup>42</sup> He wore it together with 100 other pairs of white tzitzis.  
<https://www.mywesternwall.net/2017/11/03/top-32-rabbis-and-founders-wearing-techelet-techeiles.html>

<sup>43</sup> <https://www.techeiles.org/debate/>  
Several of those who personally don't wear *techeiles* hold that there is no issue with wearing it if someone wanted to do so. These include Rav Chaim Kanievsky, Rav Shmuel Kanievsky, and Rav Dovid Cohen of Gvul Yavetz (<https://mishpacha.com/true-blue/>).

<sup>44</sup> It is reported that Rav Elyashiv was ready to accept that there is an obligation to wear *techeiles* based on a *safek deoritta lchumra* but wouldn't agree considering that the price would be exorbitant for many people. (Or Yisrael v. 10 p. 139)

<sup>45</sup> To a questioner [he explained](#) that if someone wears *techeiles* there is no reason that they need to remove it.

<sup>46</sup> Haskama to Techelet M'ey Elisha

<sup>47</sup> Yalkut Yosef 1995 edition, v. 2 p. 112, Responsa Rishon Letzion 1:1. He argues against wearing *techeiles* because the gedolei hador of the previous generation did not do so.

Though he does permit wearing it in a concealed fashion.

<sup>48</sup> Teshuvot Vehanahagot 4:5

<sup>49</sup> He did not wear it but held it was permitted to wear.  
<https://judaism.stackexchange.com/questions/12824/sefardic-contemporaries-for-techeiles>

<sup>50</sup> Or Yisrael v. 10 p. 139. Rav Shlomo Zalman Auerbach was not against it and felt he was too old to start a new project (Rav Borenstein in Lulaot Techelet). Chafetz Chaim said the same about the Radziner *techeiles* that he was too old to look into it.

# Crunching the Numbers – How Many Strings

1 Rambam<sup>51</sup> holds that one string out of eight are *techeiles*. Maggid Meisharim, Mabit, Maharam Ibn Gabay, Sefer Charedim, Levush, Gra, Sefer Hakaneh, and Arizal agree with the Rambam. Radziner in Petil Techelet ch. 6 ends up following the Rambam but says one has what to rely upon to follow either of the other opinions. Ben Ish Chai (Noach n. 17) and [Rav Meir Mazuz](#) hold like the Rambam.

2 Raavad holds that two strings out of eight are *techeiles*. Aruch (*Techeiles*) agrees with the Raavad. Sefer Haitur, Sefer Machriya, Tur, Rabbenu Yerucham, and Shulchan Aruch Harav agree. Smag

isn't sure whether to follow Tosfos or Raavad. Some achronim hold like the Raavad.

4 Rashi and Tosfos hold that four strings out of eight are *techeiles*.<sup>52</sup>

## Conclusion

Rav Schachter<sup>53</sup> and many other Ashkenazic rabbis<sup>54</sup> follow the opinion of Rashi and Tosfos to wear four strings of *techeiles*.<sup>55</sup> Some Ashkenazic rabbis,<sup>56</sup> especially, those in Israel, as well as Sephardic *poskim*<sup>57</sup> follow the Rambam to wear only one string of *techeiles* out of eight.

# Let's Get Down to Business – Practically How to Tie It

**Rav Amram Gaon:** Rav Amram Gaon says that there shall be at least 7 links that each have 3 winds. After tying a knot closest to the garment, the first link should be white. Every link after should alternate in color. One can extend the pattern to 13 links if desired.<sup>58</sup>



**Tosfos:** Tosfos and Rosh holds that one should use 7 links of 3 winds each, with 5 total knots separating them. Between the first and second knot, second and third knot, and third and



fourth knot, there should be one link of white followed by one link of *techeiles*. Between the fourth and fifth knot, one link of white should be used.<sup>59</sup>



**Sefer Hachinuch:** Sefer Hachinuch has the same position as Tosfos except that he advises doing it with thirteen windings, which Tosfos also allows.

<sup>51</sup> Tzitzis 1:6

<sup>52</sup> Rashi and Tosfos Menachot 38a, Rosh Tzitzis n. 6

<sup>53</sup> [Hilchos Tzitzis](#)

<sup>54</sup> Rav Belsky

<sup>55</sup> Birurei Halacha Bmitzvat Techeiles Shebetzitzis p. 63 n. 106 concludes

that even those rishonim who think you need fewer strings of *techeiles* would allow wearing more strings out of doubt. Similarly, Rav Zalman Nechemya Goldberg any combination of strings and tying are acceptable.

<sup>56</sup> Rav Moshe Lichtenstein, Rav Nachum Rabinovitz

<sup>57</sup> Rav Meir Mazuz, Rav Ben Chaim

<sup>58</sup> [Geonica v. 2 p. 331](#)

<sup>59</sup> Tosfos Menachot 39a s.v. lo, Rosh Tzitzis n. 15



**Raavad / Rav Natronai Gaon:** The Raavad quotes Rav Natronai Gaon and holds that there should be 4 links and that each link has 7 winds. Each link is separated by a knot. The winds of each link should alternate white and *techeiles*, the first and last wind of each link being white.<sup>60</sup>



**Rambam:** The Rambam fundamentally is just like Rav Amram Goan in that there are 7 sections of 3 windings with no knots separating them, however, all sections are 3 winds of *techeiles* besides the very first and very last wind are white. In the closest link to the garment, the first wind should be white, while the other two winds of that link should be *techeiles*.

### *Halacha*

Rav Hershel Schachter's opinion is to be strict for as many opinions in the rishonim as possible and therefore has his own method of tying to satisfy the Rambam, Raavad, and Tosfos. Students of his including Rav Aryeh Lebowitz agree.

Rav Yisrael Belsky's opinion is that we follow the tying of the Sefer Hachinuch which is in line with the majority of rishonim, including the Tosfos, Rosh, and Rav Amram Goan. Many Ashkenazim follow this opinion.<sup>62</sup>

Lastly, many Sephardim and some Ashkenazim especially those from Israel hold like the Rambam's approach.<sup>63</sup>

In the farthest link from the garment, the final wind should be white, while the other two winds of that link should be *techeiles*.<sup>61</sup>

**Rav Hershel Schachter:** Rav Schachter in terms of the colors of the windings follows the Rambam to have all windings *techeiles* besides the first and last three. Though Rambam only has one white in the beginning and the end, he advises having three because of the opinion of Tosfos to start and end with three whites. He also incorporates Tosfos's understanding that each section should be broken up with a double knot. Furthermore, he incorporates the approach of the Raavad of having 7 winds in each section.



Rav Schachter  
(Tosfos/Rambam)



Rav Belsky  
(Chinuch)



Rav Mazuz  
(Rambam)

### Works Cited

- Hellman, Meir. Levush Haaron. (2018).
- Shimel, Refael. Techelet M'ey Elisha. (2017).
- Serman, Baruch. The Rarest Blue. (2012).
- Tavgar, Eliyahu. Kelil Techelet. (1993).
- Teitelbaum, Shlomo. Lulaot Techelet. (2000).

<sup>60</sup> Raavad Tzitzis 1:7

<sup>61</sup> Rambam Tzitzis 1:7-8

<sup>62</sup> Rav Eliyahu Tavgar, Rav Avraham Twerski, and Rav Hirsch Tzvi Weinreb (bluefringes.com).

<sup>63</sup> Rav Meir Mazuz, Rav Nachum Rabinovitch, Rav Berel Wein, Rav Moshe Lichtenstein, Rav Moshe David Tendler, Rav Yosef Tzvi Rimon, and Rav Eliyahu Ben Chaim.