



## Tattoo treatment

Treatment recommendation for 1064 nm									Notes
Color	Skin type	Wave-length [nm]	Spot size [mm]	Start-Fluence [J/cm²]	Speed [Hz]	Passes	Treatment frequency	Speed Zimmer cooling system	<ul style="list-style-type: none"><li>Pre-cooling increases patient comfort and limits post-treatment purpura; cold compresses are useful for both pre- and post-cooling. Prevent cold burns of the skin due to strong exposure to air flow.</li><li>If the skin is visibly tanned, the treatment must be postponed for one or two months</li><li><b>Treatment endpoint: Light frosting of the skin surface</b></li><li>After a few treatments "veiling effect" appears, the tattoo ink is only less visible than before the laser pulse</li><li><b>1064 nm mode - Find clinical endpoint by increasing fluence in 1 J/cm² steps, in 532 nm mode increase in 0.4 J/cm² steps and for the fractionated handpiece in 0.2 J/cm² steps</b></li><li><b>Spot bleeding may occur immediately after treatment</b></li><li>Prevent lightening and abrasions of the skin</li><li>Frosting should disappear in less than 20 minutes with minimal pinpoint bleeding</li><li>Perform treatment in contact mode with vertical metallic end tip in contact with skin surface</li><li><b>Caution:</b> Perform test spots before treating large areas. Carefully evaluate patient condition and consider other treatment options. Observe the registration regulations of the respective country.</li><li><b>General notes:</b> Use of large spot sizes or high repetition rates may make it impossible to reach maximum fluence. If desired fluence cannot be achieved: 1. reduce spot size, 2. reduce frequency within recommended range.</li></ul>
Black  Dark blue	≤ III	1064 QS	□2x2; 3x3; 4x4; 5x5	2 – 10	1 - 10	1	Follow-up treatment after 45 - 60 days	High:  5 - 7	
	≥ IV	1064 QS	□2x2; 3x3; 4x4; 5x5	2 - 7	1 - 10	1			
	All	1064 QS	xxx xxx xxx 8 DF	0.8 – 1.4	1 – 5	1 – 2 (in conjunction with full spot)			
		1064 QS	xxx xxx xxx 9 HC	0.6 – 1.2	1 - 5	Single application possible (w. dense tattoo / in combination with full spot)			

QS: Q-Switched, OP: Opti-Pulse, PT: Photo-Thermal, □: Full Spot, xxx: Fractionated

Coverage pass 8 DF: 3% (532 nm), 5% (1064 nm), 10% (694 nm); Coverage pass 9 HC: 20% (532 nm), 25% (1064 nm), 40% (694 nm).



## Tattoo treatment

Treatment recommendation for 532 nm									Notes
Color	Skin type	Wave-length [nm]	Spot size [mm]	Start-Fluence [J/cm²]	Speed [Hz]	Passes	Treatment frequency	Speed Zimmer cooling system	<div>See above</div> <ul style="list-style-type: none"><li><b>Caution:</b> Perform test spots before treating large areas. Carefully evaluate patient condition and consider other treatment options. Observe the registration regulations of the respective country.</li><li><b>Use DF on difficult to remove tattoos in combination with a full spot handpiece. 1-2 passes DF followed by a full spot treatment - Attention lower frosting and pinpoint bleeding to be expected.</b></li><li><b>HC handpiece can be used individually to reduce blistering of dense tattoos for the next session or in combination after a full spot treatment for faster ink evacuation.</b></li></ul>
Purple	≤ III	532 QS	□2x2; 3x3; 4x4	2 – 4	1 - 10	1	Follow-up treatment after 45 - 60 days	High:  5 - 7	
Red									
Orange	≥ IV	532 QS	□2x2; 3x3; 4x4; 5x5	1.6 – 3.4	1 – 10	1			
Yellow									
Brown									

QS: Q-Switched, OP: Opti-Pulse, PT: Photo-Thermal, □: Full Spot, ☐☐☐: Fractionated

Coverage pass 8 DF: 3% (532 nm), 5% (1064 nm), 10% (694 nm); Coverage pass 9 HC: 20% (532 nm), 25% (1064 nm), 40% (694 nm).



## Tattoo treatment

Treatment recommendation for 694 nm							Notes
Color	Wave-length [nm]	Spot size [mm]	Start-Fluence [J/cm²]	Speed [Hz]	Treatment frequency	Speed Zimmer cooling system	<ul style="list-style-type: none"><li>• Pre-cooling increases patient comfort and limits post-treatment purpura; cold compresses are useful for both pre- and post-cooling. Prevent cold burns of the skin due to strong exposure to air flow.</li><li>• If the skin is visibly tanned, the treatment must be postponed for one or two months</li><li>• <b>Treatment endpoint: Light frosting on the skin surface</b></li><li>• After a few treatments "veiling effect" appears, the tattoo ink is only less visible than before the laser pulse</li><li>• <b>Find clinical endpoint by increasing fluence in 0.6 J/cm² increments</b></li><li>• <b>Pinpoint bleeding may occur immediately after treatment</b></li><li>• Prevent lightening and abrasions of the skin</li><li>• Frosting should disappear in less than 20 minutes with minimal pinpoint bleeding</li><li>• Perform treatment in contact mode with spacer tip in contact with skin surface</li><li>• <b>Caution:</b> Perform test spots before treating large areas. Carefully evaluate patient condition and consider other treatment options. Observe the registration regulations of the respective country.</li><li>• <b>General notes:</b> Use of large spot sizes or high repetition rates may make it impossible to reach maximum fluence. If desired fluence cannot be achieved: 1. reduce spot size, 2. reduce frequency within recommended range.</li></ul>
Blue  Black	694 QS	□2x2; 3x3; 4x4; 5x5	2.4 – 7	1 - 3	Follow-up treatment after 45 - 60 days	High:  5 - 7	
Sky Blue  Green	694 QS	□2x2; 3x3; 4x4; 5x5	3 – 8	1 - 3			
Brown  Purple	694 QS	□2x2; 3x3; 4x4; 5x5	3 - 7	1 – 3			

QS: Q-Switched, OP: Opti-Pulse, PT: Photo-Thermal, □: Full Spot, ☐☐☐: Fractionated

Coverage pass 8 DF: 3% (532 nm), 5% (1064 nm), 10% (694 nm); Coverage pass 9 HC: 20% (532 nm), 25% (1064 nm), 40% (694 nm).



## Tattoo treatment

Treatment recommendation for 694 nm → 1064 nm mix								Notes
Color	Wavelength [nm]	Spot size [mm]	Start-Fluence [J/cm²]	Speed [Hz]	Passes	Treatment frequency	Speed Zimmer cooling system	
Black	Mix 694 → 1064 QS (Pulse delay off)	□2x2; 3x3; 4x4; 5x5	1.5 - 4 (694 nm)	1 - 2	1	Follow-up treatment after 45 - 60 days	High:  5 - 6	<ul style="list-style-type: none"><li>Pre-cooling increases patient comfort and limits post-treatment purpura; cold compresses are useful for both pre- and post-cooling.</li><li>If the skin is visibly tanned, the treatment must be postponed for one or two months</li><li>Fractionated treatment can cause bleeding and scabbing</li><li><b>Treatment of very dark tattoos should only be carried out with a single wavelength</b></li><li><b>Use of fractionated 9 mm HC handpiece instead of full spot handpiece in first treatments to avoid blistering</b></li><li><b>Do not perform full spot and fractionated 9 mm HC treatment in the same session.</b><ul style="list-style-type: none"><li>➤ If endpoint is not homogeneous and less visible in areas with different colors, then increase the fluence of the laser source in relation to the color that reacts less</li></ul></li><li><b>Treatment endpoint: In first sessions moderate "matting/bleaching" where color is present, not on the rest of the skin. After several sessions limited effect and tattoo color is barely visible directly after laser pulse.</b></li><li>Avoid excessive frosting and abrasion of the skin</li><li>Frosting should wear off in &lt;20 minutes with minimal pinpoint bleeding</li><li>Treatment in contact mode, metal spacer in contact perpendicular to the skin surface</li></ul>
Dark blue			2 - 7 (1064 nm)					
		9 HC	0.8 - 1.2 (694 nm)	1 - 2	2 – 3 (~40% treated area/ passage)			
0.6 - 1.1 (1064 nm)								
Blue		□2x2; 3x3; 4x4; 5x5	1.8 - 5 (694 nm)	1 – 2	1			
			2 - 9 (1064 nm)					
Black		9 HC	0.8 - 1.2 (694 nm)	1 – 2	2 – 3 (~40% treated area/pas- sage)			
Sky Blue			0.6 - 1.1 (1064 nm)					
Green								
Brown								
Purple								

QS: Q-Switched, OP: Opti-Pulse, PT: Photo-Thermal, □: Full Spot, x x x: Fractionated

Coverage pass 8 DF: 3% (532 nm), 5% (1064 nm), 10% (694 nm); Coverage pass 9 HC: 20% (532 nm), 25% (1064 nm), 40% (694 nm).



## Tattoo treatment

### Further comments on treatment recommendation for 694 nm → 1064 nm mix

#### See above

- **Caution:** Perform test shots before treating large areas. Carefully evaluate patient condition and consider other treatment options. Observe the registration regulations of the respective country.
- **General notes:** Use of large spot sizes or high repetition rates may make it impossible to reach maximum fluence. If desired fluence cannot be achieved: 1. reduce spot size.  
2. reduce frequency in recommended range.
- Test shot: Perform in Q-switched mix mode as follows:
  - Select Mix mode for Q-Switched emission, set frequency to 1 Hz, set delay between pulses and spot size as in table. Determine correct spot size by size of tattoo, parts of tattoo to be treated and fluence required.
  - For the first treatment in Mix mode, set the fluence of the YAG 1064 Q-S laser to the minimum shown in the table. For subsequent sessions, set fluence to minimum +1 J/cm<sup>2</sup>.
  - Set the Q-S laser source in Ruby 694 nm to the minimum specified in the table.
  - Select a significant part of the tattoo to test the set fluence areas. Select the one that creates the treatment endpoint immediately after laser pulse.
  - **Find the clinical endpoint by increasing the starting fluence of each source (YAG and Ruby) in 0.5 J/cm<sup>2</sup> increments.**

QS: Q-Switched, OP: Opti-Pulse, PT: Photo-Thermal, □: Full Spot, ☒: Fractionated

Coverage pass 8 DF: 3% (532 nm), 5% (1064 nm), 10% (694 nm); Coverage pass 9 HC: 20% (532 nm), 25% (1064 nm), 40% (694 nm).