CLAIMS

What is claimed is:

1. A static mixer, comprising:

a static mixer housing, comprising,

an inlet port for receiving two or more fluids to form a mixed fluid,

a channel in fluid communication with the inlet port,

a raised rib along a perimeter of the channel,

a flow splitter for splitting the mixed fluid into a first stream and a second stream within channels,

a second flow splitter for splitting the first stream into a third stream and a fourth stream within channels and a third flow splitter for splitting the second stream into a fifth stream and a sixth stream within channels,

a first T-style junction for rejoining and mixing the third stream and the fourth stream within a channel,

a second T-style junction for rejoining and mixing the fifth stream and the sixth stream within a channel, and

a third T-style junction for rejoining and mixing the streams; and

a plastic film, the plastic film sealed to the raised rib, forming a static mixer capable of mixing the two or more fluids,

where a fluid flow of at least one of the two or more fluids is discontinuous.

2. The static mixer of claim 1, wherein the channel comprises one of a semi-circular geometry, a trapezoidal geometry, a rectangular geometry, or a chevron geometry.

3. The static mixer of claim 1, wherein the static mixer housing is formed of one of high-density polyethylene (HDPE), acrylonitrile-butadiene-styrene (ABS), nylon 6, nylon 66, nylon 46, or polyether sulfone.

4. The static mixer of claim 1 further comprising additional T-style junctions.

5. The static mixer of claim 4 further comprising additional flow splitters.

6. The static mixer of any of claims 1-5 wherein the flow splitters are Y-style splitters.

7. The static mixer of any of claims 1-6 wherein the plastics film is formed of a polyethylene material.

8. The static mixer of any of claims 1-7 further comprising a port having at least two inlet ports.

9. The static mixer of any of claims 1-8 further comprising a concave nub, a convex nub, or a radiused inflection at a flow splitter.

10. The static mixer of any of claims 1-9, wherein the channels have a constant inner dimension.

11. The static mixer of any of claims 1-9, wherein the channels have inner dimensions that are not constant in size.

12. A static mixer system comprising one or more static mixers connected in series.

13. A static mixer system comprising one or more static mixers connected in parallel.

14. A static mixer, comprising:

a static mixer housing, comprising,

an inlet port for receiving two or more fluids to form a mixed fluid,

a channel in fluid communication with the inlet port,

a flow splitter for splitting the mixed fluid into a first stream and a second stream within channels, and

a first T-style junction for rejoining and mixing the first stream and the second stream within a channel,

wherein a fluid flow of at least one of the two or more fluids is discontinuous.

15. The static mixer of claim 14, wherein the channel comprises one of a semi-circular geometry, a trapezoidal geometry, a rectangular geometry, or a chevron geometry.

16. The static mixer of claim 14, wherein the static mixer housing is formed of one of high-density polyethylene (HDPE), acrylonitrile-butadiene-styrene (ABS), nylon 6, nylon 66, nylon 46, or polyether sulfone.

17. The static mixer of claim 14 further comprising additional T-style junctions.

18. The static mixer of claim 14 further comprising additional flow splitters.

19. The static mixer of any of claims 14-18 wherein the flow splitters are Y-style splitters.

20. The static mixer of any of claims 14-19 wherein the first T-style junction is located outside the static mixer.

21. The static mixer of any of claims 14-20, further comprising a raised rib along a perimeter of the channel.

22. The static mixer of claim 21, further comprising a plastic film, the plastic film sealed to the raised rib, forming a static mixer capable of mixing the two or more fluids.

23. The static mixer of any of claims 14-22, wherein two fluids are introduced into the static mixer.

~~24. The static mixer of any of claims 14-23, wherein at least one of the two fluid is in a state of discontinuous flow.~~

2~~5~~4. A static mixer, comprising:

a static mixer housing, comprising,

an inlet port for receiving at least two fluids, wherein at least one of the fluids is introduced in an intermittent manner,

a channel in fluid communication with the inlet port,

a flow splitter for splitting the at least two fluids into a first stream and a second stream within channels,

a first T-style junction for rejoining and mixing the first stream and the second stream within a channel; and

an outlet port.

2~~6~~5. The static mixer of claim 2~~5~~4, further comprising a plurality of flow splitters.

2~~7~~6. The static mixer of claim 2~~5~~4, further comprising a plurality of T-style junctions.

2~~8~~7. The static mixer of claim 2~~5~~4, wherein the inlet port comprises two inlets.

2~~9~~8. The static mixer of claim 2~~5~~4, wherein the inlet port comprises two inlets of differing inner diameters.