

CLAIMS

1. A thermal interface material (TIM) structure comprising:

a TIM sheet comprising a plurality of piercings,

wherein each of the plurality of piercings comprises a cavity and displaced material,
and

wherein the displaced material from each of the plurality of piercings protrudes
away from the TIM sheet.
2. The TIM structure of claim 1, further comprising a viscous TIM placed in at least
one cavity and guided away from the TIM sheet by the displaced material.
3. The TIM structure of claim 1, wherein the plurality of piercings alter the thermal
conductivity direction of the TIM sheet.
4. The TIM structure of claim 1, wherein the displaced material from each of the
plurality of piercings protrudes above and below the TIM sheet.
5. The TIM structure of claim 1, wherein the displaced material from at least one of
the plurality of piercings is attached to at least two sides of the cavity.
6. The TIM structure of claim 1, wherein the plurality of piercings include at least two
different sized cavities.
7. The TIM structure of claim 1, wherein at least one portion of the TIM sheet is
without piercings.
8. A system comprising:

a heat-generating electronic component comprising a non-flat surface;

a heat exchanger positioned on the electronic component along the non-flat surface, wherein a gap exists between the heat exchanger and electronic component, and wherein the gap is a portion of the non-flat surface of the electronic component that is separated from the heat exchanger by a greater distance than at least one other portion of the non-flat surface; and

a thermal interface material (TIM) sheet placed between the electronic component and the heat exchanger, the TIM sheet comprising a plurality of piercings positioned in the gap between the heat exchanger and electronic component, wherein each of the plurality of piercings comprise a cavity and displaced material protruding away from the TIM sheet.

9. The system of claim 8, further comprising:

a viscous TIM placed in at least one cavity and guided away from the TIM sheet by the displaced material.

10. The system of claim 8, wherein the TIM sheet is without piercings at a portion of the non-flat surface of the electronic component separated from the heat exchanger by a smaller distance than the gap.
11. The system of claim 8, wherein the plurality of piercings alter the thermal conductivity direction of the TIM sheet.
12. The system of claim 8, wherein the displaced material from each of the plurality of piercings protrudes above and below the TIM sheet.
13. The system of claim 8, wherein the displaced material from at least one of the plurality of piercings is attached to at least two sides of the cavity.
14. The system of claim 8, wherein the plurality of piercings include at least two different sized cavities.

15. A method comprising:
- placing a thermal interface material (TIM) sheet between an upper forming plate and a lower forming plate, wherein the upper forming plate comprises a plurality of forming plate cavities, and wherein the lower forming plate comprises a plurality of forming plate piercing nails; and
- pressing the upper forming plate to the lower forming plate creating a plurality of piercings in the TIM sheet, wherein each of the plurality of piercings comprises a cavity and displaced material, and wherein the displaced material from each of the plurality of piercings protrudes away from the TIM sheet.
16. The method of claim 15, wherein the plurality of piercings alter the thermal conductivity direction of the TIM sheet.
17. The method of claim 15, wherein the displaced material from each of the plurality of piercings protrudes above and below the TIM sheet.
18. The method of claim 15, wherein the displaced material from at least one of the plurality of piercings is attached to at least two sides of the cavity.
19. The method of claim 15, wherein the plurality of piercings include at least two different sized cavities.
20. The method of claim 15, wherein at least one portion of the TIM sheet is without piercings.