An insulating wrap for adding to containers to prevent heat adsorption or heat loss is composed of conductive insulation material as well as radiant barrier material. The insulating wrap conforms to the container shape and has multiple attachment elements for closing and retaining the insulating wrap to the container. The insulating wrap may also have attachment elements for adding a top and/or a bottom insulating cover also comprising conductive insulation material as well as radiant barrier material. The insulating wrap may employ insulating tape on the top and bottom edges to protect the edges as well as to further improve heat transfer at the interface between the top or bottom covers and the insulating wrap. In one embodiment the top cover may have an integrated handle piece where the top and bottom cover attachments have sufficient strength to allow a container to be lifted. This embodiment facilitates lifting of an insulated container.
INSULATING/PROTECTIVE COVERING FOR A CONTAINER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to the following commonly co-pending U.S. Patent Application:


TECHNICAL FIELD

[0003] The present invention relates in general to insulating and/or protective coverings.

BACKGROUND INFORMATION

[0004] Equipment used in many applications can be exposed to adverse conditions. The conditions can vary from sunlight exposure to corrosive gases. The condition that is being protected against determines what method is best for protection.

[0005] Sunlight as radiant energy can be destructive to materials as well as an unwanted heat source. A device that would protect against sunlight brings the advantage of reducing the affects of radiant energy in the form of heat and material breakdown. A device that further insulated would increase the utility of thermal transfer.

[0006] There is, therefore, a need for a protective covering that insulates.

SUMMARY OF THE INVENTION

[0007] An insulating wrap to inhibit heat transfer to or from a container comprises conduction insulating material as well as material to prevent radiant heat transfer. The insulating wrap conforms to the shape of the container and has attachment elements for closing the insulating wrap and retaining it against the container. The insulating wrap may have additional attachment features for coupling an insulating top cover and an insulating bottom cover. The top and bottom covers also have material for preventing conductive as well as radiant heat transfer. The attachment elements may include hook and loop, magnetic, mechanical snaps, straps with latches, etc. If the attachment elements provide sufficient strength for lifting a loaded container, the insulating top cover may be fitted with a handle element to allow the container to be lifted without providing an opening to a container handle further preventing heat transfer. Insulating tape may be used on the top and bottom edges to protect the edges and to further reduce heat transfer.

[0008] The foregoing has outlined rather broadly the features and technical advantages of the present invention in order that the detailed description of the invention that follows may be better understood. Additional features and advantages of the invention will be described hereinafter which form the subject of the claims of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, in which:

[0010] FIG. 1A illustrates one embodiment of the insulating wrap according to embodiments of the present invention;

[0011] FIG. 1B illustrates another embodiment of the insulating wrap according to embodiments of the present invention;

[0012] FIG. 2A illustrates the insulating wrap of FIG. 1A with an insulating top component;

[0013] FIG. 2B illustrates the insulating wrap of FIG. 1A assembled with an added insulating top and an insulating bottom component;

[0014] FIG. 3A is a side view and a top view of an insulating top or bottom component according to one embodiment of the present invention; and

[0015] FIG. 3B is a side view and a top view of an insulating top or bottom component according to another embodiment of the present invention.

DETAILED DESCRIPTION

[0016] In the following description, numerous specific details are set forth to provide a thorough understanding of the present invention. However, it will be obvious to those skilled in the art that the present invention may be practiced without such specific details. In other instances, well-known elements may be shown in block diagram form in order not to obscure the present invention in unnecessary detail. For the most part, details concerning detailed dimensions and the like have been omitted inasmuch as such details are not necessary to obtain a complete understanding of the present invention and are within the skills of persons of ordinary skill in the relevant art.

[0017] Refer now to the drawings wherein depicted elements are not necessarily shown to scale and wherein like or similar elements are designated by the same reference numeral through the several views. The following refers to the invention insulating wrap for simplicity. It is understood that the present invention may be used to protect equipment other than fluid sampling equipment and is not limited to sampling equipment.

[0018] FIG. 1A illustrates the insulating wrap 100 according to embodiment of the present invention. The insulating wrap 100 comprises a radiant barrier material 103, a hook and loop attachment system 101 (e.g., Velcro®), and radiant barrier tape 104 for protection of the edge. In this embodiment four tabs are shown, however, the present invention is not limited to four tabs and the number may vary depending on the closure strength and size of the insulating wrap 100.

[0019] It is understood that attachment system 101 may use other attachment technologies (e.g., mechanical snaps, magnetic elements, etc.) and still be within the scope of the present invention.

[0019] FIG. 1B illustrates another embodiment of an insulating wrap 110 according to embodiments of the present invention. The insulating wrap 110 comprises a
radiant barrier material 103, a plurality of straps 106 with latching elements 107, and radiant barrier tape 104 for protection of the edge. In this embodiment three sets of straps 106 are shown, however, the present invention is not limited to three sets of straps 106 and the number may vary depending on the closure strength and size of the insulating wrap 110.

[0020] FIG. 2A illustrates the insulating wrap 200 according to embodiments of the present invention that has added attachment elements 203 for incorporation of an insulating lid 206. Insulating wrap 200 is comprised of a radiant barrier material 201, hook and loop attachment systems 202, 203, 204 (e.g., Velcro®), and radiant barrier tape 205 for protection of the edge. Velcro® rectangles 202 provide latching closure for the insulating wrap 200. Additionally, Velcro® rectangles 203 provide a means to secure the top cover 206 to insulating wrap 200. Velcro rectangles 204 provide a means to attach a bottom cover 206 (not shown) to insulating wrap 200.

[0021] FIG. 2B illustrates insulating wrap 200 in an assembled state with top and bottom covers 206. An exemplary tab 209 is shown latched and an exemplary tab 209 with Velcro® elements is shown in an open position. Exemplary Velcro® elements 202 are shown latched.

[0022] FIG. 3A illustrates a top view and a side view of a top or bottom cover lid 206. In this embodiment, an additional insulating material 302 (e.g., foam) is shown attached to radiant barrier material 301, however the present invention may have or may not have this additional insulation. Velcro® elements 203 and tabs 209 are shown in the top view.

[0023] FIG. 3B illustrates another embodiment of top or bottom cover 206 according to embodiments of the present invention. An insulating material 302 (e.g., foam) is shown attached to radiant barrier material 301. Velcro® elements 203 and tabs 209 are shown in the top view. Handle 303 allows a means of lifting the entirety of the assembly.

What is claimed is:

1. A thermally insulating covering assembly for an enclosed container comprising;
   a flexible thermally insulating material piece, wherein the flexible thermally insulating material piece has two or more first attachments elements for retaining the flexible thermally insulating material piece in contact with sides of the enclosed container; and
   an insulating top cover for coupling to the flexible thermally insulating material piece, wherein the insulating top cover has attachments elements for retaining the insulating top cover on and in contact with a top of the enclosed container.
2. The covering assembly of claim 1 further comprising an insulating bottom cover for coupling to the flexible thermally insulating material piece, wherein the insulating bottom cover has attachments elements for retaining the insulating top cover in contact with a bottom of the enclosed container.
3. The covering assembly of claim 1, wherein the flexible thermally insulating material piece comprises a first layer of thermal conductive insulation coupled to a second layer of thermal radiation insulation.
4. The covering assembly of claim 3, wherein the insulating top cover comprises a first layer of thermal conductive insulation coupled to a second layer of thermal radiation insulation.
5. The covering assembly of claim 4, wherein the insulating bottom cover comprises a first layer of thermal conductive insulation coupled to a second layer of thermal radiation insulation.
6. The covering assembly of claim 1, wherein the first attachment features are mating elements selected from a group consisting of a hook and loop attachment system, a magnetic attachment system, a plug and socket connector attachment system, and a selective, separable adhesive based attachment system.
7. The covering assembly of claim 2, wherein the insulating top cover comprises three or more tab elements that extend radially beyond the flexible thermally insulating material piece when it is wrapped around and in contact with the sides of the container, the tab elements having tab attachment features that couple to mating cover attachment features on the flexible thermally insulating material piece thus retaining the insulating top cover on and in contact with the top of the enclosed container.
8. The covering assembly of claim 7, wherein the insulating bottom cover comprises three or more tab elements that extend radially beyond the flexible thermally insulating material piece when it is wrapped around and in contact with the sides of the container, the tab elements having tab attachment features that couple to mating cover attachment features on the flexible thermally insulating material piece thus holding the insulating bottom cover on and in contact with the bottom of the enclosed container.
9. The covering assembly of claim 8, wherein the tab attachment features and cover attachment features are mating elements selected from a group consisting of a hook and loop attachment system, a magnetic attachment system, a plug and socket connector attachment system, and a selective, separable adhesive based attachment system.
10. The covering assembly of claim 1, wherein the flexible thermally insulating material piece extends a lip distance above the top of the enclosed container forming a top recess when wrapped around and in contact with the sides of the container.
11. The covering assembly of claim 10, wherein the insulating top cover has a thickness corresponding to the lip distance and the insulating top cover sets in the top recess thus protecting the edge of the insulating top cover from mechanical damage and heat loss.
12. The covering assembly of claim 2, wherein the flexible thermally insulating material piece extends a lip distance above a bottom of the enclosed container forming a bottom recess when wrapped around and in contact with the sides of the container.
13. The covering assembly of claim 12, wherein the insulating bottom cover has a thickness corresponding to the lip distance and the insulating bottom cover sets in the bottom recess thus protecting the edge of the insulating top cover from mechanical damage and heat loss.
14. The covering assembly of claim 1, wherein the insulating top cover has a reusable closure for providing access to a scalable fill opening in the enclosed container.
15. The covering assembly of claim 1, wherein the enclosed container is substantially cylindrical in shape.
16. The covering assembly of claim 15, wherein the flexible thermally insulating material piece is substantially rectangular in shape with a top edge, a bottom edge and opposing first and second joining edges.

17. The covering assembly of claim 16, wherein the first attachment features comprise a two or more first elements disposed along the first joining and two or more mating second elements disposed along the second joining edge.

18. The covering assembly of claim 2, wherein the insulating top cover has an integrated handle suitable for lifting the enclosed container when the insulating top cover is coupled to the flexible thermally insulating material piece with the tab elements and the insulating bottom cover is coupled to the flexible thermally insulating material piece with tab elements.

19. The covering assembly of claim 5, wherein the thermal conductive layer is made of a foam material.

20. The covering assembly of claim 5, wherein the thermal radiation layer is made of a reflective metalized fabric material.