PLAINTIFF'S EXHIBIT

FSA-19

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BULLETIN

ROBERT H. ECKER
SEC'Y.-TREAS.

TO: Non-Metallic Division

FROM: Robert H. Ecker

DATE: April 24, 1989

SUBJECT: Non-Metallic Handbook

On January 16, 1989, we distributed a draft of the Non-Metallic Gasketing Handbook along with a form for ordering same. At the March meeting, a revision of the section on "Woven and Folded Cloth" was approved.

Just to make sure that everyone is aware of the change, we are enclosing a copy of the revised material. This has been sent to the printer and the new Handbook should be printed and distributed by the end of May.

Very truly yours,

Robert H. Ecker
Secretary/Treasurer

RHE:mer

Attachment

cc: Principal Voting Representatives
Standards and Technical Committee

WOVEN AND FOLDED CLOTH

The basic types of woven cloth are:

A. Asbestos cloth

B. Fiberglass cloth

These fabrics are woven in such a manner as to allow sufficient impregnation of elastomers or PTFE whereby all voids are filled and fibers are properly coated to prevent or minimize wicking.

Fabrics are usually 1/32" or 1/16" thickness. Thicknesses over 1/16" are obtained by plying of additional layers.

Where additional reinforcement is required, wire strands of brass, inconel and occasionally stainless steel are used. Such fabrics are able to withstand higher pressures and temperatures. The wires are tightly interwoven into the yarns with no looping of the wire observed.

A uniform coating of the impregnating material is necessary for optimizing properties in the final product.

A. Asbestos Cloth

Cloth is woven from yarn made of long spinning grade asbestos and usually blended with processing aids such as cotton or rayon. A commercial grade of asbestos yarn contains a minimum of 75%

asbestos. For additional heat resistance, an Underwriters' grade is used which contains 80 to 84% asbestos.

Fabrics made with higher asbestos levels are available for special applications. Gaskets made from asbestos/cotton or rayon blends have performed satisfactorily at temperatures to 500°F and approximately 250 psi.

B. Fiberglass Cloth

Fiberglass cloth which is used for gasketing can be woven from different types of fiberglass yarns and rovings.

1. Filament
2. Texturized
3. Cardable (blended)
4. Staple

The two types of yarn used mainly for gasketing are texturized and cardable.

Texturized yarns are made by passing strands of filament yarn through a high pressure air stream which forces the filaments apart increasing the bulkiness of the yarn. This bulkiness permits better saturation or coating of the fabric resulting in a more uniform product.

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Cardable or blended yarn fabrics use a fine glass fiber blended with acrylic and/or other fibers which provide a cushion for the glass fibers, thereby preventing possible crushing. Blending of fibers is similar to that of asbestos.

Early fiberglass gaskets did not contain wire; however, later versions using wire resulted in better formation in folding of gaskets and gaskets held their shape much better.

Folded Cloth Gaskets

Woven asbestos cloth and texturized or blended fiberglass cloth gaskets are folded to form endless seals used for handhole and manhole gaskets. They can be round, oval or square or rectangular. These materials may also be die cut into various configurations.

Tape

Tape is formed by slitting and folding cloth. It can be made in widths of 1/4" to 10" and in thicknesses of 1/16" to 1/2".

Groove or Door Packing

Any of the rubberized fabrics can be rolled or folded to form round, square or rectangular cross sections.

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Tadpole Tape

These tapes consist of fabrics wrapped around various core materials which include:

1. Glass or ceramic rope
2. Rubber ~~cards~~ cords - Silicone, Hypalon, Neoprene
3. Wire Mesh Cables - Inconel, Stainless Steel

The selection of core and cover materials is based on heat resistance, pressure, environment and compressibility. The cloth extends beyond the core to form a flat lip. This lip can be punched or drilled to accept bolts and the extension or "tail" is then bolted to the mating surface. This allows the bulb portion to be compressed and provides a good seal for irregular surfaces that must be subjected to opening and closing.

Unimpregnated cloth with various cores may also be used and the tadpole shape is formed by using a high temperature thread. This type of seal can withstand temperatures up to 1000°F continuous service.