

Manufacturing of gasket sheet using paper manufacturing process without organic solvent

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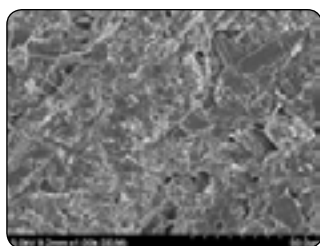
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This paper is about ceramic gasket manufacturing technology that can be used the extreme temperatures. This gasket is manufactured using ceramic fiber and talc main raw materials, and inorganic content is about more than 95 percent. Therefore, gasket has thermal stability, chemical and corrosion resistance and superior properties. So the chemical plant, high pressure thermal processing, steam lines and can be used. In this study, paper manufacturing method applied for preparation of the ceramic gasket sheet and it's a new economic process will be. Inorganic fiber, talc and binders evenly distributed in the waters for manufacture the gasket. Then dehydration on the wire mesh by supplying the slurry, and compression, through drying process completed the gasket for extreme temperature. The characteristics of manufactured during the experiment are density 1.40g/cm³, tensile strength 13.7MPa, compressibility 19%, recovery 55 and ignition loss 33.4% at 650oC. And there was no pressure drop when 10 minutes in conditions of 150LB(two inch) 10kgf/cm² nitrogen. All the additives are being evenly distributed to the surface of the gasket, and each other's bonds have been completed successfully, and the applicability by paper manufacturing process. It has been confirmed that enough.

Solvent free gasket manufacturing process:

1. All gasket materials such as water-based latex, mineral fiber and fillers are easily in water and evenly distributed.
2. Was dehydration a lot of influence on the size of the cohesion within the slurry in forming process.
3. An example a continuous process for a product is as follows : Mixture of raw materials -> forming and dehydration->third stage compression -> two stage drying -> third stage calendering -> rolling
4. New process is no odor is a clean work environment.

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Properties	Commercial used	Paper making process	
		KCP-2 Standard method	JPE17050 Continuous production Test method
Density, g/cc	1.55	1.3-1.4	1.4
Compressibility, %	5-11	18-20	19 ASTM F36
Recovery, %	10	40-50	55 ASTM F36
Tensile strength, MPa	13.6	100-1000	13.7 ASTM F158
ASTM D1 Oil resistance	Max.20	14.5	17.0 Change in weight%
Ignition loss (at 650C, %)	34.03	32.25	33.4
Gas-tight	very good	Very good	very good

Recent Publications:

1. Interface Performance Materials, Inc. (2016) Composite sheet with embedded mesh layer. US Patent : US2016-0281852
2. Dipl.-Ing. C. Simader, Dipl.-Ing. L. Horl and Prof. Dr.-Ing. habil. W. Haas, Institut für Maschinenelemente, Universität Stuttgart, Germany. The development of design guidelines for the application of formed-in-place gaskets. Sealing Technology(2012)
3. New gasket is very flexible, Sealing Technology, Volume 2009, Issue 7, July 2009, Page 2.

Biography

Yoonjong Yoo Major Research Field are Honeycomb adsorbents for VOC, CO₂, humidity adsorption, Ceramic paper, Zeolite paper, Active carbon paper for adsorption materials, Carbon (chopped) fiber paper and mat for GDL and plane heater and Solvent free gasket manufacturing process for high temperature using. And working at Korea Institute of Energy Research (KIER).

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