

Review of Orthopedic device having gel pad with phase change material

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Abstract

An orthopedic equipment for treatment of injured joints will contain one or more gel pad having one or more phase change materials for improving the thermal energy storage capacity of the gel pad. The phase change materials included in the gel material inside the gel pad may be encapsulated, formed in pellets, soluble, insoluble, or in any desirable form. By changing the temperature of gel pad and used for treatment of injured joints taking advantage of the increased thermal energy storage capacity of the phase change material.

Keywords: Orthopedic equipment, Thermal energy storage.

Introduction

An device for treatment to an injured body member and providing therapy to the member comprising:

Means for providing support to said injured body member; a gel pad adapted to be mounted between supporting means and injured body member in order to provide resilient support and cushioning effect for said injured body member, gel pad including gel material and have more than one phase change material covered by a sheet of material, said phase change material providing increased thermal storage capacity of gel material, gel pad capable of being removed from between supporting means and injured body member so that the temperature of gel pad may be changed, and then placed back between supporting means and injured body member in order to provide temperature therapy to injured body member due to increased thermal storage capacity of phase change material, gel material remaining pliable during temperature therapy in order to facilitate said resilient support and cushioning effect of gel pad, phase change material being encapsulated in a sheet of capsules inside gel pad, sheet of capsules preventing said phase change material from moving inside gel pad in order to provide a more uniform temperature distribution across gel pad; and means for removable securing supporting means to injured body member.

Background of The Review

The present review relates generally to devices and, more particularly, to a device having gel pad including more than one phase change material for better outcome of orthopedic device having phase change materials.

A gel pad useful in cure of decubitus ulcers by putting a thin-film envelope around a gel made by cross-linking high molecular weight polyvinyl alcohol, such as formaldehyde, in the presence of an catalyst, and by incorporating plasticizer in the gel, is described in U.S. Pat. No. 3,858,379, issued to Graves, et al. on Jan. 7, 1975. gel cushion useful for protecting the body against localized pressures is created by placing a PCM around a gel comprising the reaction product of an organosiloxane and a hydrogenosiloxane, which is mostly used a copolymer of a particular combination of siloxanes combined with an additive such as dimethylpolysiloxane, is used in U.S. Pat. No. 3,663,973, issued to Spence on May 23, 1972.

Conclusion

In this review we want to say that if we use more than one phase change Materials with doping then we can enhance the performance of orthopedic device for treatment of injured body by changing the temperature of gel pad injured body member in order to provide resilient support and cushioning effect for said injured body member.

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