$$R^2\text{-}OSO_3^- {}^+M^2$$

in which R^2 is linear alkyl having from 8 to 12 carbon atoms and M^2 is a cation. The alkyl ether sulfate comprises the structure:

$$R^3\text{-}(OCH_2CH_2)_yOSO_3^- {}^+M^3$$

in which R^3 is branched alkyl or linear alkyl or a combination thereof having from 8 to 13 carbon atoms, y has an average value from 0.1 to 5, and M^3 is a cation. M^1, M^2, and M^3 can be independently selected, and can be the same or different.

[0005] A new gypsum slurry is contemplated comprising gypsum, water, and a surfactant comprising:

- from 12 to 100 wt.% by total surfactant weight of the branched alkyl sulfate;
- from 0 to 88 wt.% by total surfactant weight of the linear alkyl sulfate; and
- from 0 to 30 wt.% by total surfactant weight of the alkyl ether sulfate.

[0005a] In one aspect, the present invention provides A surfactant composition comprising:

- from 12 to 95 wt.% by total surfactant weight of a branched alkyl sulfate having the structure:

  $$R^1\text{-}OSO_3^- {}^+M^1,$$

  in which R^1 is branched alkyl having from 8 to 12 carbon atoms and M^1 is a cation;
- from 0 to 88 wt.% by total surfactant weight of a linear alkyl sulfate having the structure:

  $$R^2\text{-}OSO_3^- {}^+M^2,$$

  in which R^2 is linear alkyl having from 8 to 12 carbon atoms and M^2 is a cation; and
- from 0 to 30 wt.% by total surfactant weight of an alkyl ether sulfate having the structure:

  $$R^3\text{-}(OCH_2CH_2)_yOSO_3^- {}^+M^3$$

in which R^3 is branched alkyl or linear alkyl or a combination thereof having from 8 to 13 carbon atoms, y has an average value from 0.1 to 5, and M^3 is a cation; in which

- M^1, M^2, and M^3 are independently selected.

[0006] A new gypsum board is contemplated comprising a core and facing sheets, the core comprising the gypsum slurry described above. The core has multiple foam voids, which are also sometimes referred to as bubbles, with the same meaning. The foam voids in the core have a greater median diameter than the foam voids in a corresponding core made under the same conditions except that all or substantially all of the R^1 moieties of the surfactant are replaced by R^2 moieties having the same number of carbon atoms.

[0007] A new method of controlling the median foam void diameter in a gypsum board is contemplated. This method is carried out as follows.

[0008] A first foam water composition is provided comprising 0.05 to 1 wt.% active weight of an alkyl sulfate surfactant. The alkyl sulfate surfactant of the first foam water composition comprises a linear alkyl sulfate surfactant as described above. The alkyl sulfate surfactant of the first foam water composition optionally comprises a branched alkyl sulfate surfactant as described above. The weight ratio, A, of the branched alkyl sulfate surfactant to the linear alkyl sulfate surfactant of the first foam water composition is from 0 :1 to 95 : 5.