CLAIMS

We claim:

1. A sintered foam structure formed from foam beads that are formed from a composition comprising:

an ionomer comprising, in polymerized form, ethylene, an unsaturated acid comonomer, and, optionally, an acrylate comonomer,

wherein the unsaturated acid comonomer is completely or partially neutralized with a neutralizing agent, and

wherein the composition comprises from 25 wt.% to 100 wt.% of the ionomer.

2. The sintered foam structure of Claim 1, wherein the ionomer has a crystallinity from 4% to 20%, wherein crystallinity is measured according to the description.

3. The sintered foam structure of any of Claims 1-2, wherein the composition comprises the ionomer to the exclusion of all other polymers.

4. The sintered foam structure of any of Claims 1-2, wherein the composition comprises at least one additional polymer selected from the group consisting of ethylene-based polymers, propylene-based polymers, and combinations thereof.

5. The sintered foam structure any of Claims 1-4, wherein the ionomer is a terpolymer of ethylene, the unsaturated acid comonomer, and the acrylate comonomer.

6. The sintered foam structure of any of Claims 1-5 having:

i) an Asker C hardness from 45 to 55, measured according to the description;

ii) a foam density from 0.130 g/cc to 0.280 g/cc, measured according to the description;

iii) a falling ball rebound from 55% to 65%, measured according to the description;

iv) an average stress at break from 0.55 MPa to 1.00 MPa, measured in accordance with ASTM D638; and

v) a Type C Tear from 5.0 N/mm to 15 N/mm, measured in accordance with ASTM D624.

7. The sintered foam structure of any of Claims 1-6, wherein the ionomer has a density from 0.948 g/cc to 0.962 g/cc.

8. A foam bead formed from a composition comprising:

(A) an ionomer comprising, in polymerized form, ethylene, an unsaturated acid comonomer, and, optionally, an acrylate comonomer,

wherein the unsaturated acid comonomer is completely or partially neutralized with a neutralizing agent, and wherein the composition comprises from 25 wt.% to 100 wt.% of the ionomer.

9. The foam bead of Claim 8, wherein the ionomer has (i) a density from 0.948 g/cc to 0.962 g/cc measured in accordance with ASTM D792, (ii) a melt flow rate from 0.5 g/10 min to 10 g/10 min measured in accordance with ASTM D1238, and (iii) a melting point from 55°C to 70°C measured in accordance with ASTM D3418.

10. An article comprising at least one component formed from the sintered foam structure of any one of Claims 1-7.