Claims

1. A syringe assembly, comprising:

a syringe barrel having a proximal end, a distal end, and a sidewall extending therebetween and defining a chamber having an interior, the syringe barrel formed of a first material;

a stopper slidably disposed within the interior of the chamber of the syringe barrel, the stopper sized relative to the interior of the chamber of the syringe barrel to provide sealing engagement with the sidewall of the syringe barrel, the stopper formed of a second material different than the first material, wherein the second material does not contain more than 4% of the first material wherein the stopper comprises a non-lubricated thermoplastic elastomer and wherein the thermoplastic elastomer comprises a composition having a hard polymer phase having a high melt temperature > 170 degrees C and an elastomeric phase; and

a plunger rod having a first end engageable with a portion of the stopper.

2. The syringe assembly of claim 1, wherein the second material does not contain more than 1.5% of the first material.

3. The syringe assembly of claim 1, wherein the second material does not contain more than 1% of the first material.

4. The syringe assembly of claim 1, wherein the thermoplastic elastomer of the stopper has a viscosity, measured using a capillary rheometer at 205 degrees C, Die Roundhole 20 mm length/1mm diameter/180 degree inlet, Piston: D=15 mm, and melting time = 7 min, is ≥70 Pa.s at 1,000 s^{-1} shear rate, ≥12.0 Pa.s at 10,000 s^{-1} shear rate, and ≥3.0 Pa.s at 50,000 s^{-1} shear rate.

5. The syringe assembly of claim 1, wherein the thermoplastic elastomer comprises at least an olefin block copolymer.