Claims

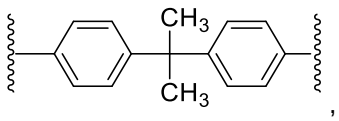
1. A compound of formula (I):

$$F_T–OC(O)O–B–OC(O)O–[A–OC(O)O–B]_n–OC(O)O–F_T \quad (I)$$

wherein

(i) A comprises a soft segment and is covalently bound to B via a carbonate linkage;

(ii) B comprises a polyalkylene oxide or a moiety described by the formula:



,

and is covalently bound to A via a carbonate linkage; and

(iii) F_T is a surface active group comprising a polyfluoroorgano group, wherein F_T is covalently bound to B via a carbonate linkage; and

(iv) n is an integer from 1 to 10.

2. The compound of claim 1, wherein B

i) comprises polypropylene oxide, polyethylene oxide, or polytetramethylene oxide; or

ii) is formed from triethylene glycol, tetraethylene glycol, or bisphenol A.

3. The compound of claim 1 or 2, wherein A comprises hydrogenated polybutadiene (HLBH), hydrogenated polyisoprene (HHTPI), poly ((2,2-dimethyl)-1,3-propylene carbonate), polybutadiene, poly (diethylene glycol)adipate (PEGA), poly (hexamethylene carbonate) (PHCN), poly (ethylene-co-butylene), (diethylene glycol-ortho phthalic anhydride) polyester, (1,6-hexanediol-ortho phthalic anhydride) polyester, (neopentyl glycol-ortho phthalic anhydride) polyester (PDP), a polysiloxane, bisphenol A ethoxylate, poly(ethylene oxide)-b-poly(propylene oxide)-b-poly(ethylene oxide) (PLN), polyethylene oxide (PEO), polypropylene oxide (PPO), or polytetramethylene oxide (PTMO).

4. The compound of claim 1, wherein the compound of formula (I) is further described by formula (II):

$$F_T–OC(O)O–(CH_2CH_2O)_m–OC(O)O–[A–OC(O)O–(CH_2CH_2O)_m]_n–OC(O)O–F_T \quad (II)$$

wherein

(i) A comprises a soft segment;

(ii) F_T is a surface active group comprising a polyfluoroorgano group;

(iii) m is an integer from 2 to 4; and

(iv) n is an integer from 1 to 10.

5. The compound of claim 4, wherein A comprises

i) hydrogenated polybutadiene (HLBH), hydrogenated polyisoprene (HHTPI), poly ((2,2-dimethyl)-1,3-propylene carbonate), polybutadiene, poly (diethylene glycol)adipate (PEGA), poly (hexamethylene carbonate) (PHCN), poly (ethylene-co-butylene), (diethylene glycol-ortho phthalic anhydride) polyester (PDP), (1,6-hexanediol-ortho phthalic anhydride) polyester, (neopentyl glycol-ortho phthalic anhydride) polyester, a polysiloxane,

bisphenol A ethoxylate, poly(ethylene oxide)-b-poly(propylene oxide)-b-poly(ethylene oxide) (PLN), polyethylene oxide (PEO), polypropylene oxide (PPO), or polytetramethylene oxide (PTMO); or

ii) a triblock copolymer PPO-b-PEO-b-(polysiloxane)-b-PEO-b-PPO (PLNSi); or

iii) hydrogenated polyisoprene (HHTPI) or hydrogenated polybutadiene (HLBH); or

iv) polypropylene oxide (PPO) or polytetramethylene oxide (PTMO); or

v) polyethylene oxide-polydimethylsiloxane-polyethylene oxide (C10 MW $_{PEO}$ = 2,500 Da), polyethylene oxide-polydimethylsiloxane-polyethylene oxide (C15 MW $_{PEO}$ = 1,000 Da), or polyethylene oxide-polydimethylsiloxane-polyethylene oxide (C22 MW $_{PEO}$ = 2,500 Da); or

vi) propylene oxide-polydimethylsiloxane-propylene oxide block copolymer (C22 MW $_{PPO}$ = 2,500 Da); or

vii) polyethylene oxide (PEO); or

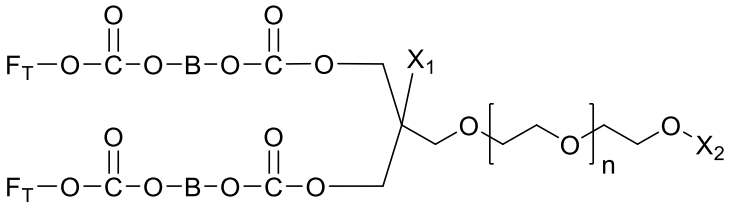
viii) diethylene glycol-ortho phthalic anhydride; or

ix) poly(ethylene oxide)-b-poly(propylene oxide)-b-poly(ethylene oxide) (PLN).

6. The compound of any one of claims 1-4, wherein A is free of ester linkages.

7. The compound of claim 4, wherein A comprises hydrogenated polybutadiene (HLBH), hydrogenated polyisoprene (HHTPI), poly((2,2-dimethyl)-1,3-propylene carbonate), polybutadiene, poly(ethylene-co-butylene), a polysiloxane, bisphenol A ethoxylate, poly(ethylene oxide)-b-poly(propylene oxide)-b-poly(ethylene oxide) (PLN), polyethylene oxide (PEO), polypropylene oxide (PPO), or polytetramethylene oxide (PTMO).

8. A compound of formula (III):



(III)

wherein:

(i) F_T is a polyfluoroorgano group;

(ii) each of X_1 and X_2 is, independently, is H, CH_3, or CH_2CH_3;

(iii) B comprises a polyalkylene oxide; and

(iv) n is an integer from 5 to 100.

9. The compound of claim 8, wherein B

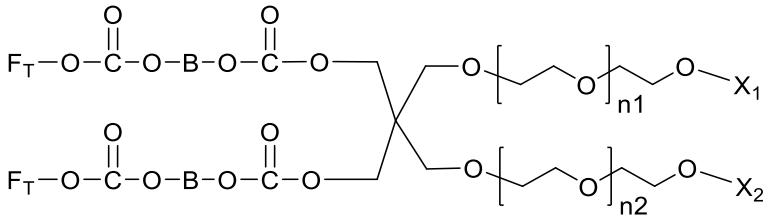
i) comprises polypropylene oxide, polyethylene oxide, or polytetramethylene oxide; or

ii) wherein B is formed from triethylene glycol or tetraethylene glycol; or

iii) wherein B is polyethylene oxide, X_1 is ethyl, and X_2 is H (YMerOH-1226-PCT-PC); or

iv) wherein B is polyethylene oxide, X_1 is ethyl, and X_2 is methyl (YMer-1226-PCT-PC).

10. A compound of formula (IV):



(IV)

wherein:

(i) each F_T is a polyfluoroorgano;

(ii) each of X_1 and X_2 is, independently, H, CH_3, or CH_2CH_3;

(iii) B comprises a polyalkylene oxide; and

(iv) each of n1 and n2 is independently an integer from 5 to 50.

11. The compound of claim 10, wherein B comprises polypropylene oxide, polyethylene oxide, or polytetramethylene oxide.

12. The compound of claim 11, wherein B is formed from triethylene glycol or tetraethylene glycol.

13. The compound of claim 10, wherein B is polyethylene oxide, X_1 is H, and X_2 is H (XMer-1226-PCT-PC).