CLAIMS

1. A radiation curable intaglio ink comprising:
    a. from ~~about~~ 10 wt-% to ~~about~~ 60 wt-% of one or more radiation curable compounds, wherein at least one of said one or more radiation curable compounds is a fatty acid polyester (meth)acrylate oligomer, preferably a fatty acid polyester acrylate oligomer;
    b. from ~~about~~ 2 wt-% to ~~about~~ 20 wt-% of one or more photoinitiators, preferably selected from the group consisting of Norrish Type I photoinitiators, Norrish Type II photoinitiators and mixtures thereof;
    c. from ~~about~~ 5 wt-% to ~~about~~ 12 wt-% of a high molecular weight acid modified alkyd surfactant having a molecular weight from 3000 to 20000 and/or an alkylarene sulfonic acid surfactant;
    d. from ~~about~~ 10 wt-% to ~~about~~ 55 wt-% of one or more fillers or extenders, preferably selected from the group consisting of carbon fibers, talcs, micas, wollastonites, calcinated clays, china clays, kaolins, carbonates, silicas and silicates, sulfates, titanates, titanium dioxides, alumina hydrates, silicas, fumed silicas, montmorillonites, graphites, anatases, rutiles, bentonites, vermiculites, zinc whites, zinc sulfides, wood flours, quartz flours, corn starches, natural fibers, synthetic fibers and combinations thereof, and

    the weight percents being based on the total weight of the radiation curable intaglio ink,

    wherein the radiation curable intaglio ink has a viscosity between ~~about~~ 10 and ~~about~~ 50 Pas at 40°C and 200 s^{-1}.

2. The radiation curable intaglio ink according to claim 1, wherein the high molecular weight acid modified alkyd surfactant has a molecular weight from ~~about 3000 to about 20000, preferably from about~~ 5000 to ~~about~~ 15000.

3. The radiation curable intaglio ink according to any of the preceding claims, wherein the fatty acid polyester (meth)acrylate is a fatty acid polyester tetraacrylate oligomer or a fatty acid polyester hexaacrylate oligomer.

4. The radiation curable intaglio ink according to any of the preceding claims, wherein the fatty acid polyester (meth)acrylate oligomer comprises saturated fatty acid residues, preferably saturated fatty acid residues having 14 to 20 carbons atoms, still more preferably 16 to 18 carbon atoms.

5. The radiation curable intaglio ink according to any of the preceding claims, wherein one or more another radiation curable compounds of the one or more radiation curable compounds are (meth)acrylate monomer reactive diluents selected from the group consisting of mono(meth)acrylate

monomers, di(meth)acrylate monomers, tri(meth)acrylate monomers, tetra(meth)acrylate monomers and mixtures thereof.

6. The radiation curable intaglio ink according to any of the preceding claims, wherein one or more another radiation curable compounds of the one or more radiation curable compounds are selected from the group consisting of urethane (meth)acrylate oligomers, epoxy (meth)acrylate oligomers and mixtures thereof.

7. The radiation curable intaglio ink according to any of the preceding claims, wherein the alkylarene sulfonic acid surfactant is a (C1-C14-alkyl)-arene sulfonic acid, preferably an ammonium salt or alkyl substituted ammonium salt of (C4-C14-alkyl)-arene sulfonic acid, more preferably an ammonium salt or alkyl substituted ammonium salt of (C4-C14-alkyl)-benzene sulfonic acid.

8. The radiation curable intaglio ink to any of the preceding claims further comprising from ~~about~~ 1 wt-% to ~~about~~ 7 wt-% of one or more waxes, preferably selected from the group consisting of microcrystalline waxes, paraffin waxes, polyethylene waxes, fluorocarbon waxes, polytetrafluoroethylene waxes, Fischer-Tropsch waxes, silicone fluids, beeswaxes, candelilla waxes, montan waxes, carnauba waxes and mixtures thereof, the weight percents being based on the total weight of the radiation curable intaglio ink.

9. The radiation curable intaglio ink according to any of the preceding claims further comprising one or more coloring components selected from the group consisting of color constant pigments, dyes and mixtures thereof, preferably selected from the group consisting of color constant organic pigments, color constant inorganic pigments and mixtures thereof.

10. The radiation curable intaglio ink to any of the preceding claims further comprising one or more machine readable materials preferably selected from the group consisting of magnetic materials, luminescent materials, electrically conductive materials, infrared-absorbing materials and mixtures thereof.

11. A pattern or image made from the radiation curable intaglio ink recited in any one of claims 1 to 10.

12. A security document comprising the pattern or image recited in claim 11.

13. A process for producing a pattern or image, said process comprising
a) inking an intaglio engraved printing plate with the radiation curable intaglio ink recited in any one of claims 1 to 10,
b) wiping off any excess of the radiation curable intaglio ink using a polymeric wiping cylinder and

cleaning said polymeric wiping cylinder with an alkaline aqueous wiping solution in combination with one or more mechanical means,

c) printing the pattern or image with the intaglio engraved printing plate by applying the radiation curable intaglio ink onto the substrate, and

d) curing the radiation curable intaglio ink by radiation.

14. The method according to claim 13, wherein the substrate is selected from the group consisting of papers or other fibrous materials, paper-containing materials, plastics and polymers, metalized plastics or polymers, composite materials and mixtures or combinations thereof.

15. The method according to claim 13 or 14, wherein the radiation curable intaglio ink is a UV-Vis curable intaglio ink and wherein the step d) of curing the UV-Vis curable intaglio ink is carried out with UV-Vis radiation.