Claims

1. A thermoplastic moulding composition comprising:

a) from 90.0 to 99.99989 wt.-% of a thermoplastic polymer;
b) from 0.0001 to 5.0 wt.-% of carbon black; and
c) from 0.00001 to 5.0 wt.-% of a monoazo dye comprising at least one heteroaromatic moiety,
wherein the thermoplastic polymer is selected from the group consisting of polyalkyl (meth)acrylate, polymethylmethacrylimide, polyalkyl (meth)acrylate copolymers, polystyrene, polystyrene copolymer, acrylonitrile copolymers, polycarbonates, polyesters, polyvinylidene fluoride or a mixture thereof.

2. Thermoplastic moulding composition according to Claim 1, wherein the monoazo dye is selected from the list consisting of
5-[(3,4-dichlorophenyl)azo]-1,2-dihydro-6-hydroxy-1,4-dimethyl-2-oxonicotinonitrile,
2,3-dihydro-2,2-dimethyl-6-((4-(phenylazo)-1-naphthyl)azo)-1*H*-perimidin,
cyano-5-[[5-cyano-2,6-bis[(3-methoxypropyl)amino]-4-methylpyridin-3-yl]azo]-3-methyl-2-thiophenecarboxylic acid methyl ester,
5-methyl-2-phenyl-4-phenylazo-4*H*-pyrazol-3-one,
4-[(2,4-dimethylphenyl)azo]-2,4-dihydro-5-methyl-2-phenyl-3*H*-pyrazol-3-one,
3-[(1-oxonaphthalen-2-ylidene)methylhydrazinylidene]-1-prop-2-enylindol-2-one,
4-((*o*-methoxyphenyl)azo)-3-methyl-1-phenyl-2-pyrazolin-5-one, and
5-methyl-2-phenyl-4-phenylazo-4*H*-pyrazol-3-one.

3. Thermoplastic moulding composition according to Claim 1 or 2, wherein the carbon black has a weight average particle size of from 5.0 to 100.0 nm, preferably from 7.0 to 60.0 nm and a specific surface area, determined by BET method, of from 50 to 500 m^2 / g.

4. Thermoplastic moulding composition according to any of Claims 1 to 3 further comprising

- at least one further dye selected from perinone dye, quinophthalone dye and anthraquinone dye;
- at least one phtalocyanine pigment; or
- any mixture of the above.

~~5. Thermoplastic moulding composition according to any of Claims 1 to 4, wherein the thermoplastic polymer is selected from the group consisting of polyalkyl (meth)acrylate,~~

~~polymethylmethacrylimide, polyalkyl (meth)acrylate copolymers, polystyrene, polystyrene copolymer, acrylonitrile copolymers, polycarbonates, polyesters, polyvinylidene fluoride or a mixture thereof.~~

~~6~~5. Thermoplastic moulding composition according to any of Claims 1 to ~~5~~4, wherein the thermoplastic polymer is polymethyl methacrylate having a weight average molecular weight Mw of from 80 000 g/mol to 180 000 g/mol and is obtainable by polymerization of a composition whose polymerizable constituents comprise, based on the weight of the polymerizable composition:

(i) from 50.0 to 99.9 wt.-%, preferably from 80.0 to 99.9 wt.-% of methyl methacrylate
(ii) from 0.1 to 50.0 wt.-%, preferably from 0.1 to 20.0 wt.-% of an acrylic acid ester of a C1-C4 alcohol
(iii) from 0.0 to 35.0 wt.-% of at least one further monomer copolymerizable with the monomers (i) and (ii).

~~7~~6. Thermoplastic moulding composition according to any of Claims 1 to ~~6~~5, wherein the thermoplastic polymer comprises a polymer matrix and scattering particles dispersed in said polymer matrix, wherein the scattering particles have a weight average particle diameter of from 0.01 µm to 100.0 µm and refractive index of the scattering particles differs from that of the polymer matrix by at least 0.01.

~~8~~7. Thermoplastic moulding composition according any of Claims 1 to ~~7~~6, wherein the thermoplastic polymer is polymethyl methacrylate and the thermoplastic moulding composition has a melt flow rate from 0.5 to 10.0 g / 10 min, measured at 230 °C with a load of 3.8 kg.

~~9~~8. Process for the manufacturing of a thermoplastic moulding composition according any of Claims 1 to ~~8~~7, wherein the process comprises the following steps:

a) providing a thermoplastic polymer, wherein the thermoplastic polymer is selected from the group consisting of polyalkyl (meth)acrylate, polymethylmethacrylimide, polyalkyl (meth)acrylate copolymers, polystyrene, polystyrene copolymer, acrylonitrile copolymers, polycarbonates, polyesters, polyvinylidene fluoride or a mixture thereof;
and
b) adding to the thermoplastic polymer from step a) at least one colouring composition, comprising carbon black and a monoazo dye comprising at least one heteroaromatic moiety, wherein said colouring composition is preferably a liquid composition or a masterbatch.

~~10~~9. Process according to Claim ~~9~~8, wherein the colouring composition is a liquid composition comprising:

from 1.0 to 30.0 wt.-% of a dispersing additive
from 0.05 to 10.0 wt.-% of carbon black
from 0.5 to 50.0 wt.-% of the monoazo dye and
from 0.0 to 50.0 wt.-% of an auxiliary additive and
a liquid, being preferably demineralized water or an organic solvent, where the portions by weight of the components add up to 100 wt.-%.

~~11~~10. Process according to Claim ~~9~~8, wherein the colouring composition is a masterbatch comprising:

from 0.01 to 40.0 wt.-% by weight of the monoazo dye
from 0.01 to 10.0 wt.-% by weight of carbon black
from 50.0 to 99.98 wt.-% by weight thermoplastic polymer~~.~~
from 0.0 to 10.0 wt.-% of an auxiliary additive.

~~12~~11. Process according to any of Claims ~~9~~8 to ~~11~~10, wherein the colouring composition comprises less than 100 ppm, preferably less than 50 ppm of aluminium or a compound thereof and
less than 300 ppm, preferably less than 200 ppm of silicon or a compound thereof; and/or

the colouring composition has a mass loss in dried form of not more than 15 wt.-%, preferably from 0.0 to 10 wt.-%, more preferably from 0.0 to 7 wt.-%, even more preferably from 0.0 to 5 wt.-% and especially preferably from 0.0 to 4 wt.-% in isothermal thermogravimetric analysis at 260 °C for 60 min.

~~13~~12. Process according to any of Claims ~~9~~8 to ~~12~~11, wherein the step b) is carried out in an extruder, preferably at a temperature ranging from 200 °C to 320 °C, more preferably from 230 °C to 300 °C.

~~14~~13. A process for the manufacturing of a moulded part, wherein the process comprises a step of injection moulding of a thermoplastic moulding composition according to any of Claims 1 to ~~8~~7 at a temperature ranging from 200 °C to 320 °C, preferably from 230 °C to 300 °C, wherein the thermoplastic moulding composition is injected into a mould which can produce the moulded part, wherein the thermoplastic moulding composition comprises

a) from 90.0 to 99.99989 wt.-% of a thermoplastic polymer;
b) from 0.0001 to 5.0 wt.-% of carbon black; and

c) from 0.00001 to 5.0 wt.-% of a monoazo dye comprising at least one heteroaromatic moiety.

~~15~~14. A process for the manufacturing of an extruded part, wherein the process comprises an extrusion process of a thermoplastic moulding composition according to any of Claims 1 to ~~8~~7 at a temperature ranging from 200 °C to 320 °C, preferably from 230 °C to 300 °C, wherein the thermoplastic moulding composition is melted and die-casted to the final part,

wherein the thermoplastic moulding composition comprises

a) from 90.0 to 99.99989 wt.-% of a thermoplastic polymer;
b) from 0.0001 to 5.0 wt.-% of carbon black; and
c) from 0.00001 to 5.0 wt.-% of a monoazo dye comprising at least one heteroaromatic moiety.

~~16~~15. Process according to Claim ~~15~~14, wherein the moulded part has different wall thicknesses, one or more perforations, at least one non-planar surface or a combination of these features.

~~17~~16. A moulded part or an extruded part obtainable by the process according to any of Claims ~~14~~13 to ~~16~~15.

17. Process for the manufacturing of a thermoplastic moulding composition comprising:

a) from 90.0 to 99.99989 wt.-% of a thermoplastic polymer;
b) from 0.0001 to 5.0 wt.-% of carbon black; and
c) from 0.00001 to 5.0 wt.-% of a monoazo dye comprising at least one heteroaromatic moiety;

wherein the process comprises the following steps:

a) providing a thermoplastic polymer; and
b) adding to the thermoplastic polymer from step a) at least one colouring composition, comprising carbon black and a monoazo dye comprising at least one heteroaromatic moiety, wherein said colouring composition is a liquid composition comprising:

from 1.0 to 30.0 wt.-% of a dispersing additive
from 0.05 to 10.0 wt.-% of carbon black
from 0.5 to 50.0 wt.-% of the monoazo dye and
from 0.0 to 50.0 wt.-% of an auxiliary additive and

a liquid, being preferably demineralized water or an organic solvent, where the portions by weight of the components add up to 100 wt.-%.