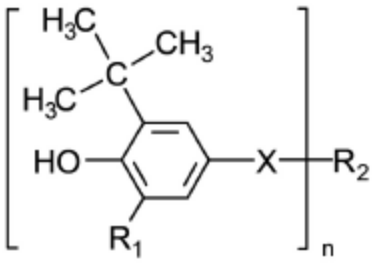
CLAIMS

1. Process for preparing a polyurethane foam comprising reacting a polyether polyol and a polyisocyanate in the presence of a blowing agent and an antioxidant, wherein:

the antioxidant consists of one phenolic antioxidant or two or more phenolic antioxidants, wherein the one or more phenolic antioxidants contain no atoms other than carbon, hydrogen and oxygen, and the amount of the one or more phenolic antioxidants is of from 2,300 to less than 10,000 parts per million by weight (ppmw) based on the polyether polyol;

the one phenolic antioxidant or at least one of the phenolic antioxidants is a compound of Formula (II):



Formula (II)

wherein

R_1 is hydrogen or C_1-C_8 alkyl,

n is 1, 2 or 4,

X is $-CH_2CH_2-C(=O)-O-$ where $-CH_2CH_2$ is bonded to the benzene ring and $C(=O)-O-$ is bonded to R_2, and

if n is 1: R_2 is C_1-C_{24} alkyl, or

if n is 2: R_2 is C_2-C_{12} alkylene or C_4-C_{12} alkylene interrupted by oxygen, or

if n is 4: R_2 is C_4-C_{10} alkanetetrayl;

the isocyanate index is ~~higher than 100~~of from 110 to 150, preferably of from ~~105~~110 to 140, more preferably of from 110 to 130, most preferably of from 110 to 125;

in a case where the blowing agent comprises water, water is used in an amount of at least 4 parts per hundred parts by weight of polyol (pphp);

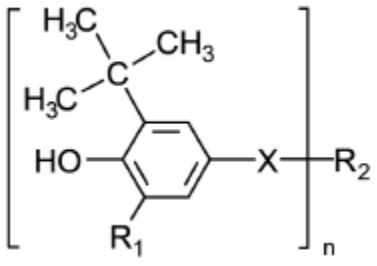
the maximum temperature during the preparation of the polyurethane foam is higher than 140 °C, preferably of from 150 to 190 °C, more preferably of from 160 to 190 °C; and

the density of the polyurethane foam is ~~lower than 25~~at most 23 kg/m^3, preferably of from 6 to ~~lower than 25~~23 kg/m^3, more preferably of from 10 to ~~lower than 25~~23 kg/m^3, more preferably of from 12 to 22 kg/m^3, more preferably of from 13 to 20 kg/m^3, most preferably of from 14 to 18 kg/m^3.

2. Process according to claim 1, wherein the amount of the one or more phenolic antioxidants is of from 2,500 to 8,000 ppmw, preferably of from 2,800 to 7,000 ppmw, more preferably of from 3,000 to 6,000 ppmw, more preferably of from 3,500 to 5,500 ppmw, most preferably of from 4,000 to 5,000 ppmw.

3. Process according to claim 1 or 2, wherein the one phenolic antioxidant or at least one of the phenolic ~~antioxidants is a sterically hindered phenolic antioxidant containing 1, 2, 3 or 4 hindered phenolic groups, preferably 1 hindered phenolic group.~~

~~4. Process according to claim 3, wherein the one phenolic antioxidant or at least one of the phenolic antioxidants is a compound of Formula (II):~~



~~Formula (II)~~

~~wherein~~

~~R_1 is hydrogen or C_1-C_8 alkyl,~~

~~n is 1, 2 or 4,~~

~~X is $-CH_2CH_2-C(=O)-O-$ where $-CH_2CH_2-$ is bonded to the benzene ring and $C(=O)-O-$ is bonded to R_2, and~~

~~if n is 1: R_2 is C_1-C_{24} alkyl, or~~

~~if n is 2: R_2 is C_2-C_{12} alkylene or C_4-C_{12} alkylene interrupted by oxygen, or~~

~~if n is 4: R_2 is C_4-C_{10} alkanetetrayl.~~

~~5. Process according to claim 4, wherein the one phenolic antioxidant or at least one of the phenolic~~ antioxidants is octadecyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate.

~~6.~~ 4. Process according to any one of the preceding claims, wherein the one phenolic antioxidant or at least one of the phenolic antioxidants has a molecular weight which is higher than 250 g/mol, preferably at least 300 g/mol, more preferably at least 390 g/mol, more preferably at least 450 g/mol, most preferably at least 500 g/mol, and which is at most 1,500 g/mol, preferably at most 1,000 g/mol, more preferably at most 700 g/mol, most preferably at most 600 g/mol.

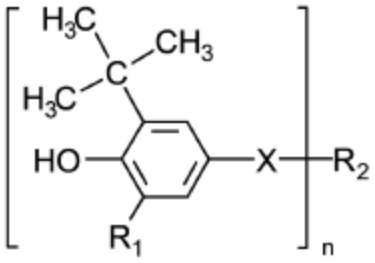
~~7.~~ 5. Process according to any one of the preceding claims, wherein the polyol has a functionality in the range of from 2 to 6, preferably of from 2.5 to 4, more preferably of from 2.5 to 3.5.

~~8.~~ 6. Polyurethane foam obtainable by the process according to any one of claims 1-5.

7. ~~9.~~ Shaped article comprising the polyurethane foam according to claim ~~8~~6.

~~10.~~ 8. Polyether polyol composition, comprising a polyether polyol and an antioxidant, wherein the antioxidant consists of one phenolic antioxidant or two or more phenolic antioxidants, the one or more phenolic antioxidants contain no atoms other than carbon, hydrogen and oxygen, and the amount of the one or more phenolic antioxidants is of from ~~2,300~~4,200 to less than 10,000 parts per million by weight (ppmw) based on the polyether polyol~~.~~, and

wherein the one phenolic antioxidant or at least one of the phenolic antioxidants is a compound of Formula (II):



Formula (II)

wherein

R_1 is hydrogen or C_1-C_8 alkyl,

n is 1, 2 or 4,

X is $-CH_2CH_2-C(=O)-O-$ where $-CH_2CH_2$ is bonded to the benzene ring and $C(=O)-O-$ is bonded to R_2, and

if n is 1: R_2 is C_1-C_{24} alkyl, or

if n is 2: R_2 is C_2-C_{12} alkylene or C_4-C_{12} alkylene interrupted by oxygen, or

if n is 4: R_2 is C_4-C_{10} alkanetetrayl.