

ALIEN PROPERTY CUSTODIAN

SOLVENT FOR POLYMERISED SYNTHETIC SUBSTANCES

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The present invention relates to solvents for polymerised synthetic substances and particularly to synthetic substances of this kind containing chlorine such as chlorine-rubber and polymerised vinyl chloride. These substances, as is known, are continuously increasing in importance but it is difficult to obtain pore-free films with such substances so that their high resistance cannot generally be sufficiently utilised.

The present invention renders it possible to obtain pore-free coatings with such substances when they are used in certain solvents which have the further advantage that they can also dissolve polymerised compounds free from chlorine such as polystyrenes and alkyl cellulose or other cellulose ethers.

Contrary to the usual aromatic and nitrogen-containing synthetic substances, the said aliphatic and arylaliphatic synthetic substances, but principally synthetic substances of this kind containing chlorine, have a very low solubility in the usual solvents, and a particularly low solubility with the fairly volatile solvents preferably used in the lacquer or varnish industry. Whereas for example other synthetic substances can be easily or fairly readily dissolved in commercial benzene, with these synthetic substances this can be done only to an extent which is quite insufficient for practical purposes.

It has now been found that of the aromatic solvents, methylisopropylbenzene occupies a special position since this aromatic substance which is characterised by its relatively large aliphatic substituted part can dissolve such synthetic substances in considerably greater quantities. Accordingly the present invention consists in a medium to difficultly volatile solvent for polymerised synthetic substances of the aliphatic or arylaliphatic series, particularly for halogen-containing synthetic substances of this kind such as chlorine-rubber or polymerised polyvinylchloride consisting in a solvent mixture comprising methylisopropylbenzene. Although in practice the speed of solubility is sufficient only for polystyrenes, methylisopropylbenzene becomes generally utilisable when small quantities of aliphatic ester or ketones are added thereto. This addition can be maintained below 10% so that upon drying such solvent mixtures no undesired disintegration phenomena arise since the speeds of evaporation of the components are in this case approximately equal. As esters and ketones the following for example have been shown to be utilisable as solvents, a certain superiority of the oxycarbonic acid esters over the remaining sol-

vents being clearly recognisable: ethyl acetate, butyl lactate, butyl acetate, ethyl oxalate, ethyl glycol acetate, butyl propionate, methyl ethyl ketone, diamyl ketone, mixtures of glycolmonoacetate with a higher alcohol such as butanol or ethyl glycol. Even for the difficultly soluble chlorine-rubber an addition of 7.5% ethyl lactate is in this case sufficient.

As is known, esters and ketones are good solvents for most synthetic substances and thus also for certain synthetic substances of the kind dealt with here. It must nevertheless be considered as surprising that, contrary to what is otherwise known, the addition of methylisopropylbenzene does not give rise to any precipitation of the dissolved substance from such solutions. It would normally be expected that this aromatic substance, like the usual aromatic substances, would abstract the aliphatic solvent from the solution of synthetic substance and thus cause precipitation of the said synthetic substance. That in the present case this unexpected effect occurs appears to be due to the fact that this aromatic compound comprises extensive side chains which themselves condition the stability of the system. This must be correct as is shown by the fact that isopropylbenzene seems to have a similar favourable effect. It appears to be due to the same reason that during the drying of the varnish, and thus the evaporation of the solvent, disintegration cannot normally be observed.

In this way there is obtained a solvent for the said polymerised substances which is of only medium volatility and therefore of good use in the varnish industry, and which above all is also cheap since, as is known, methylisopropylbenzene is formed as a waste product in the production of cellulose from wood and in the extraction of camphor. It is especially to be emphasised that this solvent is especially suitable for polymerised substances containing halogen, particularly chlorine-rubber. The varnish formed from a base of for example chlorine-rubber (for example that known under the registered Trade Mark "Tegofan") is not at all or only very slightly inclined to become stringy when spread or sprayed and provides pore-free coatings or films. Even with the addition of the known solvents for varnishes, viz. commercial benzene or ester-benzene mixtures this undesired phenomenon does not appear. Such varnishes flow well and the gloss obtained is even outstanding. Almost the same effect is obtained with polymerised vinyl chloride, (for example that known under the registered

Trade Mark "Vinoflex N") or polymerised styrene, (for example that known under the registered Trade Mark "Ronilla f"). In the series of hitherto utilisable fairly or difficultly volatile solvents such cheap and generally utilisable solvents did certainly not exist.

The invention is illustrated by the following examples, but it is to be understood that the invention is not restricted to the particular details disclosed therein.

Example 1.—92 parts by weight methylisopropylbenzene are mixed with 8 parts by weight ethyl lactate. This mixture is especially suitable for chlorine-rubber.

Example 2.—93 parts by weight p-methylisopropylbenzene are mixed with 7 parts by weight ethyl benzol proplionate. This solvent is well suited for polymerised vinyl chloride and also for other polymerised resins.

Example 3.—90 parts by weight methylisopropylbenzene are mixed with 10 parts by weight

diamyl ketone. Since methylisopropylbenzene is formed in cellulose manufacture and processes, such mixtures are quite cheap, so that the cost of an addition of such a somewhat dearer ketone can be borne.

Example 4.—35 parts by weight p-methylisopropylbenzene are mixed with 10 parts by weight isopropylbenzene (or instead 10 more parts p-methylisopropylbenzene) 5 parts by weight butyl lactate, 25 parts by weight benzene lac and 25 parts by weight butyl acetate. This mixture appears to be especially economical, and is suitable for all purposes within the scope of the invention.

Example 5.—46 parts by weight methylisopropylbenzene are mixed with 4 parts by weight ethyl oxalate and 50 parts by weight toluene. This makes a cheap solvent which is almost generally utilisable for the objects mentioned.

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