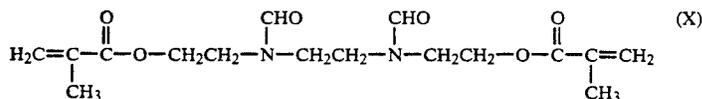


EXAMPLE 2

Synthesis of
N,N'-Ethanediyl-bis[β-(N-formyl)amino-ethyl
2-methyl-2-propenoate]



51.50 g (0.252 mol) of the precursor (IX) in 200 ml of dry trichloromethane together with 61.00 g (0.603 mol) of triethylamine and 30 mg of 2,6-di-tert-butyl-4-methylphenol were initially introduced at -35° C and 52.27 g (0.500 mol) of methacryloyl chloride were added dropwise between -30° C. and -35° C. over the course of an hour. The mixture was stirred at -35° C. for a further 2 hours, the precipitate which deposited was separated off and the organic phase was concentrated after aqueous extraction to give 58.97 g (69% of theory) of the desired product (X). The initially yellowish oil slowly crystallized out.

Melting point: 59°-60° C.

IR (K Br): $\gamma = 2960, 1728, 1672, 1432, 1401, 1320, 1298, 1160, 1085, 1031, 948, 813 \text{ cm}^{-1}$.

¹H-NMR (CDCl₃, 200 MHz): $\delta = 1.93$ (bs, 6 H, CH₃), 3.4-3.7 (m, 8 H, CH₂N), 4.27 (m, 4 H, CH₂O), 5.62, 6.09 (2 m, each 2 H, vinyl.H), 8.04, 8.09 (2 s, together 2 H, CHO in various rotamers) ppm.

EXAMPLES 3 to 5

Production of the preparations (II)

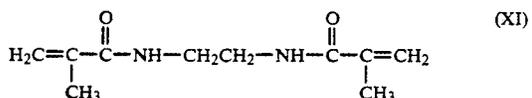
The adhesives according to the invention are produced by intensive mixing of the constituents shown in the following examples.

EXAMPLE 3

14 g of water
65 g of acetone
6 g of 25% strength by weight aqueous glutaraldehyde solution
15 g of N,N'-1,2-ethanediyl-bis-2-methyl-2-propenamide (XI)
40 mg of camphorquinone

EXAMPLE 4

18 g of water
65 g of acetone
17 g of N,N'-1,2-ethanediyl-bis-2-methyl-2-propenamide (XI)
40 mg of camphorquinone



EXAMPLE 5

45 g of water
51 g of product (VIII)
4 g of product (X)
170 mg of camphorquinone

EXAMPLE 6

The suitability of the adhesives (II) corresponding to Examples 1 to 5 is tested by determining the bonding

strength of the light-activated plastic filling material based on multi-functional methacrylic acid esters and barium aluminosilicate LUMIFOR Light Curing Composite Universal (U) ® on dentine.

5 Extracted human teeth which have been kept in 1%

chloramine solution for a maximum of 3 months after extraction are used for the tests. After these teeth have been carefully cleaned under running water, they were stored in physiological saline solution up to the point of embedding in epoxy resin (Lekutherm X 257).

Using abrasive paper of different grain size, the tooth is ground wet until a sufficiently large dentine surface is exposed for bonding a synthetic filling material cylinder of 3.5 mm. The exposed dentine surface was finally prepared wet using silicon carbide paper 600.

The dentine is successively pretreated with the EDTA conditioning fluid GLUM ® cleanser (60 seconds cleaning with a cotton-wool pellet, rinsing with water, air drying) and the adhesive (60 seconds period of action, air drying).

In order to prepare the sample for the tensile bonding test, the dentine sample prepared as described previously is tensioned in a stand using a cylindrical, divisible Teflon mould. This Teflon mould, altogether 5 mm high, is conically shaped in the upper half so that a tensile test can be carried out using a correspondingly shaped adapter.

A sealing material based on polyfunctional methacrylic acid ester BAYER Resin L ® is applied in a thin layer to the pretreated dentine surface using a brush and additionally distributed using a stream of air.

The sealing material is first irradiated at a distance of 5 mm from the dentine surface using a polymerization light (Translux Cl, Kulzer). Incremental mould filling and light activation of the synthetic filling material is then carried out.

The light activation period for the synthetic filling material is set to a total of 160 seconds on the basis of the large volume.

After termination of the light activation, the sample is removed and stored in a water bath at 23° C. until the tensile test.

The tensile bonding strength, the force used to break the sample divided by the contact area with the dentine, was measured using a feed rate of 1 mm/min.

The breaking surface on the dentine is then checked using a light microscope to evaluate the cause of failure. In this connection, multiple cohesive fractures were to be observed, i.e. the bondings produced using the adhesive components according to the invention were stronger than the bonded parts to be joined themselves. This shows the high efficiency of the adhesive components according to the invention.

It will be appreciated that the instant specification is set forth by way of illustration and not limitation, and that various modifications and changes may be made without departing from the spirit and scope of the present invention.

What is claimed is:

1. An alkanediyl bis-carboxamide of the formula