

hrs.dibutyltin dilauatebeige, with tendency(dbtdl)to clear yellow.sodium bicarbonateagitation: 800 rpsilicon 193csodium chloridglycerolysistoluene isocyanate(tdi) glycerintemp = 215 degrees centigrade lead oxidetime = 45 mins.agitation: 1300 rpm10olein phase of palmeoxidation:# oh = 202.43 mgpalm polyolvigorous agitationrigid sandyoilkoh/g samplepolyurethane, goodhydrogentemperature = 50 degrees centigrade 1,6 butanediolambientappearance.peroxide(bdo) temperatureformic acidtime: 4 hrs.dibutyltin dilauate(dbtdl)sodium bicarbonateagitation: 800 rpsilicon 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm11olein phase of palmeoxidation:# oh = 418.83 mgpalm polyolvigorous agitationa rigid whiteoilkoh/g samplepolyurethane washydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambientobtained, very hard.(bdo)temperaturedoes not permitformic acidtime: 4 hrs.dibutyltin dilauateagitation because(dbtdl)the reaction is verysodium bicarbonateagitation: 800 rpsilicon 193fast.sodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm12olein phase of palmeoxidation:# oh = 202.43 mgpalm polyolvigorous agitationbeige coloredoilkoh/g samplepolymer, whichhydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambientexhibited good(bdo) temperatureconsistency.formic acidtime: 4 hrs.dibutyltin dilauate(dbtdl)sodium bicarbonateagitation: 800 rpsilicon 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm13olein phase of palmeoxidation:# oh = 418.83 mgpalm polyolvigorous agitationa white high densityoilkoh/g samplefoam was obtained,hydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambientwith oval pores, of(bdo)temperaturerigid consistence.formic acidtime: 4 hrs.dibutyltin dilauate (dbtdl)sodium bicarbonateagitation: 800 rpsilicon 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm14olein phase of palmeoxidation:# oh = 32.84 mgpalm polyolvigorous agitationmanually agitated,oilkoh/g samplehowever no typicalhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambientfeatures of rectiontemperaturewere evidencedformic acidtime: 4 hrs.dibutyltin dilauate(temperature(dbtdl)changes, bubbling,sodium bicarbonateagitation: 800 rpsilicone emulsionand growth of foam),sodium chloridglycerolysismethyleneon the contrary, thediisocyanateliquid aspect stayed.(mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm15olein phase of palmeoxidation:# oh = 88.97 mgpalm polyolvigorous agitationno formation of foamoilkoh/g samplewas witnessed.hydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambient(bdo)temperatureformic acidtime: 4 hrs.dibutyltin dilauate(dbtdl)sodium bicarbonateagitation: 800 rpsilicone 193csodium chloridglycerolysistoluene isocyanate(tdi)glycerintemp = 215 degrees centigrade ethylenediaminesodium hydroxidetime = 45 mins.waterphosphoric acidagitation: 1300 rpm16olein phase of palmeoxidation:# oh = 88.97 mgpalm polyolvigorous agitationbubbling wasoilkoh/g sampleobserved, as well ashydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambientan increase in(bdo)temperaturetemperature and theformic acidtime: 4 hrs.dibutyltin dilauatefoam that was seen(dbtdl)solidifyingnsodium bicarbonateagitation: 800 rpsilicone 193cpletely.sodium chloridglycerolysistoluene isocyanate(tdi)glycerintemp = 215 degrees centigrade ethylenediaminesodium hydroxidetime = 45 mins.waterphosphoric acidagitation: 1300 rpm17olein phase of palmeoxidation:# oh = 401.4 mgpalm polyolvigorous agitationrigid polyurethaneoilkoh/g samplewith goodhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperatureconsistency althoughformic acidtime: 3 hrs.dibutyltin dilauateethe pore size is big.(dbtdl)sodium bicarnonateagitation: 950 rpsilicone emulsionsodium chloridglycerolysismethylenediisocyanate (mdi) glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm18olein phase of palmeoxidation: # oh = 401.4 mgpalm polyolvigorous agitationpolymer with a smalloilkoh/g sampleized pore and goodhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperatureirrigidity properties.formic acidtime: 3 hrs.dibutyltin dilauate(dbtdl)sodium bicarbonateagitation: 950 rpsilicone emulsionsodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm19olein phase of palmeoxidation# oh = 437.56 mgpalm polyolvigorous agitationpolymer with a smalllyung module =oilkoh/g samplepore size and33.3293 mpahydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturegood properties formaximumformic acidtime: 3 hrs.dibutyltin dilauateerirrigidity. chosen foreffort = 3.1673 mpa(dbtdl)the characterizingsodium bicarnonateagitation: 950 rpsilicone emulsionrange for rigid pusodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm20olein phase of palmeoxidation: # oh = 433.08 mgpalm polyolvigorous agitationpresentsoilkoh/g samplehomogeneity, goodhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturepore size, showsformic acidtime: 3 hrs.dibutyltin dilauateegood rigidity.(dbtdl)sodium bicarbonateagitation: 950 rpsilicone 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm21olein phase of palmeoxidation# oh = 263.4 mgpalm polyolvigorous agitationexhibitsoilkoh/g samplehomogeneity, goodhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturepore size and informic acidtime: 3 hrs.dibutyltin dilauategeneral good(dbtdl)physicalsodium bicarnonateagitation: 950 rpsilicone 193cappearance.sodium chloridglycerolysismethylenediisocyanate (mdi) glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm22olein phase of palmeoxidation: # oh = 79.97 mgpalm polyolvigorous agitationit was found that partoilkoh/g sampleof the polyol did nothydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturereact and remainedformic acidtime: 3 hrs.dibutyltin dilauateatin the lower part, a(dbtdl)white foam beingsodium bicarbonateagitation: 950 rpsilicone emulsionfound in the uppersodium chloridglycerolysismethylenepart. the reactiondiisocyanate (mdi)time was slow.glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm23olein phase of palmeoxidation# oh = 263.4 mgpalm polyolvigorous agitationthis polyurethaneoilkoh/g samplepresents goodhydrogen peroxidetemperature = 50 degrees centigrade 1,6 butanediolambient temperaturefeatures, compared(bdo)with that of the sameformic acidtime: 3 hrs.dibutyltin dilauateethydroxil number.(dbtdl)with deg, however,sodiumagitation: 950 rpsilicone 193cits rigidity is less.bicarbonatesodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 180 degrees centigrade sodium hydroxidetime = 25 mins.phosphoric acidagitation: 1300 rpm24olein phase of palmeoxidation: # oh = 263.4 mgpalm polyolvigorous agitationthis polyurethaneoilkoh/g sampleexhibts goodhydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturefeatures, it is a semi-formic acidtime: 3 hrs.dibutyltin dilauateerigid product.(dbtdl)sodium bicarbonateagitation: 950 rpsilicone 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 180 degrees centigrade sodium hydroxidetime = 25 mins.phosphoric acidagitation: 1300 rpm25olein phase of palmeoxidation# oh = 263.4 mgpalm polyolvigorous agitationshows goodness =oilkoh/g samplereplicability and is0.133 grams per cubic centimetrehydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturesent for theformic acidtime: 3 hrs.dibutyltin dilauatecharacterization by(dbtdl)density test.sodium bicarnonateagitation: 950 rpsilicone 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 180 degrees centigrade sodium hydroxidetime = 25 mins.phosphoric acidagitation: 1300 rpm26olein phase of palmeoxidation: # oh = 263.4 mgpalm polyolvigorous agitationexhibits goodyoung module =oilkoh/g samplereplicability and is1.32276 mpahydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturesent for the test bymaximu effort =formic acidtime: 3 hrs.dibutyltin dilauatecharacterization of0.08760 mpa(dbtdl)compression.sodium bicarbonateagitation: 950 rpsilicone 193csodium chloridglycerolysismethylenediisocyanate (mdi)glycerintemp = 180 degrees centigrade sodium hydroxidetime = 25 mins.phosphoric acidagitation: 1300 rpm27olein phase of palmeoxidation# oh = 437.66 mgpalm polyolvigorous agitationpolymer with a smalldensity =oilkoh/g samplepore size and good0.450 grams per cubic centimetrehydrogen peroxidetemperature = 50 degrees centigrade diethylene glycolambient temperaturevelocity features.formic acidtime: 3 hrs.dibutyltin dilauateechosen for the rank(dbtdl)of pusodium bicarnonateagitation: 950 rpsilicone 193ccharacterization bysodium chloridglycerolysismethylenedensity.diisocyanate (mdi)glycerintemp = 215 degrees centigrade sodium hydroxidetime = 45 mins.phosphoric acidagitation: 1300 rpm (Results 13)

1) Family number: 20698233 (US6121398A)

High modulus polymers and composites from plant oils

Abstract: Source: US6121398A The synthesis of liquid molding resins derived from plant oils that are capable of curing to high modulus thermosetting polymers and composites is described in this invention. The resins described resemble the unsaturated polyester, vinyl ester and epoxy resins presently used as the polymer matrix material in high performance glass, carbon, aramid and natural fiber reinforced composite materials. The resins disclosed herein are suitable for polymer and composite ...

Probable Assignee CREY BIORESINS INC **Assignee(s):** UNIV DELAWARE ; KUSEFOGLU SELIM ; PALMESE GUISEPPE ; KHOT SHRIKANT ; ZHAO RALPH ; WOOL RICHARD ; CARA PLASTICS INC

2) Family number: 23546154 (US6107433A)

Process for the preparation of vegetable oil-based polyols and electroninsulating casting compounds created from vegetable oil-based polyols

Abstract: Source: US6107433A A vegetable oil-based polyol is made by adding a peroxyacid to vegetable oil wherein said peroxyacid reacts with said vegetable oil to form epoxidized vegetable oil and adding said epoxidized vegetable oil to a mixture of an alcohol, water, and a catalytic amount of fluoboric acid so as to form a vegetable oil-based polyol. A further embodiment of the present invention involves making a vegetable oil-based polyol using an epoxidized vegetable oil as the starting ...

Probable Assignee PITTSBURG STATE UNIVERSITY **Assignee(s):** PITTSBURG STATE UNIVERSITY

3) Family number: 32587796 (US2006041157A)

MODIFIED VEGETABLE OIL-BASED POLYOLS

Abstract: Source: US2006041157A Methods of making unsaturated modified vegetable oil-based polyols are described. Also described are methods of making oligomeric modified vegetable oil-based polyols. An oligomeric composition having a modified fatty acid triglyceride structure is also described. Also, methods of making a polyol including hydroformylation and hydrogenation of oils in the presence of a catalyst and support are described.

Probable Assignee CARGILL INC **Assignee(s):** CARGILL INC ; GUO ANDREW ; PETROVIC ZORAN S ; JAVNI IVAN ; ZLATANIC ALISA ; ZLATANIC ; ZORAN PETROVIC ; PITTSBURG STATE UNIV ; GUO ANDREW XIUGUANG ; JAVNI IVAN X

4) Family number: 33587875 (US2006264524A)

POLYURETHANE FOAMS COMPRISING OLIGOMERIC POLYOLS

Abstract: Source: US2006264524A The invention relates to polyurethane foams comprising oligomeric polyols. In embodiments of the invention, the polyurethane foams comprise the reaction product of: (a) a polyisocyanate; and (b) an active-hydrogen containing composition comprising an oligomeric polyol having a hydroxyl number of about 45 to about 65 mg KOH/g, a number average hydroxyl functionality (Fn) of less than about 2.7, and about 40 percent weight or greater oligomers. The polyurethane foams ...

Probable Assignee CARGILL INC **Assignee(s):** ABRAHAM TIMOTHY W ; CARGILL INC ; CARTER JACK A ; DOUNIS DIMITRI ; MALSAM JEFF ; PITTSBURG STATE UNIV ; ZLATANIC ALISA B

5) Family number: 33477110 (US2007110877A)

PROCESS FOR THE PRODUCTION OF POLYURETHANE PRODUCTS

Abstract: Source: US2007110877A The present invention relates to a process for obtaining polyols from used frying oils as the starting ingredient and converting the polyols to polyurethane products. The process comprises few steps such as epoxidation process by reacting used frying oil with an acid, reacting the epoxidised used frying oil with a monohydric or polyhydric alcohol in the presence of a catalyst to form a polyols, mixing the polyols with an additive or additives and a blowing agent or ...

Probable Assignee MALAYSIAN PALM OIL BOARD **Assignee(s):** AHMAD SALMIAH ; HASSAN HAZIMAH ABU ; KASSIM SHAARI NORIN ZAMIAH BT ; LYE OOI TIAN ; MALAYSIAN PALM OIL BOARD ; MALAYSIAN PALM OIL BOARD KAJAN ; MALAYSIAN PALM OIL BOARD MPOB ; TUAN

ISMAIL TUAN NOOR MAZNEE BT		
6) Family number: 34563729 (US2007232816A)		© PatBase
PROCESS FOR THE PRODUCTION OF A POLYOL MONOMER		
Abstract: Source: US2007232816A A process for preparing palm-based polyol monomer includes reacting unsaturated fatty acids or its corresponding triglycerides with polyhydric alcohol. In particular, one example uses oleic acid with about 70 percent purity as the starting material for preparing the polyol monomer. Moreover, another example uses refined, bleached, and deodorised (RBD) palm olein as an alternative to oleic acid as the starting material. The preparation of the polyol monomer involves ...		
Probable Assignee MALAYSIAN PALM OIL BOARD Assignee(s): MALAYSIA PALM OIL INST ; MALAYSIAN PALM OIL BOARD MPOB		
7) Family number: 42588304 (US2008293913A)		© PatBase
PROCESS TO PRODUCE POLYOLS		
Abstract: Source: US2008293913A A process for producing oleochemical polyols comprises the steps of epoxidizing unsaturated oil using an organic acid together with oxygenated water or a per-acid to obtain epoxidized oil; washing the epoxidized oil with salt water to remove unused organic acid together with oxygenated water or a per-acid; neutralizing acidic condition of the washed epoxidized oil with a base; washing the neutralized epoxidized oil with a salt solution until the pH of the ...		
Probable Assignee MALAYSIAN PALM OIL BOARD Assignee(s): MALAYSIAN PALM OIL BOARD ; MALAYSIAN PALM OIL BOARD MPOB		
8) Family number: 43215668 (US2010240860A)		© PatBase
NATURAL OIL-DERIVED POLYESTER POLYOLS AND POLYURETHANES MADE THEREFROM		
Abstract: Source: US2010240860A A polyester polyol made from natural oil feedstocks is disclosed. Methods for making the polyol are also disclosed. The method comprises reacting monohydroxylated fatty acid/alkyl esters with a multifunctional ester-reactive initiator compound to form the polyester polyol. In one embodiment, the monohydroxylated fatty acid/alkyl esters are made by hydroxylating fatty acid/alkyl esters having greater than about ninety-five percent by weight monounsaturatation.		
Probable Assignee CARGILL INC Assignee(s): ABRAHAM TIMOTHY WALTER ; CARGILL INC ; MALSAM JEFF J		
9) Family number: 45027131 (US2010267925A)		© PatBase
NATURAL OIL-DERIVED POLYESTER POLYOLS AND POLYURETHANES MADE THEREFROM		
Abstract: Source: US2010267925A A polyester polyol made from natural oil feedstocks is disclosed. Methods for making the polyol are also disclosed. The method comprises reacting hydroxylated fatty acid/alkyl esters with a multifunctional ester-reactive initiator compound to form the polyester polyol. In one embodiment, the hydroxylated fatty acid/alkyl esters are made by hydroxylating fatty acid/alkyl esters having up to ninety-five percent by weight monounsaturatation.		
Probable Assignee CARGILL INC Assignee(s): ABRAHAM TIMOTHY WALTER ; CARGILL INC ; MALSAM JEFF J		
10) Family number: 45027131 (WO10058918A2)		© PatBase
METHOD FOR PREPARING POLYOL ESTER		
Abstract: Source: WO10058918A2 The present invention relates to a method for preparing polyol ester. The method comprises the steps of: reacting a first reactant with a second reactant in an equivalent ratio of 1:1 - 10:1 at a temperature of 100 - 350° under a pressure of 1 - 200 Torr for 0.1 - 10 hours in the presence of a solid catalyst in order to obtain a product containing polyol ester; removing fatty acids or fatty acid alkyl esters from the product; and removing the solid catalyst from ...		
Probable Assignee S M POT CO LTD Assignee(s): HYOUNG HEE JUN ; JANG HAE REUN ; S M POT CO LTD ; YOO JEONG WOO		
11) Family number: 50081021 (MY142992A)		© PatBase
A PROCESS FOR PRODUCING POLYOL AND POLYURETHANE ADHESIVES		
Abstract: Source: MY142992A THE PRESENT INVENTION RELATES TO A PROCESS FOR PRODUCING POLYOL FROM NATURAL OIL PREFERABLY PALM OIL AND ITS DERIVATIVES SUCH AS PALM OLEIN, PALM STEARIN AND PALM KERNEL OIL. IN ANOTHER EMBODIMENT OF THE PRESENT INVENTION, THE POLYOL CAN BE REACTED WITH ISOCYANATE COMPOUNDS TO PRODUCE POLYURETHANE ADHESIVES THEREFROM. THE POLYURETHANE ADHESIVE PRODUCED ACCORDING TO THE PRESENT INVENTION CAN BE USE TO JOIN MOST OTHER MATERIALS. THESE POLYURETHANE ADHESIVES MAKE TOUGH, ...		
Probable Assignee UNIV MALAYA Assignee(s): UNIV MALAYA		
12) Family number: 48960422 (US2012296014A)		© PatBase
FIBREBOARD FROM AGRICULTURAL WASTES AND A METHOD FOR MANUFACTURING THE SAME		
Abstract: Source: US2012296014A A fibreboard comprising dried plant fibres added with binder resins obtained from a reaction between a diisocyanate and a polyol derived from natural oils or fatty acids, and formed by pressing at a temperature range of 50 degrees centigrade to 150 degrees centigrade		
Probable Assignee EMERY OLEOCHEMICALS M SDN BHD Assignee(s): CHANG CHIN SHIA ; EMERY OLEOCHEMICALS M SDN BHD ; GAN SENG NEON ; UNIV MALAYA ; YAP SOON CHEE ; UNIVERSITI OF MALAYA		
13) Family number: 53487054 (US2014309322A)		© PatBase
PROCESSES FOR OBTAINING A POLYOL FROM PALM OIL, POLYOLS OBTAINED FROM SAID PROCESSES, PRODUCTS DERIVED FROM SAID POLYOL AND METHOD FOR PREPARING SAME		
Abstract: Source: US2014309322A The present invention relates to the process for production of a polyol from palm oil and of rigid polyurethane foams prepared from said polyol derived from palm oil. On the one hand, this invention provides a method for obtaining monomeric polyols from palm oil that have hydroxyl number between 50 450 mgKOH/g sample. The polyols of the present application may be obtained by means of a procedure based on the following four mother routes: Route 1: maleinisation of ...		
Probable Assignee INDUSTRIAL AGRARIA LA PALMA LIMITADA INDUPALMA LTDA Assignee(s): AGUDELO VELASQUEZ DENCY VIVIANA ; BAENA RESTREPO MARGARITA MARIA ; IND AGRARIA LA PALMA LIMITADA INDUPALMA LTDA ; INDUPALMA LTDA ; TORO ALVAREZ DAHIANA		