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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 04-089497- -00006-0001

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Act. 444 RESPUESTAREQUE Folios: 1

SEÑOR JEFE DE LA
DIVISION DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
E. S. D.

REF.: EXPEDIENTE NO. 04089497
ASUNTO: SOLICITUD PATENTE INVENCION " COMPOSICION A PARTIR DE
LODOS DE RECICLAJE PARA SUBPRODUCTOS DE CONSTRUCCION ".

JOSE FERNANDO RESTREPO PELAEZ, apoderado de la solicitante en el asunto de la referencia, a la señora jefe respetuosamente manifiesto que doy respuesta oportuna a su requerimiento notificado por fijación en lista de julio 3/2008, oficio 8569.

INSISTO EN LA NOVEDAD DE LA PATENTE ARRIBA REFERIDA Y RATIFICO MIS RAZONES CONTENIDAS EN MEMORIAL RADICADO EN MAYO 22 DE 2008. MIS MANDANTES REIVINDICAN COMPOSICIONES O CONTENIDOS Y DE NINGUNA MANERA EQUIPOS E INSTALACIONES PARA TAL FIN. LOS OBJETIVOS SON DIFERENTES.

Señora Jefe,

JOSE FERNANDO RESTREPO PELAEZ
C.C. 10222917 DE MANIZALES
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US005795377A

United States Patent [19]

Tanner et al.

[11] **Patent Number:** **5,795,377**[45] **Date of Patent:** **Aug. 18, 1998**

[54] **METHOD FOR MODIFYING PAPERMAKING SLUDGE AND PRODUCTS MADE FROM MODIFIED PAPERMAKING SLUDGE**

[75] **Inventors:** **James Jay Tanner**, Winneconne; **David Henry Hollenberg**, Kaukauna, both of Wis.

[73] **Assignee:** **Kimberly-Clark Worldwide, Inc.**, Neenah, Wis.

[21] **Appl. No.:** **906,249**

[22] **Filed:** **Aug. 5, 1997**

Related U.S. Application Data

[63] **Continuation-in-part of Ser. No. 841,960, Apr. 8, 1997, abandoned.**

[51] **Int. Cl.⁶** **C08L 1/02; D21H 11/14; D21H 21/08**

[52] **U.S. Cl.** **106/164.4; 106/164.5; 524/13; 524/14; 162/103; 162/158; 162/164.5; 162/164.6; 162/164.7; 162/181.4; 264/210.1**

[58] **Field of Search** **106/164.4, 164.5; 524/13, 14; 162/103, 158, 164.5, 164.6, 164.7, 181.4; 264/210.1**

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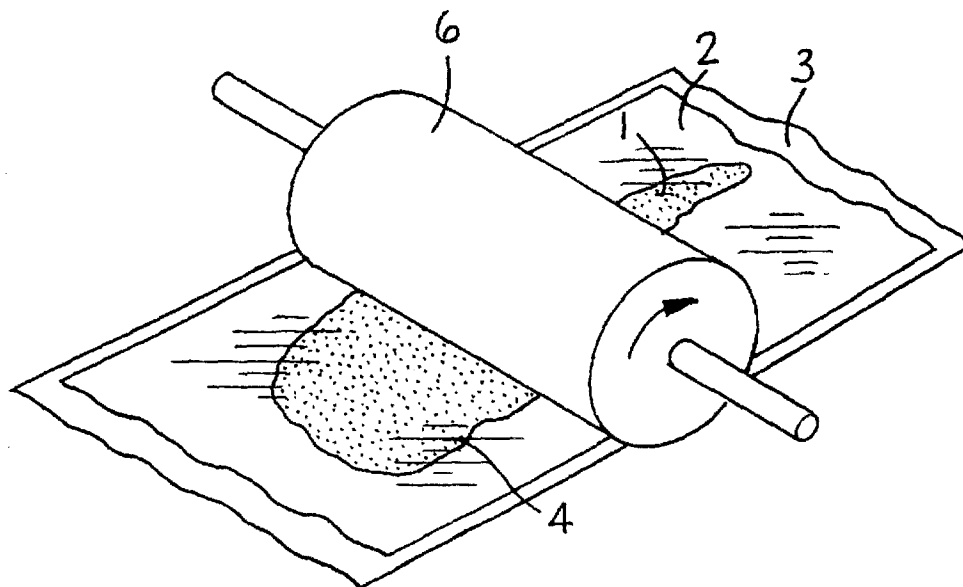
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Attorney, Agent, or Firm—Gregory E. Croft

[57] **ABSTRACT**

Papermaking sludge can be modified to a modeling clay-like consistency by the addition of one or more dispersing agents, such as polyacrylamide. The modified papermaking sludge can be formed into a number of useful products, such as paper sheets or extruded products.

21 Claims, 3 Drawing Sheets

METHOD FOR MODIFYING PAPERMAKING SLUDGE AND PRODUCTS MADE FROM MODIFIED PAPERMAKING SLUDGE

This application is a continuation-in-part of Ser. No. 08/841,960 filed Apr. 8, 1997 and entitled "METHOD FOR MODIFYING PAPER SLUDGE AND PRODUCTS MADE FROM MODIFIED PAPER SLUDGE" now abandoned.

BACKGROUND OF THE INVENTION

In the recycling of paper there is an interest in recovering and reusing as much of the materials contained in the paper as possible. Although a major constituent of most paper is wood fiber, in some types of paper there are other materials that are not generally recycled with the fiber. These materials end up being separated from the wood fiber and are ultimately discarded in the form of an aqueous suspension of solids. In this form these materials are generically termed "sludge" and are typically discarded at a cost to the recycling facility. While the composition of this sludge is variable, it generally consists of a mixture of wood pulp fibers and fines, and a combination of inorganic fillers that are used in some paper grades. These inorganic fillers are most often calcium carbonate and/or kaolin clays. It is possible that other clays can be present as well as amounts of titanium dioxide and other pigments and fillers and inks, but the major constituents are generally fiber/fines and the inorganic fillers calcium carbonate and clay.

Normally sludges from deinking operations are dewatered prior to disposal because it reduces the weight of material going to the landfill and reduces the charges for landfill disposal because these are typically based on weight. Since the majority of the weight in the sludge comes from water, it behooves the sludge processor to remove as much water as possible. The resulting material typically is a crumbly, not very cohesive material that appears to be dry. At thirty percent consistency, most sludges are more like dry solids as opposed to a suspension or dispersion. Because of the non-cohesive character of sludge, the materials handling equipment for moving, storing and transporting are generally the same as for dry materials.

The prior art sets forth basically five different approaches for utilizing the sludge as a product: (1) Pelletizing the sludge using high pressure and binders where the sludge is dried before pelletizing. The pellets can be used as absorbents or chemical carriers, e.g., fertilizer. Alternatively, large diameter pellets or cylinders are used as fuel. (2) Extracting the fibers or fillers from sludge in various ways to subsequently use the extracted material in a paper and/or ceramic product. These are both wet and dry processes. (3) Mixing the sludge with other construction ingredients such as concrete or plastic to embody the sludge as reinforcing fibers or filler. Again these are both wet and dry processes. (4) Direct molding of sludge into large shapes (i.e., large cross section) and drying. These products are construction blocks or boards and can be made using both wet and dry processes. Some of these can be fired to burn out the cellulosic and polymeric materials leaving a ceramic product. (5) Some sludges are formed into particulates or briquettes of various forms and sizes. These are subsequently carbonized to make an activated carbon product.

While considerable prior art exists with regard to methods for handling, utilizing or recycling of sludge as outlined above, in actual fact there has been little commercial implementation. The majority of the materials classed as sludge from both deinking operations as well as conventional pulp

and paper mills end up in landfills or are discarded or disposed of in some other way. The major reason is that few of the many procedures available to convert sludges can produce products that have significant value.

However, there are continuing trends indicating there is a need to develop methods and processes that would use these waste materials. It is likely that environmental and regulatory pressures to recycle paper and paper products will increase. This will mean there will be more deinking and recycling operations in the future. In addition, it is likely that the percentage of inorganic materials in recycled paper, such as calcium carbonate and clay, will increase for a number of reasons. For example, calcium carbonate improves the long term stability of printing papers because the alkalinity of the calcium carbonate reduces the rate of discoloration and embrittlement of the paper. Additionally, both calcium carbonate and clay are used to increase the opacity of paper. In printing such things as magazines or advertising supplements, addition of inorganic materials allows for reductions in the amount of fiber used for the paper. The purpose for the added inorganic material is to provide superior opacity. In addition to the improved opacity, incorporation of clay as a coating or filler and calcium carbonate as a filler also provides improvements to the surface of the paper such that the quality of the printing is improved. Furthermore, wood pulp, even though it is a renewable resource, is becoming more expensive. The cost of wood pulp currently exceeds the cost of calcium carbonate or clay, and it therefore makes economic sense to include considerable amounts of these fillers in paper.

All of these trends act together to provide increases in the amounts of waste materials in the form of sludge that will be generated in the future. Therefore there is a need for a commercially feasible method of utilizing papermaking sludge.

SUMMARY OF THE INVENTION

It has now been discovered that the rheological properties of sludge from papermaking and/or paper recycling can be altered and controlled when mixed with a small amount of dispersant (hereinafter defined). The cellulose fibers, cellulose fines, clays and fillers normally present in papermaking sludge have been agglomerated by the use of flocculants and dewatering polymers in the water treatment process that leads to the generation of papermaking sludge in a tissue mill. Whereas papermaking sludge typically has a dry, crumbly texture even though it contains large amounts of water, the modified papermaking sludge of this invention has a consistency, appearance and feel (rheology) closely resembling modeling clay. As such, the modified sludge of this invention can be formed into a very thin cross section which has integrity and uniformity. This can be done by injection molding or profile or sheet extrusion in a manner similar to that used to form polymer or food products. Therefore, as a result of this invention, papermaking sludge can be modified and thereafter converted to a useful form of paper or other molded or extruded products.

While not being bound to any theory, it is believed that the addition of the dispersant to the papermaking sludge acts as a deflocculant and effectively reverses the agglomeration of the cellulose fibers, fines, clays and fillers which took place in the tissue mill. This desired reversal is not easily accomplished and is made more difficult by the minimal water level present in the papermaking sludge when deflocculation is initiated, therefore requiring high shear and mixing. The initial distribution of water and particles is non uniform and

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the papermaking sludge is crumbly. After adding the dispersant and initial mixing of the crumbs, the loose agglomerates begin to grow. The water and colloidal particles begin to redistribute and fill the interstices between the particles and to coat the exterior surfaces of crumbs with water films. The crumbs grow by interaction and accretion and are increasingly worked or plastically deformed by the mixer. The indicated viscosity rises irregularly. As interstices continue to be filled, developing some interparticle lubricity, the growing crumbs are gradually consolidated and there is increasing interchange among them by shear and tearing. Large clumps form in the mixer that have a plastic character that exhibits a rather uniform viscosity within the clump. The exterior surface condition of the large clumps allow them to be brought together where they readily cohere into larger clumps.

Mixing, particle coating and deflocculation are most efficient when the shear forces exerted on the mix are highest. The desired condition to allow forming into a paper-like sheet is an empirical fine tuning between an insufficiently plastic mix which will tear or delaminate on passing through a die and a too compliant or incohesive mixture which will slump and not retain the extruded shape. The quantity of dispersant added, moisture level of the sludge and mixing intensity/time and temperature are the controllable variables to obtain the fine tuning of the rheological properties.

Hence in one aspect, the invention resides in a method of modifying papermaking sludge comprising adding from about 0.5 to about 20 dry weight percent of a dispersant to the papermaking sludge and mixing the dispersant and the papermaking sludge until the rheology of the mixture is substantially the same as that of modeling clay. The modified sludge, like modeling clay, exhibits changing rheological properties with temperature and liquid addition. Accordingly, as used herein, a rheology which is substantially the same as that of modeling clay is a rheology substantially the same as that of Roma Plastilina Grade No. 1 gray/green modeling clay, commercially available from Sculpture House, 38 East 30th Street, New York, N.Y., held at a temperature from 65° to 85°. When the papermaking sludge mixture behaves like modeling clay within this temperature range, it can be further processed into other products as described herein.

In another aspect, the invention resides in a modified papermaking sludge comprising from about 0.5 to about 20 dry weight percent of a dispersant, said modified sludge having a tensile strength (maximum stress at failure) of about 5 kilopascals or greater, more specifically about 10 kilopascals or greater, still more specifically from about 5 to about 70 kilopascals, and still more specifically from about 10 to about 35 kilopascals. In addition, the modified sludge of this invention can also have a strain at failure of about 0.02 or greater millimeter per millimeter, more specifically about 0.03 or greater millimeter per millimeter, and still more specifically from about 0.02 to about 0.1 millimeter per millimeter. By way of comparison, a typical papermaking sludge has an estimated maximum stress at failure of only about 0.88 kilopascals. The tensile test method and apparatus used to measure the tensile strength and strain are described in connection with FIGS. 5 and 6 herein.

The amount of dispersant added to the sludge can be from about 0.5 to about 20 weight percent or greater, more specifically from about 1 to about 12 weight percent, and still more specifically from about 2 to about 8 weight percent.

In another aspect, the invention resides in a method of making a paper sheet comprising: (a) combining papermak-

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ing sludge with a dispersant; (b) mixing the papermaking sludge and the dispersant; (c) forming the mixture into a sheet, such as by extruding and rolling the extruded material; and (d) drying the sheet.

In this aspect, the extrusion of the mixture and rolling the extrudate can be achieved using conventional extrusion and rolling equipment where the mass of malleable material is extruded into a uniform size continuous strand, ribbon or thick sheet. The extrudate is passed through a nip or series of nips to further extrude it into a thin sheet. In some instances it may be necessary to have the extrudate carried on a conveyor because of the very low tensile strength in the thin, wet condition.

The drying can be accomplished by using can dryers and passing the extruded sheet over the circumference of a series of heated rotating cans to vaporize the water. Drying of the sheet can be accelerated by impinging the sheet with high velocity hot air. Considerable shrinkage will occur during the drying and a calendering of the sheet may be needed to create a smooth sheet. The rate of water removal will be a function of the thickness of the sheet, the drying temperature and the adjacent air turbulence. Because of the unique form and composition of this production, other drying methods that would not be efficient for conventional paper, such as microwave drying, might find efficient application in the drying of products of the present invention.

In another aspect, the invention resides in a modified sludge composition comprising from about 5 to about 60 weight percent cellulose fibers and fiber fragments (fines), from about 10 to about 50 weight percent inorganic material such as calcium carbonate and clays, from about 0.5 to about 20 weight percent dispersant, and from about 30 to about 70 weight percent water.

In another aspect, the invention resides in a dry (air dry) paper sheet comprising from about 5 to about 30 weight percent cellulose fibers of traditional papermaking length (greater than 1.0 millimeter), from about 1 to about 10 weight percent cellulose fiber fragments, from about 5 to about 30 weight percent calcium carbonate, from about 5 to about 30 weight percent clay, and from about 1 to about 30 weight percent dispersant.

The dry paper sheet of this invention is much weaker in tensile strength for comparable basis weight than conventional papers due to the absence of significantly high quantities of long cellulosic fibers. It also has lower stretch properties than normal paper stocks such as writing or copier paper. However the tensile properties are not directional. The sludge paper surface is very tightly bonded and any inorganic materials are not free to shake loose. It readily accepts ink and provides a sharp edge to an ink line, which is needed for direct printing of complex graphics on paper or board stock. The paper does not readily redisperse in water from its dry state. It is more brittle and less porous than conventional paper. The density is higher than typical paper and the bulk is lower. The paper sheets of this invention can substitute for light or heavyweight printing papers, newsprint, linerboard, corrugating medium, S2S, clay coated board such as carton board and packaging materials. The paper sheet value exceeds the costs of processing and alternative disposal.

With regard to the composition of the papermaking sludge, there is an organic portion, an inorganic portion and water. The amount of water in the sludge can be from about 30 to about 70 weight percent, more specifically from about 40 to about 60 weight percent.

The organic portion of the papermaking sludge comprises cellulose fibers and fines and can be from about 5 to about

40 weight percent, more specifically from about 10 to about 35 weight percent, and still more specifically from about 15 to about 30 weight percent of the papermaking sludge. From about 10 to about 70 weight percent of the organic portion can be fiber fragments or fines. From about 30 to about 90 weight percent can be whole fibers or fibers having an average length of about 1 millimeter or greater.

The inorganic portion of the papermaking sludge can be from about 10 to about 65 weight percent, more specifically from about 30 to about 50 weight percent. From about 10 to about 90 weight percent, more specifically from about 20 to about 80 weight percent, and still more specifically from about 40 to about 60 weight percent of the inorganic portion can be calcium carbonate. From about 10 to about 90 weight percent, more specifically from about 20 to about 80 weight percent, and still more specifically from about 40 to about 60 weight percent of the inorganic portion can be clay. Suitable clay materials include kaolin clay or any sedimentary clay of colloidal size that is iron-free and has an Al_2O_3 : SiO_2 mole ratio of about 1:2; e.g. Dickite, Halloysite and Nacrite.

As used herein, a "dispersant" is a material that helps maintain fine solid particles in a state of suspension and inhibit their agglomeration or settling in a fluid medium. With the help of mechanical agitation, dispersants can also break up agglomerates of particles to form particle suspensions. Overall, dispersants are useful in preventing settling, deposition, precipitation, agglomeration, flocculation, coagulation, adherence or caking of solid particles in a fluid medium. Suitable dispersants include: organic polyelectrolytes including polycarboxylates, polysulfonates, polysulfates and polyphosphates; inorganic sulfonates, polyphosphates and silicates; and polymers containing polar groups such as polyacrylamides and polyols.

Exemplary of suitable synthetic polymer dispersants are the co-polymers of ethylenically unsaturated monomers with mono-ethylenically unsaturated carboxylic acids or their partially neutralized salts. Examples of the preferred, α,β -monounsaturated carboxylic acids include acrylic acid, methacrylic acid, maleic acid, maleic anhydride, itaconic acid, itaconic anhydride, fumaric acid, half esters or half amides of maleic, fumaric and itaconic acid, crotonic acids, alkyl acrylates and methacrylates containing 1-18 carbon alkyl groups, vinyl esters, vinyl aromatic compounds, dienes, etc. Homopolymers of monethylenically unsaturated carboxylic acids or mixtures of these monomers may also be used. Examples include acrylic acid and methacrylic acid homopolymers and acrylic acid/methacrylic acid copolymers. Examples of polyacrylamides of use include polyacrylamides and polymethacrylamides and their N and N,N dialkyl derivatives containing 1-18 carbon alkyl groups.

Exemplary of the sulfonic acid containing polymer dispersants are the homopolymers of monoethylenically unsaturated sulfonic acids (or salts thereof) and copolymers thereof with the aforementioned ethylenically unsaturated monomers. Suitable sulfonated containing monomers include aromatic sulfonic acids (such as styrene sulfonic acids, 2-vinyl ethylbenzenesulfonic acid, 2-vinyl-3-bromobenzenesulfonic acid, 2-allylbenzenesulfonic acid, vinylphenyl methanesulfonic acid), heterocyclic sulfonic acids (such as 2-sulfo-4-vinyl-furane and 2-sulfo-5-allylfurane), and aliphatic sulfonic acids (such as ethylene-sulfonic acid and 1-phenylethylene sulfonic acid). Other sulfonated polymers that have been found to be of value in bringing about changes in the rheology of the mixtures of interest include calcium lignosulfonates, formaldehyde modified naphthalene sulfonates, sulfonated melamine-formaldehyde polymers and other sulfonated polymers.

Exemplary of natural polymers and their derivatives that have been found to be useful as dispersants in the present invention include the carboxylated, sulfonated and phosphorylated derivatives of cellulose and starch such as carboxymethyl cellulose and carboxymethyl starch and neutralized or partially neutralized salts thereof. Other water soluble derivatives of cellulose and starch such as the hydroxyethyl and ethoxylated celluloses and starches are also of use in the present invention. Carbohydrate based materials such as corn syrups, maltodextrins, as well as naturally occurring carbohydrates (alginic acids, carrageenan, and gums such as arabic, algin, agar, ghatti, karaya, acacia, xanthan and chemically modified derivatives thereof. Other carboxylated polymers have also been found to be of value in modifying the rheology of the clay-carbonate-wood pulp blends.

Finally, there are inorganic dispersants and rheology modifiers such as the condensed phosphates, and the silicates that are commonly used to disperse particulates in the water treatment and ceramics industries. These include tetrasodium pyrophosphate, sodium hexametaphosphate, and sodium silicate.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a schematic illustration of a method of making a sludge sheet using a roller.

FIG. 2 is a schematic illustration of a laboratory method for drying a sludge sheet.

FIG. 3 is a schematic illustration of a continuous method of producing sludge paper.

FIG. 4 is a schematic illustration of core profile extrusion of sludge.

FIG. 5 is a schematic illustration of how the "dog bone" shaped sludge samples are prepared for tensile testing.

FIG. 6 is a further illustration of a single sample prepared for tensile testing.

DETAILED DESCRIPTION OF THE DRAWING

FIG. 1 illustrates a method of rolling a quantity of sludge modified in accordance with this invention into a flat sheet. Shown is a quantity of hand rolled modified sludge 1 sandwiched between a top plastic sheet 2 and a bottom plastic sheet 3 supported on a flat surface (not shown). The modified sludge is flattened into a wet sheet 4 using a brass roll 6. This method is further described in connection with Example 1.

FIG. 2 illustrates an alternative method of drying a modified sludge sheet as more fully described in Example 2. Shown is a steam heated platen 21, a wet, flattened modified sludge sheet 4 such as that illustrated in FIG. 1, a bottom plastic sheet 3 and a canvas cover 22 which is adapted to overlay the modified sludge sheet and apply tension while the sheet is drying.

FIG. 3 is a schematic illustration of a continuous method of making modified sludge sheets. Shown is a hopper/mixer 31 in which the sludge and dispersant are received and mixed, an extruder 32 which continuously feeds the mixture through a shaping die to produce the appropriate shaped extrudate 33, a pair of rollers 34 and 35 which provide a nip through which the extrudate passes and is flattened into a wet modified sludge sheet 36, a carrier and drying fabric 37 which supports the modified sludge sheet and carries it through the process, and drier rolls 38 and 39 which dry the modified sludge sheet to the desired moisture level, which is typically from about 1 to about 10 weight percent. The dried modified sludge sheet 40 is peeled away from the support fabric after the dryer roll 39.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES

2020

Abogado
JOSE FERNANDO RESTREPO PELAEZ

ASUNTO	Radicación	04-89497
	Trámite	002
	Evento	001
	Actuación	430
	Oficio	Nº 13540
	Folios	009

Patente de Invención	☒	Patente de Modelo de Utilidad	☐
Vía Nacional	☐		
Vía PCT (fase nacional)	☐	Cap. I	☐
		Cap. II	☐

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción: Folios: 4 a 6

Reivindicaciones: Folios: 7 a 8 (radicadas inicialmente)
Folios: 33 a 34 (modificación del capítulo reivindicatorio incluido en el memorial de respuesta)

2. Objeto de la invención

- La Invención se titula "**COMPOSICIÓN A PARTIR DE LODOS DE RECICLAJE PARA SUBPRODUCTOS DE CONSTRUCCIÓN**" (folio 1)

La **reivindicación independiente 1** define una composición moldeable obtenida a partir de lodos por reciclaje del cartón y papel, como materia prima, caracterizada principalmente por incluir una mezcla que contiene un 60% en peso de agua y un 40% en peso de sólidos orgánicos e inorgánicos.

- El problema planteado en esta solicitud consiste en desarrollar una composición con base en sólidos de reciclaje de material celulósico con bajos índices de toxicidad y libre de bacterias contaminantes.

La solicitud en estudio presenta una composición a partir de lodos de reciclaje de cartón y papel que comprende un 60% de agua y un 40% de sólidos orgánicos e inorgánicos.

- El objeto de la invención se catalogó como C04B 18/24, según la Clasificación Internacional de Patentes (IPC.).

3. De la solicitud de Patente

Reivindicaciones (artículo 30 D 486)

- Para futuras respuestas, se sugiere presentar el capítulo reivindicatorio modificado, en folios independientes y no en el memorial de respuesta al requerimiento.
- La reivindicación 2 define una composición moldeable que contiene carbonato de sodio. De igual manera, la reivindicación 4 define una composición moldeable que contiene un 10% de carbonato de sodio. Sin embargo, el capítulo descriptivo señala que la composición moldeable incluye un 10% de carbonato de calcio. Por lo anterior, es necesario corregir el contenido de dichas reivindicaciones de acuerdo con lo divulgado en la descripción de la solicitud.
- La reivindicación 2 cuya categoría es de producto (composición moldeable), relaciona la etapa de agregar una mezcla al componente de sólidos orgánicos e inorgánicos. Es importante mencionar que un producto, tal como la composición moldeable, debe definirse por sus características estructurales y no por la forma de preparar dicha composición. Lo mismo sucede en la reivindicación 4. Por lo anterior, es necesario que el solicitante realice las correspondientes correcciones.

En conclusión, el capítulo reivindicatorio no cumpliría con el requisito de claridad de acuerdo con el artículo 30 de la Decisión 486.

4. Determinación del Estado de la Técnica

Considerando que la fecha de presentación de la solicitud de patente es: 09 de septiembre de 2004, se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a esta.

Nº	Documento	Título	Fecha de publicación
D1	US 5,897,700	"APPARATUS AND INTEGRATED PROCESS FOR RECLIMING PAPER MILL SLUDGE AND PRODUCING USEFUL PRODUCTS THEREFROM"	27 de abril de 1999
D2	US 5,795,377	"METHOD FOR MODIFIYN PAPERMAKING SLUDGE AND PRODUCTS MADE FROM MODIFIED PAPERMAKING SLUDGE"	18 de agosto de 1998

5. Análisis de patentabilidad (según requisito) (artículo 14 D486)

Es importante mencionar que de acuerdo con las objeciones citadas en el numeral 3 de la presente comunicación, para el siguiente análisis de patentabilidad se tuvo en cuenta únicamente las características técnicas de la composición relacionadas con la naturaleza química de los componentes y sus correspondientes porcentajes en la formulación.

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Novedad (artículo 16 D486)

Reivindicación 1

Respecto a la solicitud en estudio

- La reivindicación independiente 1 define una composición o base de lodos de reciclaje del cartón y papel, que comprende una mezcla que contiene un 60% en peso de agua y un 40% en peso de sólidos orgánicos e inorgánicos.

Respecto al estado de la técnica

- El documento US 5,350,451 (llamado D1 de aquí en adelante), divulga una base de lodos de reciclaje de papel que contiene un 60% de agua y un 40% de sólidos orgánicos e inorgánicos (columna 2, líneas 40-45; columna 4; líneas 23-41)
- Asimismo, el documento US 5,795,377 (llamado D2 de aquí en adelante), divulga una composición moldeable o base de lodos de reciclaje de papel (columna 2, líneas 40-41; líneas 57-58; columna 4, línea 61) que comprende 60% en peso de agua y un 40% en peso de sólidos orgánicos e inorgánicos (columna 4, líneas 59-65).

De acuerdo con lo anteriormente expuesto, todas las características técnicas de la composición moldeable, señaladas en la reivindicación 1, ya eran conocidas en D1 y D2.

En conclusión, la materia de invención de la solicitud en estudio se encuentra afectada en su novedad de acuerdo con el artículo 16 de la Decisión 486.

Nivel inventivo (artículo 18 D486)

Aunque la reivindicación independiente 1 carece de novedad, tal como se demostró en el punto anterior, a continuación se presenta el análisis de nivel inventivo de la composición moldeable definida en las reivindicaciones 1 a 4.

Respecto al estado de la técnica

- El documento US 5,795,377 (llamado D2 de aquí en adelante), divulga una composición moldeable o base de lodos de reciclaje de papel (columna 2, líneas 40-41; líneas 57-58; columna 4, línea 61) que comprende 60% en peso de agua y un 40% en peso de sólidos orgánicos e inorgánicos (columna 4, líneas 59-65)

De igual manera, D2 indica que la porción de la composición moldeable comprende:

- 0.5% a 20% en peso de un agente dispersante (columna 4, líneas 31-32) compuesto por silicato de sodio (columna 6, línea 21) y almidón (columna 6, línea 8), cabe resaltar que el almidón está constituido principalmente por amilopectina.
- 10% a 90% en peso de carbonato de calcio (columna 5, líneas 10-14)
- 10% al 65% en peso de cenizas (columna 5, líneas 8-9)
- 15 al 30% en peso de fibras celulósicas (columna 4, línea 66 a columna 5, línea 3)

Respecto a la solicitud en estudio:

- De acuerdo con la materia de invención definida en las reivindicaciones 1 a 4 de la solicitud en estudio, se entiende que el principio técnico sobre el cual se fundamenta la propuesta consiste en desarrollar una composición moldeable a partir de una base de lodos y una mezcla de silicato de sodio, carbonato de calcio y amilopectina. No obstante, en D2 se encuentra divulgada una composición moldeable que incluye los mismos componentes propuestos por la solicitud en estudio.

D2 no menciona exactamente los porcentajes que señala la solicitud en estudio para cada componente de la base moldeable. Sin embargo, D2 sugiere varios intervalos de porcentajes de adición de cada uno de los compuestos que conforman la composición moldeable a partir de lodos de reciclaje.

Así las cosas, un técnico de nivel medio versado en la materia que tuviera acceso a D2, podría desarrollar pruebas de rutina para seleccionar la cantidad efectiva de cada componente, cuyos valores correspondan a los propuestos por la solicitud estudiada y conlleven a la obtención de una composición que cumpla con los requerimientos técnicos necesarios para su aplicación en la producción de artículos extruidos para la construcción. Cabe resaltar que la formulación de composiciones moldeables es una actividad que forma parte de los conocimientos básicos que tiene un técnico de nivel medio versado en la materia que trabaje en el desarrollo de materiales procesables para el moldeo de elementos para la construcción.

Por lo anteriormente expuesto, la invención de la solicitud no parece generar un efecto sorprendente que evidencie un salto tecnológico respecto a lo conocido.

En conclusión, la materia de invención de la solicitud, no cumple con el requisito de nivel inventivo como se requiere según el art. 18 de la Decisión 486

6. Respuesta a los argumentos sobre novedad del solicitante

Con respecto al documento D1 citado en el análisis de patentabilidad, el solicitante señala: *'Insisto en la novedad de la patente... y ratifico mis razones contenidas en memorial radicado en mayo 22 de 2008. Mis mandantes reivindican composiciones o contenidos y de ninguna manera equipos e instalaciones para tal fin. Los objetivos son diferentes'*.

Es claro para la Oficina que D1 reclama un aparato y un proceso para reciclar lodos de papel y obtener productos ecológicos derivados a partir de dichos lodos y la solicitud en estudio reclama una composición o base de lodos de reciclaje del cartón y papel. No obstante, es necesario resaltar que aunque D1 no reivindica la composición o base de lodos, el capítulo descriptivo de dicho documento revela tal composición moldeable con todos los elementos técnicos definidos en la solicitud en estudio, razón por la cual D1 puede ser empleado para el estudio de novedad.

Adicionalmente, cabe recordar que en el análisis de novedad, la determinación del contenido que debe divulgar un documento pertinente, implica la explicitación de todos y cada uno de los elementos técnicos que componen la materia de la invención sin excepción alguna en un único documento. Así las cosas, D1, tal como se demuestra en el numeral 5 de la presente comunicación, divulga todas las características técnicas de la invención de la solicitud por lo cual se concluye que la composición moldeable no es novedosa.

7. Conclusión:

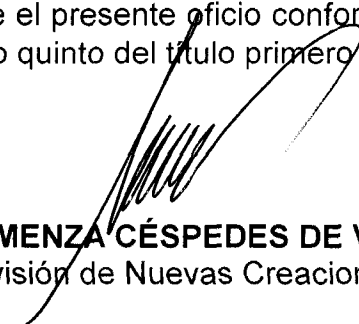
Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

N°	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	US 5,897,700	1	Novedad
D2	US 5,795,377	1	Novedad
		1-4	Nivel Inventivo

D1: folios 24-28

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de 60 días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 23 OCT. 2008

CONCEPTO TÉCNICO No.2928	EXAMINADOR TÉCNICO Código No.202076
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