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División Nuevas Creaciones

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54. **TITULO** TABLETA QUIMICA PARA PISCINAS

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71. **SOLICITANTE** ARCH CHEMICALS, INC.

DOMICILIO NORWALK, CONNECTICUT, ESTADOS UNIDOS DE AMERICA

74. **APODERADO** JUAN PABLO CADENA SARMIENTO

22. **SANTAFE DE BOGOTA, D.C.** 14-05-2007

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1 SOLICITUD DE:

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☒ Capítulo I. ☐ Capítulo II.

2 SOLICITANTE (71)	Nombre: ARCH CHEMICALS, INC. Dirección: 501 Merritt 7, P.O. Box 5204, Norwalk, Connecticut 06856-5204, Estados Unidos de América Nacionalidad o Domicilio: Estados Unidos de América Lugar de Constitución: Estados Unidos de América Teléfono: Fax: E-mail	IDENTIFICACION C.C. ☐ NIT ☐ C.E. ☐ Otro ☐ Cual____ Número _____
3 REPRESENTANTE O APODERADO	Nombre: JUAN PABLO CADENA SARMIENTO Dirección: Cra. 7 No. 71-21, Torre B, Piso 4 Teléfono: 744 2200 Fax: 742-2200 E-mail:	IDENTIFICACION C.C. ☒ NIT ☐ C.E. ☐ Otro ☐ Cual____ Número 80.410.337 TP 57492
4 INVENTOR (ES) (72)	Nombre: David W. BLANCHETTE, Warren G.GINN Dirección: 87 Maplewood Road, Southington, CT 06489, Estados Unidos de América; 62 Elm Avenue, Glen Cove, NY 11542, Estados Unidos de América *(respectivamente)* Nacionalidad o Domicilio: Estados Unidos de América	

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2

10 **ANEXOS**

- [x] Comprobante de pago de la tasa de presentación de la solicitud. $482.000.oo
- [x] Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- [x] Poderes, si fuere el caso.
- [ ] Documento de cesión del inventor al solicitante o a su causante.
- [ ] Declaraciones
- [x] Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- [x] Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
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- [ ] De ser el caso, certificado de depósito del material biológico.
- [ ] Arte final 12x12.
- [ ] De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- [x] Otros: Documentos PCT.
  Tarjeta de propietarios.

11 **FIGURA CARACTERÍSTICA:**

12 Solicito la concesión de la patente,

NOMBRE: JUAN PABLO CADENA SARMIENTO

FIRMA: _____

C.C. 80.410.337 de Usaquén T.P. 57492 del C.S.J.

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DIVISION DE NUEVAS CREACIONES

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PATENTE [X] MODELO DE UTILIDAD [ ] DISEÑO INDUSTRIAL [ ]

SOLICITANTE(S. RAZON SOCIAL O APELLIDOS Y NOMBRES ARCH CHEMICALS, INC.

DOMICILIO NORWALK CONNECTICUT ESTADOS UNIDOS DE AMERICA

APODERADO JUAN PABLO CADENA SARMIENTO

TITULO TABLETA QUIMICA PARA PISCINAS

CLASIFICACION

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PRORROGA CAMBIO DE NOMBRE

TRASPASO A

INVENTOR (ES) DAVID W. BLANCHETTE, WARREN G. GINN

OTROS

OFICINA DE COMUNICACIONES

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NOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
APPLICATION AS PUBLISHED OR REPUBLISHED

To:

GANGEMI, Anthony, P.
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
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The International Bureau transmits herewith the following documents:

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(54) Title: POOL CHEMICAL TABLET

(57) Abstract: One aspect of the present invention is directed to a solid chemical tablet (11) in a shape comprising an elongated cylindrical side surface (40, 130) and an elongated flat side surface (30) or an elongated concave cut side surface (140). Another aspect of the present invention is directed to a solid chemical tablet (11) comprising a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate. This invention further relates to a solid chemical tablet (11) comprising a blend of solid calcium hypochlorite, and one or more solid alkali metal phosphate.

POOL CHEMICAL TABLET

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a particular shaped pool chemical tablet. More particularly, the present invention relates to a chemical tablet that is easily identifiable and provides consistent chemical dissolution in a body of water.

2. Brief Description of Art

Sanitization of water is important to everyday life. Drinking water, bathing water and swimming water need to be properly sanitized to prevent unhealthy levels of bacteria, fungi and other contaminants. A typical method for sanitizing bathing and swimming water employs dissolving a tablet, briquette, or solution comprising the desired sanitizing chemicals in the water.

A common problem in treating bodies of water, such as swimming pools, with sanitizing chemicals has been providing a dispensing article that allows uniform distribution of the sanitizing chemicals into the body of water. Attempts in the art have culminated in the use of pressed tablets of varying forms such as briquettes, circular, cylindrical, or elliptical blocks that have means for metering the sanitizing chemical into the surrounding water.

An additional concern in this field includes the safety of humans and animals when they are exposed to high amounts of highly concentrated pool chemicals. Therefore pool chemical tablets are preferably formed so as to allow an even, controlled dispersion of the chemicals in the body of water. Better control of the dispersion of the chemicals is always desired when tablets are created.

There is also a further need in the art for consumers to have the ability to distinguish different pool chemicals from others. It is known that the use of chemicals, even household products containing certain chemicals require some precautions. It would be helpful for a consumer to be able to visually distinguish one type of pool chemical tablet from another to avoid unwanted reactions. Differently shaped pool chemical tablets is one option of visual distinguishment.

U.S. Patent No. 4,876,003 to Casberg relates to a package for a water sanitizing chemical that permits the chemical to dissolve uniformly and over a substantially long period of time. This patent describes an elongated halogen compound containing tablet with an elongate central section connecting two opposing obliquely and inwardly tapered ends encased by a tablet shell of the same configuration but having openings in the ends. The openings in the shell allow the chemical to dissolve through into the body of water.

Likewise, U.S. Patent No. 4,928,813 to Casberg relates to a capsule and a method of making a capsule for use in the dissolution of a chlorine chemical into a body of water. This patent discloses a capsule that generally comprises a tablet section and a shell means. The tablet sections comprises at least one halogen chemical compound tablet. The tablet section has an elongate center section with two opposite end sections. The shell means is securely fitted about the tablet section. The shell means have two end portions adjacent to the tablet end sections. Each of the end portions comprises a tablet wall with an aperture therethrough and an extension having a conduit means or flow passage therethrough. This causes water to pass through the extensions and the apertures to access the tablet section such that the shell means reduces the dissolving rate of the halogen compound. This tablet was designed to last a longer time than other tablets and to dissolve at a relatively even rate

Additionally, U.S. Patent No. 5,137,731 to Casberg discloses a pool chemical tablet design which has a donut shape with a close-fitting peripheral water impervious barrier. The barrier is a certain size in relation to the tablet size and hole diameter to achieve a very even dissolving rate of a desired magnitude.

U.S. Design Patents Nos. 283,649 and 625,619 to Casberg demonstrate different shapes of pool chemical tablets used in the art to provide even distribution of pool chemicals into surrounding bodies of water that do not pose a danger to users of the water.

Despite the above-mentioned advancements in the art, what is needed is a pool chemical tablet that is shaped to be visually distinctive from other tablets, and shaped to allow easy handling while providing an even and safe distribution of pool chemicals into the surrounding body of water. Ideally the chemical tablet would not easily clog, trap, or otherwise interfere with any other components of a filtration system or the like.

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BRIEF SUMMARY OF THE INVENTION

Therefore, one aspect of the present invention is directed to a chemical tablet for use as a sanitizer in pool chemicals having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface.

Another aspect of the present invention is directed to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface wherein the chemical tablet comprises hydrated calcium hypochlorite.

Yet another aspect of the present invention is directed to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface, wherein the chemical tablet comprises a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate, wherein the blend comprises at least about 17% by weight of water based on the total weight of the blend, from about 0.1% to about 10% of lime based on the total weight of the blend, at least about 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite.

Yet another aspect of the present invention relates to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface, wherein the chemical tablet comprises a blend of hydrated calcium hypochlorite and an alkali metal phosphate.

A further aspect of the present invention relates to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface wherein the chemical tablet comprises a blend of a hydrated calcium hypochlorite, a scale inhibiting solid alkali metal phosphate and a residue dispersing solid alkali metal phosphate.

Advantages to the present invention include: even dissolution of the sanitizing chemicals, scale inhibition, and residue dispersion. Another advantage of the present invention is controlled dispersion of the chemicals into the pool water it sanitizes. Easy recognition of this pool chemical tablet by its unique shape is yet another advantage of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of a pool chemical tablet with an elongated flat side surface according to the present invention;

FIG. 2 is a side perspective view of the pool chemical tablet of FIG. 1.

FIG. 3 is a view of the pool chemical tablet of FIG. 1 showing the cylindrical side surface of the chemical tablet.

FIG. 4 is a view of the pool chemical tablet of FIG. 1 showing the elongated flat side surface of the chemical tablet.

FIG. 5 is a top perspective view of a pool chemical tablet with an elongated concave cut side surface according to the present invention.

FIG. 6 is a side perspective view of the pool chemical tablet of FIG. 5.

FIG. 7 is a view of the pool chemical tablet of FIG. 5 showing the concave cut side of the chemical tablet.

DETAILED DESCRIPTION OF THE INVENTION

As used in the present specification and claims, the term "D-shaped" means an article is in the shape of the capital letter D.

As used in the present specification and claims, the term "moon shaped" means an article is in the shape of a crescent moon, namely one side of the article has a concave shape.

The term "tablet" as used in the present specification and claims covers any shape or size tablet, or other compressed shaped product made of sanitizing chemicals required in the present invention.

The term "blend" as used in the present specification and claims refers to an homogeneous or near homogeneous mixture of the materials as described herein.

The term "hydrated" as used in conjunction with calcium hypochlorite products in the present specification and claims refers to any calcium hypochlorite product that has a water content of at least 5% by weight of calcium hypochlorite product.

The term "average dissolving rate" as used in the present invention, unless otherwise identified, is used to mean the static average dissolving rate of the tablotted blends of the present invention in a standing volume of water.

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The term "coloring agent" as used in the present specification and claims refers to any chemical, pigment, dye, tint, or other substance, that provides color to the chemical tablet of the present invention.

Referring to FIG. 1, a chemical tablet 11 is shown which illustrates one embodiment of the tablet of the present invention. The chemical tablet 11, also illustrated in FIGS. 2-4, has a unique D-shaped structure.

FIGS. 1-4 illustrates one embodiment of a chemical tablet 11 of the present invention. The chemical tablet has an upper flat surface 10 and a lower flat surface 20. The upper flat surface 10 is connected to the lower flat surface 20 by a first elongated cylindrical side surface 40 and a second elongated flat side surface 30.

The second elongated flat side surface 30 has two edges 32 and 32' as shown in FIG. 4. Edges 32 and 32' aid in forming the particular shape of chemical tablet 11 as well as minimize stress that may cause cracking or breaking of the chemical tablet.

As shown in FIG. 1, upper flat surface 10 can be connected to an upper beveled edge 12. The upper flat surface and upper beveled edge are connected by an upper inner edge 13. The upper beveled edge 12 follows the perimeter of the upper flat surface of the chemical tablet. The width 14 of the upper beveled edge is about 0.25 inches as measured from an upper outer edge 16 to upper inner edge 13 as shown in FIG. 2..

As can be seen in FIG. 2, the lower flat surface 20 of the chemical tablet may also be connected to a lower beveled edge 23. The lower flat surface 20 is connected to lower beveled edge 22 by lower inner edge 23. The lower beveled edge 22 follows the perimeter of the lower flat surface of the chemical tablet. The width 24 of the lower beveled edge is about 0.25 inches as measured from a lower outer edge 26 to lower inner edge 23. Widths 14 and 24 are preferably the same size.

Preferably, chemical tablet 11 of the present invention has an upper beveled edge connected to the upper flat surface and a lower beveled edge connected to the lower flat surface as shown in FIG. 2. This particular shape aids in distinguishing the chemical tablet from other chemical tablets used in water sanitization.

Although other dimensions may be suitable for the chemical tablet of the present invention, preferably, chemical tablet 11 conforms to certain dimensions to maintain optimum average dissolving rate of less than 150 grams/day for a 100% by weight hydrated calcium hypochlorite tablet. Preferably chemical tablet 11 has a volume of 10.2 cubic inches and preferably its weight is about 340 grams. Ideally, chemical tablet 11 has

a surface area of 25.1 square inches. The surface area of chemical tablet 11 contacted by the water at the feeder's highest feed rate is 13.5 square inches. This contact area at a maximum flow rate of 2.0 gpm gives a desired feed rate of 20 lbs available chlorine per day for a straight 100% hydrated calcium hypochlorite tablet.

Additionally, while other dimensions may be suitable for the chemical tablet of the present invention, as shown in FIGS. 1 and 2, it is preferred that the elongated cylindrical side surface 40 is formed having a diameter of about 3 inches (if completely cylindrical) as noted by reference number 42. Additionally, it is preferred that the distance 34 from an apex 44 of the elongated cylindrical side surface 40 and the elongated flat surface 30 is about 2.37 inches. Further, it is preferred that the distance 18 from the upper flat surface 10 and the lower flat surface 20 is about 1.7 inches.

A preferred embodiment of the chemical tablet has an elongated cylindrical side surface 40 of a diameter of about 3 inches (if totally cylindrical in shape), a distance from an the apex 44 of the elongated cylindrical side surface 40 and the elongated flat surface 30 of about 2.37 inches, and a distance 18 from the upper flat surface 10 and the lower flat surface 20 of about 1.7 inches.

As shown in FIGS. 5-7, the chemical pool tablet of the present invention can alternatively be moon shaped, that is, having an elongated concave cut side surface instead of an elongated flat surface found in the prior embodiment. The pool chemical tablet of this alternative embodiment has an upper flat surface 110 and a lower flat surface 120. Upper flat surface 110 is connected to lower flat surface 120 by a first elongated cylindrical side surface 130 and a second elongated concave cut side surface 140. The concave cut side surface 140 can be of any concave curvature.

Any curvature may be used for this elongated concave cut side. The curvature may be created when the granular material is compressed into a mold to form the desired shape of the tablet. Preferably, the curvature of this concave cut is formed with a radius of 1.5 inches and cuts into a 3 inch round tablet such that there would be a distance of 2.24 inches from the opposite side of the tablet to the deepest point on the concave cut-out as shown in Fig. 5-7. This preferred shape provides an optimum surface area.

As shown in FIG. 5, upper flat surface 110 can be connected to an upper beveled edge 112. The upper flat surface and upper beveled edge are connected by an upper inner edge 113. The upper beveled edge 112 follows the perimeter of the upper flat surface of

the chemical tablet. The width 114 of the upper beveled edge is about 0.25 inches as measured from an upper outer edge 116 to upper inner edge 113.

As can be seen in FIG. 6, the lower flat surface 120 of the pool tablet may also be connected to a lower beveled edge 122. The lower flat surface 120 is connected to lower beveled edge 122 by lower inner edge 123. The lower beveled edge 122 follows the perimeter of the lower flat surface of the pool tablet. The width 124 of the lower beveled edge is about 0.25 inches as measured from a lower outer edge 126 to a lower inner edge 123.

Preferably, chemical tablet 111 has an upper flat surface connected to an upper beveled edge and a lower flat surface connected to a lower beveled edge as shown in FIG. 6. This particular shape aids in distinguishing the chemical tablet from other chemical tablets used in water sanitization.

Although other dimensions may be suitable for this embodiment of the chemical tablet, preferably chemical tablet 111 conforms to certain dimensions to maintain optimum dissolving rate of less than 150 grams per day for a 100% hydrated calcium hypochlorite tablet. Preferably chemical tablet 111 has a weight of about 300 grams.

Ideally, chemical tablet 111 has a surface area of at least 25.1 square inches, but more preferably 25.9 square inches. The surface area of chemical tablet 111 contacted by the water at the feeder's highest feed rate is 13.5 square inches. This contact area at a maximum flow rate of 2.0 gpm gives a desired feed rate of 20 pounds of available chlorine per day for a 100% hydrated calcium hypochlorite tablet.

Additionally, while other dimensions may be suitable for the chemical tablet 111, as shown in FIGS 5 and 6, it is preferred that the elongated concave cut side surface 140 is formed having a diameter of about 3 inches (if the tablet were completely cylindrical) as noted by reference number 142. Additionally, it is preferred that the distance 134 from an apex 144 of the elongated side surface 130 and a point 146 on the elongated concave cut side surface 140 is about 2.24 inches. Further it is preferred that the distance 118 from the upper flat surface 110 and the lower flat surface 120 is about 1.75 inches.

One embodiment of chemical tablets 11 and 111 of the present invention preferably comprises only pressed granular hydrated calcium hypochlorite. Chemical tablet 11 may alternatively additionally contain a coloring agent such as ultramarine blue, phthalocyanine blue or phthalocyanine green besides the hydrated calcium hypochlorite.

Preferably the calcium hypochlorite is present in an amount that allows 47% of the chlorine to be available for sanitizing uses. This composition preferably contains at least about 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite. More preferably, the composition contains from about 25% to about 40% magnesium sulfate heptahydrate and about 60% to about 75% by weight of hydrated calcium hypochlorite. The amount of water in the blend should be at least about 17% by weight of the total blend; more preferably, about 18% to about 24% by weight of the blend. The granular magnesium sulfate heptahydrate is physically blended with granular hydrated calcium hypochlorite to produce an essentially homogeneous granular mixture.

This embodiment may also contain small amounts of other materials. One preferred material is lime ($Ca(OH)_2$) which may be included in amounts up to about 10% by weight preferably from about 01% to about 10% by weight, more preferably about 0.5% to about 3%, and most preferably about 1% to about 2% of the total amount of the blend of the two ingredients.

The amount of water in chemical tablets 11 and 111 may be calculated by any standard analytical method for measuring water in chemical products like these. Our preferred method is thermogravimetric analysis (TGA).

Additionally, the above-described embodiment may also comprise a coloring agent. A coloring agent added to the above-described embodiment would help consumer distinguish between this formula and others that are available. As mentioned above, the ability to distinguish between different chemicals is important to customer safety.

Coloring agents that are preferred include, but are not limited to, ultramarine blue, phthalocyanine blue, and phthalocyanine green. Preferably, the concentration of the coloring agent is between 0.01 and 0.5%. Ideally, the concentration is 0.05%.

Another embodiment of the present invention comprises hydrated calcium hypochlorite in an amount which allows approximately 68% of the chlorine to be available for sanitizing purposes. Preferably, commercial calcium hypochlorite product such as HTH® and CCH® products available from Arch Chemicals, Inc. of Norwalk, Connecticut have a minimum available chlorine content ranging from about 65 weight percent to about 75 weight percent. The remainder of such commercially available calcium hypochlorite products usually consists of water and inorganic calcium and alkali metal salts. Typically,

the salts present include sodium chloride, calcium chloride, calcium hydroxide, and the like.

Additionally, the hydrated calcium hypochlorite in this embodiment can further be combined with an alkali metal phosphate. The alkali metal of the solid alkali metal phosphate may be lithium, sodium or potassium. Preferably the alkali metal in the alkali metal phosphate is sodium. The preferred alkali metal phosphate in the present embodiment is sodium tripolyphosphate (STPP). STPP is used to inhibit the development of scale deposits that sometimes occurs in using such calcium hypochlorite based tablets.

The hydrated calcium hypochlorite component in this embodiment is preferably at least about 95% of the total weight of all ingredients present in the tablet. Most preferably, the hydrated calcium hypochlorite component is from about 98.5% to about 99.5% of the total weight of the ingredients of the tablet. The alkali metal phosphate STPP is typically present in this embodiment in an amount of at least 0.1% but not more than 4.5% by weight, based on the weight of the total weight of the ingredients of the tablet. More preferably, the STPP is present in an amount from about 0.2% to 1.0% by weight, based on the total weight of the total weight of the ingredients of the tablet. Most preferably, the STPP is present in an amount of about 0.5% by weight based on the total weight of the ingredients of the tablet.

The above embodiment of the chemical tablet may also contain a coloring agent. Examples of suitable coloring agents include ultramarine blue, phthalocyanine blue, or phthalocyanine green.

In yet another embodiment, the hydrated calcium hypochlorite as described above that has approximately 68% available chlorine, may be blended with a combination of two or more alkali metal phosphates such as STPP and sodium hexametaphosphate (SHMP). SHMP is a residue-dispersing alkali metal phosphate.

Similar to the embodiment described above, the hydrated calcium hypochlorite component in this embodiment is preferably at least about 95% of the total weight of all ingredients present in the tablet. Most preferably, the hydrated calcium hypochlorite component is from about 98.5% to about 99.5% of the total weight of the ingredients of the tablet.

Each alkali metal phosphate is present in this embodiment in an amount of at least 0.1% but not more than 4.5% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment. More preferably, each alkali metal

phosphate is present in an amount of at least 0.2% but not more than 1.0% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment. Most preferably, each alkali metal phosphate is present in an amount no less or more than 0.5% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment.

An advantage of this embodiment includes reduced scale deposits and blocked passageways of filters and the like, when the embodiment is used in water treatment applications in which feeding equipment is employed, such as swimming pools, hot tubs, and spas.

Likewise, a colorant agent such as the examples given above may be added to this chemical tablet embodiment that contains one or more alkali metal phosphates in combination with the hydrated calcium hypochlorite.

Typically a chemical tablet for use in water sanitization is formed by methods known in the art, including: using tableting equipment such as hydraulic presses or briquetting apparatus. Any suitable dwell times and pressures may be used in operating the hydraulic presses.

Preferably, the chemical tablet of the present invention is placed in a feeder or skimmer unit of a swimming pool. More preferably, the chemical tablet is placed in a "wave" technology chlorinator. The chemical tablet of the present invention may also be used in the sanitization of spas or hot tubs.

The chemical tablets 11 and 111 of the present invention has an average dissolving rate of less than about 150 grams/day for straight 100% hydrated calcium hypochlorite. In other words, a 300 gram tablet will take at least 2 days to dissolve completely in a standing (non-flowing) body of water. Preferably, the average dissolving rate is less than 100 grams per day for the tablets of the present invention. It should be recognized that the average dissolving rate of the chemical tablets 11 and 111 of the present invention will generally have higher dissolving rates in flowing water conditions such as in a skimmer or a feeder in a swimming pool.

The present invention is further described in detail by means of the following Examples. All parts and percentages are by weight and all temperatures are degrees Celsius unless explicitly stated otherwise.

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EXAMPLES

EXAMPLE 1

The chemical tablet 11 as illustrated in FIGS 1 – 4 can be formed by using methods of tabletting known in the art, such as a hydraulic press or a briquetting apparatus. The D shaped tablet as shown in these figures can be easily distinguished from other tablets or briquettes that are used in water sanitization.

EXAMPLE 2

The chemical tablet 111 as illustrated in FIGS 5 – 7 can be formed by using methods of tabletting known in the art, such as a hydraulic press or a briquetting apparatus. The moon shaped tablet as shown in these figures can be easily distinguished from the other tablets or briquettes that are used in water sanitization.

While the invention has been described above with reference to specific embodiments thereof, it is apparent that many changes, modifications, and variations can be made without departing from the inventive concept disclosed herein. Accordingly, it is intended to embrace all such changes, modifications and variations that fall within the spirit and broad scope of the appended claims.

WHAT IS CLAIMED IS:

1. A chemical tablet (11) for use as a sanitizer in pool chemicals comprising:

an upper flat surface (10, 110); and

a lower flat surface (20, 120),

wherein the upper flat surface (10, 110) and the lower flat surface (20, 120) are connected by a first elongated side surface and a second elongated side surface, wherein the second elongated side surface is an elongated flat side surface (30) or an elongated concave cut side surface (140).

2. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) includes at least one of the following dimensions: a distance from an apex (44) of a first elongated cylindrical side surface (40, 130) and the elongated flat side surface (30) of about 2.37 inches; a distance from the upper flat surface (10, 110) and the lower flat surface (20, 120) of at least 1.7 inches; and a distance from the apex (44) of the first elongated cylindrical side surface (40, 130) and a point (146) on the elongated concave cut side surface (140) of about 2.24 inches.

3. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate, wherein the blend comprises at least about 17% by weight of water based on the total weight of the blend, from about 0.1% to about 10% of lime based on the total weight of the blend, at least 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite.

4. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises at least one of hydrated calcium hypochlorite and at least one alkali metal phosphate, said at least one alkali metal phosphate preferably comprising sodium tripolyphosphate, said sodium tripolyphosphate more preferably present in an amount from about 0.1% to about 4.5% by weight based on the total weight of the chemical tablet (11).

5. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises a blend of:

a hydrated calcium hypochlorite;

a scale inhibiting solid alkali metal phosphate, said scale inhibiting solid alkali metal phosphate preferably present in an amount from about 0.1% to about 4.5% by weight based on the total weight of the tablet, said scale inhibiting solid alkali metal phosphate more preferably comprising sodium tripolyphosphate; and

a residue dispersing solid alkali metal phosphate, said residue dispersing solid alkali metal phosphate preferably present in an amount from 0.1% to about 4.5% by weight based on the total weight of the tablet, said residue dispersing solid alkali metal phosphate more preferably comprising sodium hexametaphosphate.

6. The chemical tablet (11) of any one of the preceding claims wherein the chemical tablet (11) further comprises a coloring agent.

7. The chemical tablet (11) of claim 6 wherein the coloring agent is ultramarine blue, phthalocyanine blue or phthalocyanine green.

8. The chemical tablet (11) of any one of the preceding claims wherein said chemical tablet (11) dissolves at a rate of about less than 150 grams per day.

9. The chemical tablet (11) of any one of the preceding claims wherein at least one of the upper flat surface (10, 110) and the lower flat surface (20, 120) is connected to one of an upper beveled edge (12, 112) and a lower beveled edge (22, 122).

10. The chemical tablet (11) of claim 9 wherein the distance between the upper beveled edge (12, 112) and an upper outer edge (16, 116) of the chemical tablet (11) and the distance between the lower beveled edge (22, 122) and a lower outer edge (26, 126) of the chemical tablet (11) is about 0.25 inches.

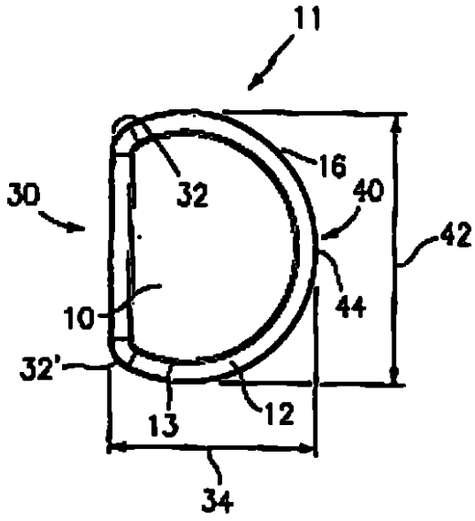

FIG. 1

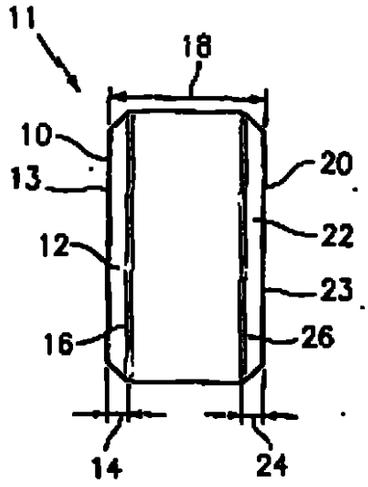

FIG. 2

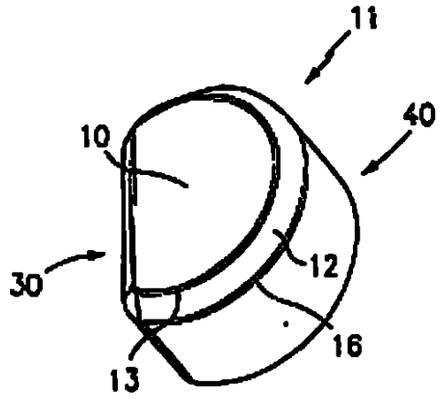

FIG. 3

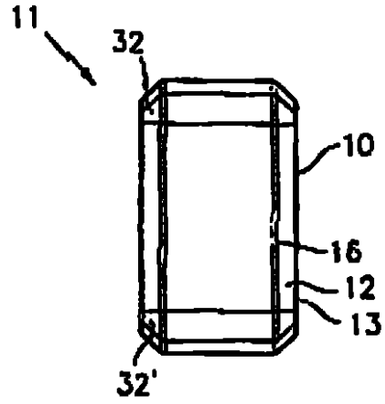

FIG. 4

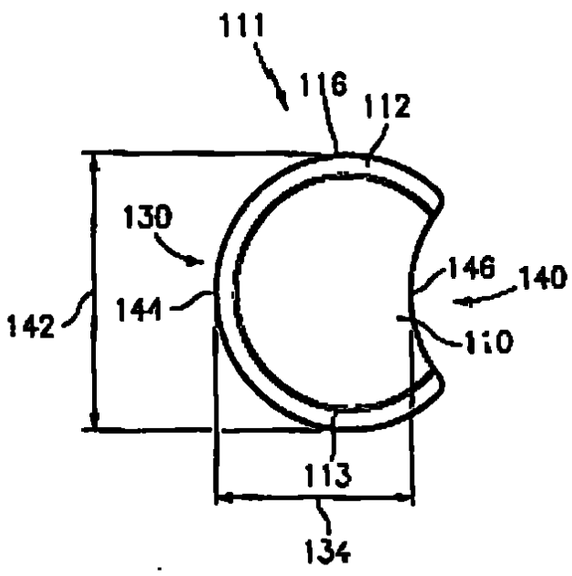

FIG. 5

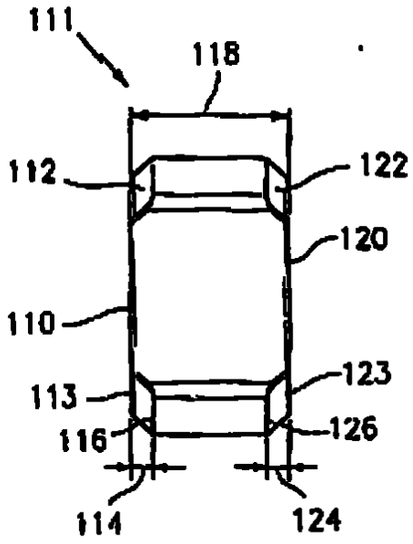

FIG. 6

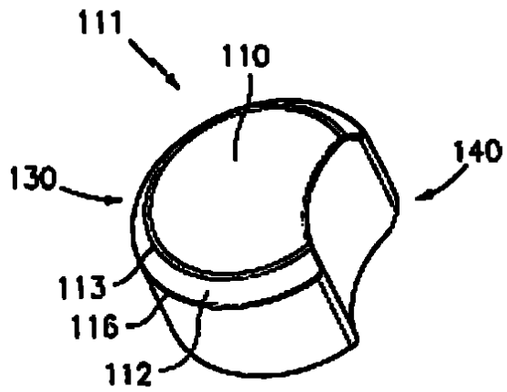

FIG. 7

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/33307

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : A 61K 9/20
US CL : 424/465
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 424/465

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
WEST

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
STN

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	U.S. Patent No. 6,984,398 B2 (Brennan et al.) 3 April 2003, Abstract; column 3, lines 18-20; and working examples	1-10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
21 February 2006 (21.02.2006)	10 MAR 2006
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer: Mary C. Fitzgerald Telephone No. (571) 272-0510

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WO 2006/044086 A1

(54) Título: TABLETA QUÍMICA PARA PISCINAS

(57) Extracto: Un aspecto de la presente invención se dirige a una tableta química sólida (11) en una configuración que comprende una superficie lateral cilíndrica alargada (40, 130) y una superficie lateral plana alargada (30) o una superficie lateral recortada cóncava alargada (140). Otro aspecto de la presente invención se dirige a una tableta química sólida (11), que comprende una mezcla de hipoclorito de calcio hidratado con heptahidrato de sulfato de magnesio. Esta invención se refiere además a una tableta química sólida (11), que comprende una mezcla de hipoclorito de calcio sólido y uno o más fosfatos sólidos de metal alcalino.

TABLETA QUÍMICA PARA PISCINAS

ANTECEDENTES DE LA INVENCIÓN

1. Campo de la Invención

La presente invención se refiere a una tableta química para piscinas, de configuración particular. Más particularmente, la presente invención se relaciona con una tableta química que es fácilmente identificable y facilita una disolución consistente de un químico en un cuerpo de agua.

2. Breve Descripción del Arte

La desinfección de agua es importante para la vida diaria. El agua potable, el agua de baño y el agua de natación necesitan desinfectarse adecuadamente para evitar niveles insalubres de bacterias, hongos y demás contaminantes. Un método típico para desinfectar agua de baño y natación utiliza la disolución en el agua de una tableta, briqueta, o solución, que contiene los químicos desinfectantes deseados.

Un problema común al tratar cuerpos de agua, tales como piscinas de natación, con tabletas químicas desinfectantes ha sido ofrecer un artículo dispensador que permita la distribución uniforme de los químicos desinfectantes en el cuerpo de agua. Los intentos en el arte han culminado en el uso de tabletas comprimidas de formas variables, tales como briquetas, bloques circulares, cilíndricos, o elípticos que disponen de medios para dosificar el producto químico desinfectante en el agua circundante.

Una preocupación adicional en este campo incluye la seguridad de humanos y animales cuando se exponen a altas cantidades de químicos para piscinas con concentraciones elevadas. En consecuencia, las tabletas químicas para piscinas se forman preferiblemente de modo que permitan una dispersión controlada uniforme de los químicos en el cuerpo de agua. Cuando se crean las tabletas es siempre deseable un mejor control de la dispersión de los químicos.

Existe además la necesidad adicional en el arte de que los consumidores puedan distinguir diferentes químicos para piscinas de otros. Se sabe que el uso de químicos, incluso productos para el hogar, que contienen ciertas sustancias químicas, requiere algunas precauciones. Sería útil para un consumidor poder distinguir visualmente un tipo de tableta química para piscinas de otro, con el fin de evitar reacciones indeseadas. Una opción de diferenciación visual la constituyen las tabletas químicas para piscinas de diferente configuración.

La Patente de los Estados Unidos No. 4,876,003 a Casberg se refiere a un empaque para un químico desinfectante de agua, que permite que el químico se disuelva de manera uniforme durante un período de tiempo sustancialmente prolongado. Esta patente describe un compuesto de halógeno, de forma alargada, que contiene una tableta con una sección central alargada, que conecta dos extremos ahusados hacia adentro y diagonalmente opuestos, rodeada por un receptáculo de la misma configuración, pero con orificios en los extremos. Los orificios en el receptáculo permiten que el químico se disuelva en el cuerpo de agua.

En forma similar, la Patente de los Estados Unidos No. 4,928,813 a Casberg se refiere a una cápsula y a un método de elaborar una cápsula para uso en la disolución un químico de cloro en un cuerpo de agua. Esta patente divulga una cápsula que, generalmente, comprende una sección de tableta y medios de receptáculo. La sección de tableta encierra por lo menos una tableta de compuesto químico halógeno. La sección de tableta tiene una sección central alargada con dos secciones extremas opuestas. Los medios de receptáculo se aseguran firmemente alrededor de la sección de tableta. Los medios de receptáculo tienen dos porciones extremas adyacentes a las secciones extremas de la tableta. Cada una de las porciones extremas comprende una pared de tableta con una abertura a través de ella y una extensión, con un medio conductor o pasaje de flujo a través de ella. Esto hace que el agua pase a través de las extensiones y las aberturas para acceder a la sección de tableta de modo que los medios de receptáculo reduzcan la tasa de disolución del compuesto halógeno. Esta

tableta se diseñó para durar un tiempo más prolongado que otras tabletas y disolverse a una tasa relativamente uniforme.

Adicionalmente, la Patente de los Estados Unidos No. 5,137,731 a Casberg divulga un diseño de tableta química para piscinas, la cual tiene la forma de una rosquilla con una barrera periférica ajustada, impermeable al agua. La barrera es de un cierto tamaño, en relación con el tamaño de la tableta y el diámetro hueco, para lograr una tasa de disolución muy uniforme, de una magnitud deseada.

Las Patentes de Diseño de los Estados Unidos No. 283,649 y 625,619 a Casberg ilustran diferentes formas de tabletas químicas para piscinas, de uso en el arte, con el fin de facilitar una distribución uniforme de químicos para piscinas en cuerpos de agua circundantes, que no representan un peligro para los usuarios del agua.

A pesar de los avances ya mencionados en el arte, lo que se necesita es una tableta química para piscinas que se configure para ser visualmente distinta de otras tabletas, y se conforme para permitir un manejo fácil, ofreciendo al mismo tiempo una distribución segura y uniforme de químicos para piscinas en el cuerpo de agua circundante. En el mejor de los casos, la tableta química no se atascaría, retendría, o interferiría de algún modo cualesquiera otros componentes de un sistema de filtración o similar.

BREVE SUMARIO DE LA INVENCIÓN

En consecuencia, un aspecto de la presente invención se dirige a una tableta química, para uso como desinfectante en químicos para piscinas, con una superficie plana superior y una superficie plana inferior, conectadas por una primera superficie lateral cilíndrica alargada y una segunda superficie lateral recortada cóncava, o plana alargada.

Otro aspecto de la presente invención se dirige a una tableta química con una superficie plana superior y una superficie plana inferior, conectadas por una primera superficie lateral cilíndrica alargada y una segunda

superficie lateral recortada cóncava, o plana alargada, en donde la tableta química comprende hipoclorito de calcio hidratado.

Todavía otro aspecto de la presente invención se dirige a una tableta química con una superficie plana superior y una superficie plana inferior, conectadas por una primera superficie lateral cilíndrica alargada y una segunda superficie lateral recortada cóncava, o plana alargada, en donde la tableta química comprende una mezcla de hipoclorito de calcio hidratado con heptahidrato de sulfato de magnesio, en donde la muestra comprende por lo menos alrededor de 17% en peso de agua basado en el peso total de la mezcla, desde alrededor de 0.1% a alrededor de 10% de cal basado en el peso total de la mezcla, por lo menos alrededor de 25% en peso de heptahidrato de sulfato de magnesio y menos de alrededor de 75% en peso de hipoclorito de calcio hidratado.

Todavia otro aspecto de la presente invención se refiere a una tableta química con una superficie plana superior y una superficie plana inferior, conectadas por una primera superficie lateral cilíndrica alargada y una segunda superficie lateral recortada cóncava, o plana alargada, en donde la tableta química comprende una mezcla de hipoclorito de calcio hidratado y un fosfato de metal alcalino.

Un aspecto adicional de la presente invención se refiere a una tableta química con una superficie plana superior y una superficie plana inferior, conectadas por una primera superficie lateral cilíndrica alargada y una segunda superficie lateral recortada cóncava, o plana alargada, en donde la tableta química comprende una mezcla de hipoclorito de sodio hidratado, fosfato de metal alcalino sólido, que inhibe la costra de óxido, y fosfato de metal alcalino sólido de dispersión de residuos.

Las ventajas de la presente invención incluyen: disolución uniforme de los químicos desinfectantes, inhibición de la costra de óxido, y dispersión de residuos. Otra ventaja de la presente invención la constituye la dispersión controlada de los químicos en el agua de la piscina que desinfecta. Una ventaja adicional de la presente invención la constituye el

reconocimiento fácil de esta tableta química para piscinas en razón de su forma única.

BREVE DESCRIPCIÓN DE LOS DIBUJOS

FIG. 1 es una vista superior en perspectiva de una tableta química para piscinas con una superficie lateral plana alargada, de acuerdo con la presente invención;

FIG. 2 es una vista lateral en perspectiva de la tableta quimica para piscinas de FIG. 1.

FIG. 3 es una vista de la tableta química para piscinas de FIG. 1, que muestra la superficie lateral cilíndrica de la tableta quimica.

FIG. 4 es una vista de la tableta química para piscinas de FIG. 1, que muestra la superficie lateral plana alargada de la tableta química.

FIG. 5 es una vista superior en perspectiva de una tableta quimica para piscinas con una superficie lateral recortada cóncava, alargada, de acuerdo con la presente invención.

FIG. 6 es una vista lateral en perspectiva de la tableta química para piscinas de FIG. 5.

FIG. 7 es una vista de la tableta química para piscinas de FIG. 5, que muestra el lado recortado cóncavo de la tableta quimica.

DESCRIPCIÓN DETALLADA DE LA INVENCIÓN

Como se emplea en la presente especificación y reivindicaciones, el término "en forma de D" significa que el articulo tiene la forma de la letra mayúscula D.

Como se emplea en la presente especificación y reivindicaciones, el término "en forma de luna" significa un articulo que tiene la forma de una luna creciente, es decir, un lado del articulo tiene una forma cóncava.

El término "tableta", como se emplea en la presente especificación y reivindicaciones, cubre cualquier forma o tamaño de tableta, u otro

producto conformado por compresión, hecho de químicos desinfectantes, requeridos en la presente invención. El término "mezcla", como se emplea en la presente especificación y reivindicaciones, se refiere a una mezcla homogénea, o casi homogénea, de los materiales como se describe en esta solicitud.

El término "hidratado", como se emplea en conjunción con productos de hipoclorito de calcio en la presente especificación y reivindicaciones, se refiere a cualquier producto de hipoclorito de calcio que tiene un contenido de agua de por lo menos 5% en peso de producto de hipoclorito de calcio.

El término "tasa de disolución media", como se emplea en la presente invención, a menos que se manifieste lo contrario, se utiliza para significar la tasa de disolución media de las mezclas comprimidas de la presente invención en un volumen inmóvil de agua.

El término "agente colorante", como se emplea en la presente especificación y reivindicaciones, se refiere a cualquier químico, pigmento, tintura, tinte, u otra sustancia, que imparte color a la tableta química de la presente invención.

Con referencia a FIG. 1, se muestra una tableta química 11 que ilustra una incorporación de la tableta de la presente invención. La tableta química 11, ilustrada también en FIGS. 2-4, tiene una estructura única en forma de D.

FIGS. 1-4 ilustran una incorporación de una tableta química 11 de la presente invención. La tableta química tiene una superficie plana superior 10 y una superficie plana inferior 20. La superficie plana superior 10 se conecta a la superficie plana inferior 20 por una primera superficie lateral cilíndrica alargada 40 y una segunda superficie lateral plana alargada 30.

La segunda superficie lateral plana alargada 30 tiene dos bordes 32 y 32' como se muestra en FIG. 4. Los bordes 32 y 32' contribuyen a conformar la forma particular de la tableta química 11, así como a minimizar el esfuerzo que pueda causar el resquebrajamiento o rotura de la tableta química.

Como se muestra en FIG. 1, la superficie plana superior 10 puede conectarse a un borde superior biselado 12. La superficie plana superior y el borde biselado superior se conectan por un borde interno superior 13. El borde superior biselado 12 sigue el perimetro de la superficie plana superior de la tableta quimica. El ancho 14 del borde superior biselado es alrededor de 0.25 pulgadas, medido desde un borde superior externo 16 al borde interno superior 13 como se muestra en FIG. 2.

Como puede observarse en FIG. 2, la superficie plana inferior 20 de la tableta química puede conectarse asimismo a un borde inferior biselado 22. La superficie plana inferior 20 se conecta al borde inferior biselado 22 por el borde interno inferior 23. El borde inferior biselado 22 sigue el perímetro de la superficie plana inferior de la tableta química. El ancho 24 del borde inferior biselado es alrededor de 0.25 pulgadas, medido desde un borde inferior externo 26 a un borde interno inferior 23. Los anchos 14 y 24 son preferiblemente del mismo tamaño.

Preferiblemente, la tableta quimica 11 de la presente invención tiene un borde superior biselado, conectado a la superficie plana superior, y un borde inferior biselado, conectado a la superficie plana inferior, como se muestra en FIG. 2. Esta forma particular ayuda a distinguir la tableta química de otras tabletas químicas usadas en la desinfección de agua.

Aunque otras dimensiones pueden ser apropiadas para la tableta quimica de la presente invención, la tableta química 11 se ajusta preferiblemente a ciertas dimensiones para mantener la tasa de disolución media óptima de menos de 150 gramos/día para una tableta de hipoclorito de calcio hidratado de 100% en peso. Preferiblemente la tableta química 11 tiene un volumen de 10.2 pulgadas cúbicas y, preferiblemente, su peso es de alrededor de 300 gramos. En el mejor de los casos, la tableta química 11 tiene un área de superficie de 25.1 pulgadas cuadradas. El área de superficie de la tableta química 11 contactada por el agua con la tasa de alimentación máxima del dosificador es de 13.5 pulgadas cuadradas. Esta área de contacto, con un caudal máximo de 2.0 gpm, proporciona una tasa

de alimentación descada de 20 lbs de cloro disponible por día para una tableta de hipoclorito de calcio hidratado del 100%.

Adicionalmente, aunque otras dimensiones pueden ser apropiadas para la tableta química de la presente invención, como se muestra FIGS. 1 y 2, se prefiere que superficie lateral cilíndrica alargada 40 se forme con un diámetro de alrededor de 3 pulgadas (si completamente cilíndrica), como se indica por el número de referencia 42. Adicionalmente, se prefiere que la distancia 34 desde un ápice 44 de la superficie lateral cilíndrica alargada 40 y la superficie plana alargada 30 sea alrededor de 2.37 pulgadas. Además, se prefiere que la distancia 18 desde la superficie plana superior 10 y la superficie plana inferior 20 sea de alrededor de 1.7 pulgadas.

Una incorporación preferida de la tableta química tiene una superficie lateral cilíndrica alargada 40 de un diámetro de alrededor de 3 pulgadas (si totalmente cilíndrica en su forma), una distancia desde el ápice 44 de la superficie lateral cilíndrica alargada 40 y la superficie plana alargada 30 de alrededor de 2.37 pulgadas, y una distancia 18 desde la superficie plana superior 10 y la superficie plana inferior 20 de alrededor de 1.7 pulgadas.

Como se muestra en FIGS. 5-7, la tableta química para piscinas de la presente invención puede tener alternativamente forma de luna, es decir, con una superficie lateral recortada cóncava, alargada, en lugar de una superficie plana alargada, encontrada en la incorporación anterior. La tableta química para piscinas de esta incorporación alternativa tiene una superficie plana superior 110 y una superficie plana inferior 120. La superficie plana superior 110 se conecta a una superficie plana inferior 120 por una primera superficie lateral cilíndrica alargada 130 y una segunda superficie lateral recortada cóncava, alargada, 140. La superficie lateral recortada cóncava 140 puede se de cualquier curvatura cóncava.

Puede usarse cualquier curvatura para este lado recortado cóncavo alargado. La curvatura puede crearse cuando se comprima el material granular en un molde para formar la forma deseada de la tableta. Preferiblemente, la curvatura de este corte cóncavo se forma con un radio de 1.5 pulgadas y cortes en una tableta redonda de 3 pulgadas, de modo que

haya una distancia de 2.24 pulgadas desde el lado opuesto de la tableta al punto más profundo en el corte cóncavo, como se muestra en Fig. 5-7. Esta forma preferida proporciona un área de superficie óptima.

Como se muestra en FIG. 5, la superficie plana superior 110 puede conectarse a un borde superior biselado 112. La superficie plana superior y el borde biselado superior se conectan por un borde interno superior 113. El borde superior biselado 112 sigue el perímetro de la superficie plana superior de la tableta química. El ancho 114 del borde superior biselado es alrededor de 0.25 pulgadas, medido desde un borde superior externo 116 al borde interno superior 113.

Como puede observarse en FIG. 6, la superficie plana inferior 120 de la tableta para piscinas puede conectarse igualmente a un borde inferior biselado 122. La superficie plana inferior 120 se conecta a un borde inferior biselado 122 por el borde interno inferior 123. El borde inferior biselado 122 sigue el perímetro de la superficie plana inferior de la tableta para piscina. El ancho 124 del borde inferior biselado es alrededor de 0.25 pulgadas, medido desde un borde inferior externo 126 a un borde interno inferior 123.

Preferiblemente, la tableta química 111 tiene una superficie plana superior, conectada a un borde superior biselado, y una superficie plana inferior, conectada a un borde inferior biselado, como se muestra en FIG. 6. Esta forma particular ayuda a distinguir la tableta química de otras tabletas químicas usadas en desinfección de agua.

Aunque otras dimensiones pueden ser apropiadas para esta incorporación de la tableta química, preferiblemente la tableta química 111 se ajusta a ciertas dimensiones para mantener la tasa de disolución óptima de menos de 150 gramos por día para una tableta de hipoclorito de calcio hidratado del 100%. Preferiblemente la tableta química 111 tiene un peso de alrededor de 300 gramos.

En el mejor de los casos, la tableta química 111 tiene un área de superficie de por lo menos 25.1 pulgadas cuadradas, pero más preferiblemente 25.9 pulgadas cuadradas. El área de superficie de la tableta

química 111 contactada por el agua, a la tasa de alimentación del dosificador, es 13.5 pulgadas cuadradas. Esta área de contacto con un caudal máximo de 2.0 gpm proporciona una tasa de alimentación deseada de 20 libras de cloro disponible por día, para una tableta de hipoclorito de calcio hidratado del 100%.

Adicionalmente, aunque otras dimensiones pueden ser apropiadas para la tableta química 111, como se muestra en FIGS 5 y 6, se prefiere que la superficie lateral recortada cóncava, alargada, 140 se forme con un diámetro de alrededor de 3 pulgadas (si la tableta fuera completamente cilíndrica), como se indica por el número de referencia 142. Adicionalmente, se prefiere que la distancia 134 desde un ápice 144 de la superficie lateral alargada 130 y un punto 146 en la superficie lateral recortada cóncava, alargada, 140 sea de alrededor de 2.24 pulgadas. Se prefiere además que la distancia 118 desde la superficie plana superior 110 y la superficie plana inferior 120 sea de alrededor de 1.75 pulgadas.

Una incorporación de las tabletas químicas 11 y 111 de la presente invención comprende preferiblemente sólo hipoclorito de calcio hidratado granular comprimido. Alternativamente, la tableta química 11 puede contener además un agente colorante tal como azul ultramarino, azul ftalocianina o verde ftalocianina, aparte del hipoclorito de calcio hidratado.

Preferiblemente el hipoclorito de calcio está presente en una cantidad que permite que el 47% del cloro esté disponible para usos desinfectantes. Esta composición contiene preferiblemente por lo menos alrededor de 25% en peso de heptahidrato de sulfato de magnesio y menos de alrededor de 75% en peso de hipoclorito de calcio hidratado. Más preferiblemente, la composición contiene desde alrededor de 25% a alrededor de 40% de heptahidrato de sulfato de magnesio y alrededor de 60% a alrededor de 75% en peso de hipoclorito de calcio hidratado. La cantidad de agua en la mezcla debe ser por lo menos alrededor de 17% en peso de la mezcla total; más preferiblemente, alrededor de 18% a alrededor de 24% en peso de la mezcla. El heptahidrato de sulfato de magnesio granular se combina

físicamente con hipoclorito de calcio hidratado granular, para producir una mezcla granular esencialmente homogénea.

Esta incorporación puede contener igualmente pequeñas cantidades de otros materiales. Un material preferido es cal ($Ca(OH)_2$) que puede incluirse en cantidades de hasta alrededor de 10% en peso, preferiblemente desde alrededor de 0.1% a alrededor de 10% en peso, más preferiblemente alrededor de 0.5% a alrededor de 3% y, muy preferiblemente, alrededor de 1% a alrededor de 2% de la cantidad total de la mezcla de los dos ingredientes .

La cantidad de agua en las tabletas químicas 11 y 111 puede calcularse por cualquier método analítico estándar para medir agua en productos químicos como éstos. Nuestro método preferido es análisis termogravimétrico (TGA).

Adicionalmente, la incorporación ya descrita puede comprender asimismo un agente colorante. Un agente colorante agregado a la incorporación ya descrita ayudaría al consumidor a distinguir entre esta fórmula y otras que estén disponibles. Como se menciona anteriormente, la capacidad de distinguir entre diferentes químicos es importante para la seguridad del cliente.

Agentes colorantes que se prefieren incluyen, pero no se limitan a, azul ultramarino, azul ftalocianina y verde ftalocianina. Preferiblemente, la concentración del agente colorante está entre 0.01 y 0.5%. En el mejor de los casos, la concentración es 0.05%.

Otra incorporación de la presente invención comprende hipoclorito de calcio hidratado en una cantidad que permite disponer de aproximadamente el 68% del cloro para fines desinfectantes. Preferiblemente, el producto de hipoclorito de calcio comercial, tales como los productos HTH® y CCH® obtenibles de Arch Chemicals, Inc. de Norwalk, Connecticut, tiene un contenido mínimo de cloro disponible que varía desde alrededor de 65 por ciento en peso a alrededor de 75 por ciento en peso. El resto de tales productos de hipoclorito de calcio disponibles en el comercio consiste usualmente de agua y sales inorgánicas de calcio y

metal alcalino. Típicamente, las sales presentes incluyen cloruro de sodio, cloruro de calcio, hidróxido de calcio, y similares.

Adicionalmente, el hipoclorito de calcio hidratado en esta incorporación puede combinarse además con un fosfato de metal alcalino. El metal alcalino del fosfato de metal alcalino sólido puede ser litio, sodio o potasio. Preferiblemente el metal alcalino en el fosfato de metal alcalino es sodio. El fosfato de metal alcalino preferido en la presente incorporación es tripolifosfato de sodio (STPP). El STPP se utiliza para inhibir el desarrollo de depósitos de costra de óxido, que a veces ocurren cuando se usan tales tabletas a base de hipoclorito de calcio.

El componente hipoclorito de calcio hidratado en esta incorporación es preferiblemente por lo menos alrededor de 95% del peso total de todos los ingredientes presentes en la tableta. Muy preferiblemente, el componente hipoclorito de calcio hidratado es desde alrededor de 98.5% a alrededor de 99.5% del peso total de los ingredientes de la tableta. El fosfato de metal alcalino STPP está típicamente presente en esta incorporación en una cantidad de por lo menos 0.1% pero no más de 4.5% en peso, basado en el peso total de los ingredientes de la tableta. Más preferiblemente, el STPP está presente en una cantidad desde alrededor de 0.2% a 1.0% en peso, basado en el peso total de los ingredientes de la tableta. Muy preferiblemente, el STPP está presente en una cantidad de alrededor de 0.5% en peso basado en el peso total de los ingredientes de la tableta.

La anterior incorporación de la tableta química puede contener igualmente un agente colorante. Ejemplos de agentes colorantes apropiados incluyen azul ultramarino, azul ftalocianina, o verde ftalocianina.

En todavía otra incorporación, el hipoclorito de calcio hidratado como se describe más arriba, con aproximadamente 68% de cloro disponible, puede mezclarse con una combinación de dos o más fosfatos de metal alcalino tales como STPP y hexametafosfato de sodio (SHMP). El SHMP es un fosfato de metal alcalino de dispersión de residuos.

Similar a la incorporación ya descrita, el componente hipoclorito de calcio hidratado en esta incorporación es preferiblemente por lo menos alrededor de 95% del peso total de todos los ingredientes presentes en la tableta. Muy preferiblemente, el componente hipoclorito de calcio hidratado es desde alrededor de 98.5% a alrededor de 99.5% del peso total de los ingredientes de la tableta.

Cada fosfato de metal alcalino está presente en esta incorporación en una cantidad de por lo menos 0.1% pero no más de 4.5% en peso, basado en el peso total de los ingredientes presentes en la tableta de la presente incorporación. Más preferiblemente, cada fosfato de metal alcalino está presente en una cantidad de por lo menos 0.2% pero no más de 1.0% en peso, basado en el peso total de los ingredientes presentes en la tableta de la presente incorporación. Muy preferiblemente, cada fosfato de metal alcalino está presente en una cantidad no menor o mayor que 0.5% en peso, basado en el peso total de los ingredientes presentes en la tableta de la presente incorporación.

Una ventaja de esta incorporación radica en la reducción de depósitos de costra de óxido y en un menor bloqueo de conductos filtrantes y similares, cuando la incorporación se usa en aplicaciones de tratamiento de aguas, en las cuales se emplea equipo dosificador, tales como piscinas de natación, tinas calientes y balnearios.

Igualmente un agente colorante, tales como los ejemplos dados más arriba, puede agregarse a esta incorporación de la tableta química con uno o más fosfatos de metal alcalino en combinación con el hipoclorito de calcio hidratado.

Típicamente, una tableta química para uso en desinfección de agua se forma por métodos conocidos en el arte, incluidos: usar equipo de compresión de tabletas tales como prensas hidráulicas o aparatos para compactar briquetas. Pueden emplearse tiempos de presión y presiones apropiados en la operación de las prensas hidráulicas.

Preferiblemente, la tableta química de la presente invención se pone en un dosificador o unidad colectora de espuma de una piscina de natación.

Más preferiblemente, la tableta química se pone en una unidad de cloración con tecnología de "ondas". La tableta química de la presente invención puede usarse asimismo en la desinfección de balnearios o tinas calientes.

Las tabletas químicas 11 y 111 de la presente invención tienen una tasa de disolución media de menos de alrededor de 150 gramos/día para hipoclorito de calcio hidratado del 100%. En otras palabras, una tableta de 300 gramos tomará por lo menos 2 días en disolverse completamente en un cuerpo de agua inmóvil (no corriente). Preferiblemente, la tasa de disolución media es menos de 100 gramos por día para las tabletas de la presente invención. Debe reconocerse que las tabletas químicas 11 y 111 de la presente invención tendrán por lo general tasas de disolución más altas en condiciones de agua corriente, tales como en una unidad colectora de espuma o un dosificador en una piscina de natación.

La presente invención se describe con más detalle mediante los siguientes Ejemplos. Todas las partes y porcentajes son en peso y todas las temperaturas son grados Celsius, a menos que explícitamente se especifique lo contrario.

EJEMPLOS

EJEMPLO 1

La tableta química 11 como se ilustra en FIGS 1 - 4 puede moldearse usando métodos de compresión de tabletas conocidos en el arte, tales como una prensa hidráulica o un aparato de compactación de briquetas. La tableta en forma de D, como se ilustra en estas figuras, puede distinguirse fácilmente de otras tabletas o briquetas que se utilizan en desinfección de agua.

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EJEMPLO 2

La tableta química 111 como se ilustra en FIGS 5 - 7 puede moldearse usando métodos de compresión de tabletas conocidos en el arte, tales como prensas hidráulicas o un aparato de compactación de briquetas. La tableta en forma de luna, como se ilustra en estas figuras, puede distinguirse fácilmente de las otras tabletas o briquetas que se utilizan en desinfección de agua.

Aunque la invención se ha descrito anteriormente con referencia a incorporaciones específicas de la misma, es evidente que pueden introducirse muchos cambios, modificaciones y variaciones sin apartarse del concepto inventivo divulgado en esta solicitud. En consecuencia, se pretende incluir la totalidad de tales cambios, modificaciones y variaciones que caen dentro del espíritu y ámbito amplio de las reivindicaciones anexas.

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LO QUE SE REIVINDICA ES:

1. Una tableta química (11) para uso como desinfectante en químicos para piscinas, que comprende:

una superficie plana superior (10, 110); y

una superficie plana inferior (20, 120),

en donde la superficie plana superior (10, 110) y la superficie plana inferior (20, 120) se conectan por una primera superficie lateral cilíndrica alargada y una segunda superficie lateral alargada, en donde la segunda superficie lateral alargada es una superficie lateral plana alargada (30) o una superficie lateral recortada cóncava, alargada, (140).

2. La tableta química (11) de la reivindicación 1 en donde la tableta química (11) incluye por lo menos una de las siguientes dimensiones: una distancia desde un ápice (44) de una primera superficie lateral cilíndrica alargada (40, 130) y la superficie lateral plana alargada (30) de alrededor de 2.37 pulgadas; una distancia desde la superficie plana superior (10, 110) y la superficie plana inferior (20, 120) de por lo menos 1.7 pulgadas; y una distancia desde el ápice (44) de la primera superficie lateral cilíndrica alargada (40, 130) y un punto (146) en la superficie lateral recortada cóncava alargada (140) de alrededor de 2.24 pulgadas.

3. La tableta química (11) de la reivindicación 1 en donde la tableta química (11) comprende una mezcla de hipoclorito de calcio hidratado con heptahidrato de sulfato de magnesio, en donde la muestra comprende por lo menos alrededor de 17% en peso de agua basado en el peso total de la mezcla, desde alrededor de 0.1% a alrededor de 10% de cal basado en el peso total de la mezcla, por lo menos 25% en peso de heptahidrato de sulfato de magnesio y menos de alrededor de 75% en peso de hipoclorito de calcio hidratado.

4. La tableta química (11) de la reivindicación 1 en donde la tableta química (11) comprende por lo menos uno de hipoclorito de calcio hidratado y por lo menos un fosfato de metal alcalino, comprendiendo dicho por lo menos un fosfato de metal alcalino preferiblemente tripolifosfato de sodio, dicho tripolifosfato de sodio más preferiblemente presente en una cantidad desde alrededor de 0.1% a alrededor de 4.5% en peso basado en el peso total de la tableta química (11).

5. La tableta química (11) de la reivindicación 1 en donde la tableta química (11) comprende una mezcla de:

un hipoclorito de sodio hidratado;

un fosfato de metal alcalino sólido, que inhibe la costra de óxido, estando dicho fosfato de metal alcalino sólido, que inhibe la costra de sodio, preferiblemente presente en una cantidad desde alrededor de 0.1% a alrededor de 4.5% en peso basado en el peso total de la tableta, conteniendo dicho fosfato de metal alcalino sólido, que inhibe la costra de sodio, más preferiblemente tripolifosfato de sodio; y

un fosfato de metal alcalino sólido de dispersión de residuos, estando tal fosfato de metal alcalino sólido de dispersión de residuos preferiblemente presente en una cantidad desde 0.1% a alrededor de 4.5% en peso, basado en el peso total de la tableta, comprendiendo tal fosfato de metal alcalino sólido de dispersión de residuos más preferiblemente hexametafosfato de sodio.

6. La tableta química (11) de una cualquiera de las reivindicaciones precedentes en donde la tableta química (11) comprende además un agente colorante.

7. La tableta química (11) de la reivindicación 6 en donde el agente colorante es azul ultramarino, azul ftalocianina o verde ftalocianina.

8. La tableta química (11) de una cualquiera de las reivindicaciones precedentes en donde dicha tableta química (11) se disuelve a una tasa de alrededor de menos de 150 gramos por día.

9. La tableta química (11) de una cualquiera de las reivindicaciones precedentes en donde por lo menos una de la superficie plana superior (10, 110) y la superficie plana inferior (20, 120) se conectan a uno de un borde superior biselado (12, 112) y un borde inferior biselado (22, 122).

10. La tableta química (11) de la reivindicación 9 en donde la distancia entre el borde superior biselado (12, 112) y un borde superior externo (16, 116) de la tableta química (11) y la distancia entre el borde inferior biselado (22, 122) y un borde inferior externo (26, 126) de la tableta química (11) es alrededor de 0.25 pulgadas.

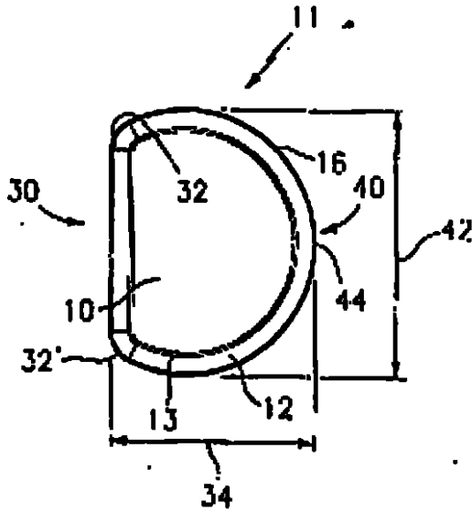

FIG. 1

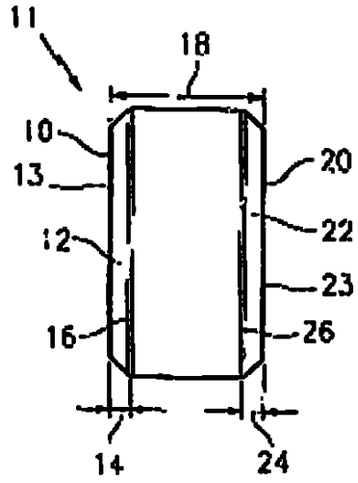

FIG. 2

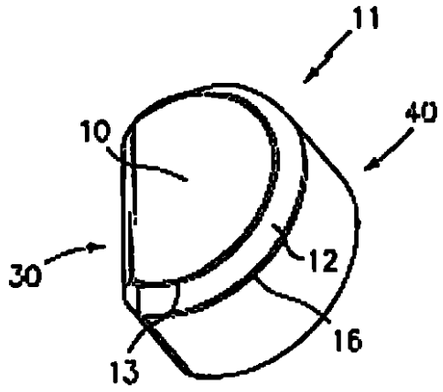

FIG. 3

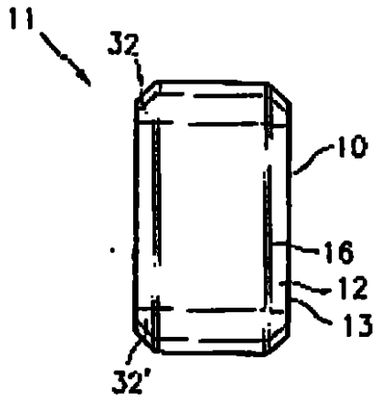

FIG. 4

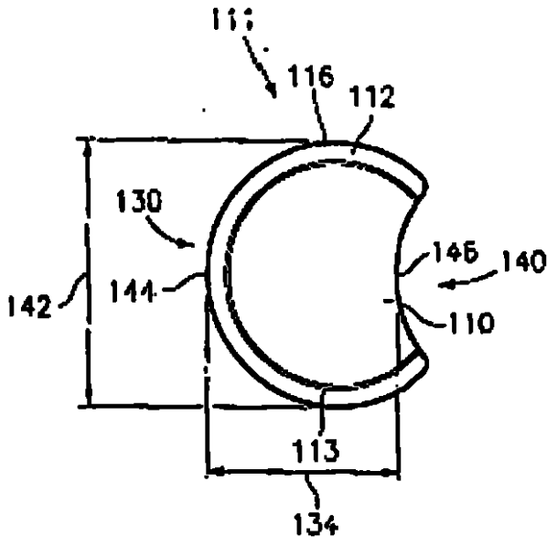

FIG. 5

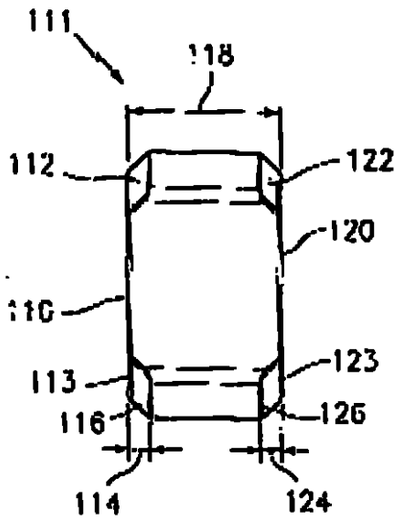

FIG. 6

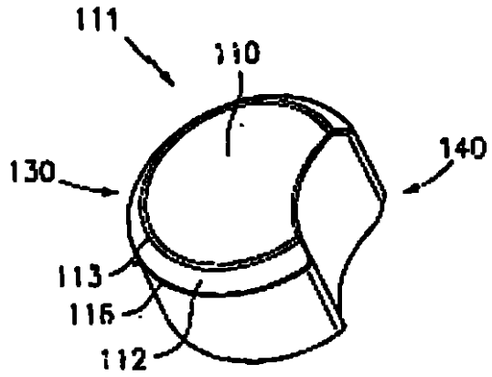

FIG. 7

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
ANTHONY P. GANGEMI
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ONE CENTURY TOWER
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RECEIVED
MAR 14 2006
By

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NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 102578-105	Date of mailing (day/month/year) 10 MAR 2006 FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US05/33307	International filing date (day/month/year) 15 September 2005 (15.09.2005)
Applicant ARCH CHEMICALS	

1. ☐ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
   1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☒ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

   Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/ISA/220 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Thurman K Page Telephone No. (571) 272-3600

Form PCT/ISA/220 (January 2004) (See notes on accompanying sheet)

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 102578-103	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US05/33387	International filing date (day/month/year) 15 September 2005 (15.09.2005)	(Earliest) Priority Date (day/month/year) 19 October 2004 (19.10.2004)
Applicant ARCH CHEMICALS		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report
   a. With regard to the language, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____ _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.
2. ☐ Certain claims were found unsearchable (See Box No. II)
3. ☐ Unity of invention is lacking (See Box No. III)
4. With regard to the title,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,
   a. the figure of the drawings to be published with the abstract is Figure No. _____
      ☐ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☒ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US05/33307

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : A61K 9/20
US Cl. : 424/465
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 424/465

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
WEST

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
STN

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	U.S. Patent No. 6,984,398 B2 (Brunsen et al.) 2 April 2003, Abstract; column 3, lines 18-20; and working examples	1-10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 February 2006 (21.02.2006)	10 MAR 2006
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Mara C. Fitzgerald Telephone No. (571) 272-0510

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
ANTHONY P. GANGEMI
WIGGIN AND DANA LLP
ONE CENTURY TOWER
NEW HAVEN, CT 06508-1832

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year)	10 MAR 2006
Applicant's or agent's file reference: 102578-109	FOR FURTHER ACTION: See paragraph 2 below

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US05/33307	15 September 2005 (15.09.2005)	19 October 2004 (19.10.2004)

International Patent Classification (IPC) or both national classification and IPC
IPC(7): A61K 9/20 and US CL: 424/465

Applicant
ARCH CHEMICALS

1. This opinion contains indications relating to the following items:

- [X] Box No. I — Basis of the opinion
- [ ] Box No. II — Priority
- [ ] Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV — Lack of unity of invention
- [X] Box No. V — Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI — Certain documents cited
- [ ] Box No. VII — Certain defects in the international application
- [ ] Box No. VIII — Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450	21 February 2006 (21.02.2006)	Marc C. Fitzgerald
Facsimile No. (571) 273-3201		Telephone No. (571) 272-8510

Form PCT/ISA/237 (cover sheet) (April 2005)

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCTUS0533307

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into ____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/US05/33107

Box No. V Reasoned statement under Rule 43 bis 1.(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-10	YES
	Claims NONE	NO
Inventive step (IS)	Claims 1-10	YES
	Claims NONE	NO
Industrial applicability (IA)	Claims 1-10	YES
	Claims NONE	NO

2. Citations and explanations:

Claims 1-10 are an inventive step under PCT Article 33(3) as being obvious over U.S. Patent No. 6,984,398 B2 to Brennan et al.

Brennan teaches a tablet used for pool sanitizing comprising a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate wherein the blend contains about 1% by weight of water based on the total weight of the blend and the dissolving rate of the tablet. Accordingly, the term tablet is not exclusive of certain shapes or sizes for the tablet. Accordingly, Brennan asserts that the inventive form of U.S. Patent No. 6,984,398 B2 is suitable to cover any shape or size tablet, or other compressed shaped product made of a blend of calcium hypochlorite and magnesium sulfate heptahydrate (column 3, lines 18-20).

In addition the patent teaches that the preferred embodiment of the composition contains at least about 22% by weight of magnesium sulfate heptahydrate and less than about 73% by weight of hydrated calcium hypochlorite (column 3, lines 59-65) and from about 0.1 to about 2% of lime by weight of the total blend of calcium hypochlorite with magnesium sulfate heptahydrate.

There is no showing by way of working examples in the instant application that the claimed shape of the tablet has benefits over the claimed shape taught by the prior reference. Absent any showing, one of ordinary skill in the art would conclude that the prior art renders obvious the instant invention.

Claims 1-10 meet the criteria set out in PCT Article 33(3), because the prior art does not teach or fairly suggest by way of working examples in the instant application that the claimed shape of the tablet has benefits over the claimed shape taught by the prior reference. Absent any showing, one of ordinary skill in the art would conclude that the prior art renders obvious the instant invention.

Claims 1-10 meet the criteria set out in PCT Article 33(4).

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

(i) the claim is unchanged;
(ii) the claim is cancelled;
(iii) the claim is new;
(iv) the claim replaces one or more claims as filed;
(v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 45 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 46 to 51 added."

2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."

3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."

4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendment might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant in a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1*bis*(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43*bis*.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article," "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the *international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19* except where, e.g. the applicant wants the latter to be published *for the purposes of provisional protection* or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume IIA, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume IIA, paragraph 296).

What parts of the international application may be amended ?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Preliminary Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When ? Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but *before the completion of the technical preparations for international publication (Rule 48.1)*.

Where not to file the amendments ?

The amendments may only be filed with the International Bureau and not with the receiving Office, or the International Searching Authority (Rule 46.2)

Where a demand for international preliminary examination has been filed, see below.

How ? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differ from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(h)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments ?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)")

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

From the INTERNATIONAL BUREAU

RECEIVED
DEC 2 8 2005

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

GANGEMI, Anthony, P.
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 09 December 2005 (09.12.2005)	
Applicant's or agent's file reference 102578-105	IMPORTANT NOTIFICATION
International application No. PCT/US2005/033307	International filing date (day/month/year) 15 September 2005 (15.09.2005)
International publication date (day/month/year)	Priority date (day/month/year) 19 October 2004 (19.10.2004)
Applicant ARCH CHEMICALS, INC.	

1. By means of this Form, which replaces any previously issued notification concerning submission or transmittal of priority documents, the applicant is hereby notified of the date of receipt by the International Bureau of the priority document(s) relating to all earlier application(s) whose priority is claimed. Unless otherwise indicated by the letter "NR", in the right-hand column or by an asterisk appearing next to a date of receipt, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. *(If applicable)* The letters "NR" appearing in the right-hand column denote a priority document which, on the date of mailing of this Form, had not yet been received by the International Bureau under Rule 17.1(a) or (b). Where, under Rule 17.1(a), the priority document must be submitted by the applicant to the receiving Office or the International Bureau, but the applicant fails to submit the priority document within the applicable time limit under that Rule, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

3. *(If applicable)* An asterisk (*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b) (the priority document was received after the time limit prescribed in Rule 17.1(a) or the request to prepare and transmit the priority document was submitted to the receiving Office after the applicable time limit under Rule 17.1(b)). Even though the priority document was not furnished in compliance with Rule 17.1(a) or (b), the International Bureau will nevertheless transmit a copy of the document to the designated Offices for their consideration. In case such a copy is not accepted by the designated Office as the priority document, Rule 17.1(c) provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
19 October 2004 (19.10.2004)	10/967,988	US	21 November 2005 (21.11.2005)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Beate Giffo-Schmitt (Fax 338-87-20)
Facsimile No. +41 22 338 82 70	Facsimile No. (41-22) 338.87.20 Telephone No. +41 22 338 9241

Form PCT/IB/204 (January 2004) COEXTENSIVE

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(b))

To:

GANGEMI, Anthony, P
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
United States of America

RECEIVED
DEC 2 8 2005
By

Date of mailing (day/month/year)	IMPORTANT NOTIFICATION
07 December 2005 (07.12.2005)	
Applicant's or agent's file reference	**International application No.**
102578-105	PCT/US2005/033307

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

ARCH CHEMICALS, INC. (for all designated States except US)

International filing date	:	15 September 2005 (15.09.2005)
Priority date(s) claimed	:	19 October 2004 (19.10.2004)
Date of receipt of the record copy by the International Bureau	:	14 November 2005 (14.11.2005)
List of designated Offices	:	

AP :BW,GH,GM,KE,LS,MW,MZ,NA,SD,SL,SZ,TZ,UG,ZM,ZW
EA :AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
EP :AT,BE,BG,CH,CY,CZ,DE,DK,EE,ES,FI,FR,GB,GR,HU,IE,IS,IT,LT,LU,LV,MC,NL,PL,PT,RO,SE,SI,SK,TR
OA :BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,ML,MR,NE,SN,TD,TG
National :AE,AG,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BW,BY,BZ,CA,CH,CN,CO,CR,CU,CZ,DE,DK,DM,DZ,EC,EE,EG,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KM,KP,KR,KZ,LC,LK,LR,LS,LT,LU,LV,LY,MA,MD,MG,MK,MN,MW,MX,MZ,NA,NG,NI,NO,NZ,OM,PG,PH,PL,PT,RO,RU,SC,SD,SE,SG,SK,SL,SM,SY,TJ,TM,TN,TR,TT,TZ,UA,UG,US,UZ,VC,VN,YU,ZA,ZM,ZW

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- time limits for entry into the national phase - see updated Important Information (as of April 2002)
- requirements regarding priority document(s) (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.87.20

Authorized officer:

Tewfik Benyahia

Telephone No. (41-22) 338 8087

INFORMATION IN TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated on the cover sheet of this Notification by paying national fees and furnishing translations, as prescribed by Articles 22 and 39 and the applicable national laws. In addition, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure the necessary steps to enter the national phase are taken in a timely fashion. Most Offices do not issue reminders to applicants in connection with the entry into the national phase.

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 19 months from the priority date (see Article 39(1)), but also in respect of any designated Office, in the absence of filing of such demand, where Article22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see PCT Gazette No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the PCT Newsletter, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the PCT Gazette ("Section IV" part published on a weekly basis), to the PCT Newsletter (on a monthly basis) and to the relevant National Chapters in Volume II of the PCT Applicant's Guide (the paper version of which is updated usually twice a year and the Internet version of which is updated usually on a weekly basis). Finally, a cumulative table of all applicable time limits for entering the national phase is available from WIPO's Internet site, via links from various pages the site including those of the Gazette, Newsletter and Guide, at http://www.wipo.int/pct/en/index.html.

Information about the requirements for filing a demand for international preliminary examination is set out in the PCT Applicant's Guide, Volume IIA, Chapter IX. Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within the time limit which is reasonable under the circumstances (Rule 17.1(c)).

Where several priorities are claimed, the priority date to be considered for the purpose of computing the 16-month time limit (and all other PCT time limits) is the filing date of the earliest application whose priority is claimed (Article 2(xi)(b)).

PATENT COOPERATION TREATY

From the RECEIVING OFFICE

RECEIVED
NOV 14 2005
By

To:

ANTHONY P. GANGEMI
WIGGIN AND DANA LLP
ONE CENTURY TOWER
NEW HAVEN, CONNECTICUT 06508-1832

PCT

COMMUNICATION IN CASES FOR WHICH
NO OTHER FORM IS APPLICABLE

Applicant's or agent's file reference: 102578-105	Date of mailing (day/month/year): 14 Nov 2005
International application No.: PCT/US05/33307	REPLY DUE: See paragraph 1 below
Applicant: ARCH CHEMICALS, INC.	International filing date (day/month/year): 15 Sep 2005

1. [X] REPLY DUE within 1 month/days from the above date of mailing
   [ ] NO REPLY DUE, however, see below
   [ ] IMPORTANT COMMUNICATION
   [ ] INFORMATION ONLY

2. COMMUNICATION:

The applicant's attention is drawn to the fact that according to the national law of the United States of America, only the inventor is entitled to file a national application (Article 27(3)). The United States of America is designated in the international application, however, (i) The named inventor(s) is (are) not also indicated as applicant(s) for the purposes of the designation of the United States of America, and is (are) not indicated as being deceased; or (ii) no inventor is indicated.If no inventor is indicated as applicant for the purposes of the designation of the United States of America, the application may be rejected by the United States Patent and Trademark Office as a designated Office.

Name and mailing address of the receiving Office: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450	Authorized officer: Felicia Lawrence
Facsimile No. 703-305-3230	Telephone No. 703-305-9290 RX 113

Form PCT/RO/132 (July 1992; reprint January 2004)

RECEIVED
NOV 14 2005
By

PATENT COOPERATION TREATY

From the RECEIVING OFFICE

To:
ANTHONY P. GANGEMI
WIGGIN AND DANA LLP
ONE CENTURY TOWER
NEW HAVEN, CONNECTICUT 06508-1832

PCT

NOTIFICATION OF THE INTERNATIONAL APPLICATION NUMBER AND OF THE INTERNATIONAL FILING DATE

(PCT Rule 20.5(e))

Date of mailing (day/month/year)	14 Nov 2005
Applicant's or agent's file reference: 102578-106	IMPORTANT NOTIFICATION

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US05/33307	15 Sep 2005	19 Oct 2004

Applicant: ARCH CHEMICALS, INC.

Title of the invention: POOL CHEMICAL TABLET

1. The applicant is hereby notified that the international application has been accorded the international application number and the international filing date indicated above.

2. The applicant is further notified that the record copy of the international application:

☒ was transmitted to the International Bureau on 14 Nov 2005

☐ has not yet been transmitted to the International Bureau for the reasons indicated below and a copy of this notification has been sent to the International Bureau*:

☐ because the necessary national security clearance has not yet been obtained.

☐ because (reasons to be specified):

* The International Bureau monitors the transmittal of the record copy by the receiving Office and will notify the applicant (with Form PCT/IB/301) of its receipt. Should the record copy not have been received by the expiration of 14 months from the priority date, the International Bureau will notify the applicant (Rule 22.1(c)).

3. FOREIGN TRANSMITTAL LICENSE INFORMATION Completed by: PL

☐ Additional license for foreign transmittal not required. This subject matter is covered by a license already granted or the equivalent U.S. national application. Refer to that license for information concerning its scope.

☐ License for foreign transmittal not required, 37 CFR 5.11(a)(1) or 37 CFR 5.11(a)(2). However, a license may be required for additional subject matter. See 37 CFR 5.15(b).

☒ Foreign transmittal license granted, 35 U.S.C. 184; 37 CFR 5.11 on 07 Nov 2005 (date):

☒ 37 CFR 5.15(a) ☐ 37 CFR 5.15(b)

Name and mailing address of the receiving Office	Authorized officer
Mail Stop PCT, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450	Felicia Lawrence
Facsimile No. 703-305-3230	Telephone No. 703-308-9299 EX 133

Form PCT/RO/105 (July 1992)

RECEIVED
NOV 14 2005
By

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

ANTHONY P. GANGEMI
WIGGIN AND DANA LLP
ONE CENTURY TOWER
NEW HAVEN, CONNECTICUT 06508-1832

PCT

NOTIFICATION OF RECEIPT OF SEARCH COPY

(PCT Rule 25.1)

Date of mailing (day/month/year)	14 Nov 2005
Applicant's or agent's file reference: 102578-105	IMPORTANT NOTIFICATION

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US06/33307	15 Sep 2005	19 Oct 2004

Applicant

ARCH CHEMICALS, INC.

1. Where the International Searching Authority and the receiving Office are not the same Office:
The applicant is hereby notified that the search copy of the international application was received by this International Searching Authority on the date indicated below

Where the International Searching Authority and the receiving Office are the same Office:
The applicant is hereby notified that the search copy of the international application was received on the date indicated below.

14 Nov 2005 (date of receipt).

2. ☐ The search copy was accompanied by a nucleotide and/or amino acid sequence listing or tables related thereto in computer readable form.

3. Time limit for establishment of international search report and written opinion of the International Searching Authority
The applicant is informed that the time limit for establishing the international search report and the written opinion of the International Searching Authority is three months from the date of receipt indicated above or nine months from the priority date, whichever time limit expires later (Rules 42.1 and 43bis.1(a)).

4. A copy of this notification has been sent to the International Bureau and, where the first sentence of paragraph 1 applies, to the receiving Office.

Name and mailing address of the ISA/	Authorized officer
Mail Stop PCT, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450	Felicia Lawrence
Facsimile No. 703-305-3230	Telephone No. 703-308-9290 EX 133

Form PCT/ISA/202 (January 2004)

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PCT

POWER OF ATTORNEY

for an international application filed under the Patent Cooperation Treaty
(PCT Rule 90.4)

The undersigned applicant(s) (*Names should be indicated as they appear in the request*):

Arch Chemicals, Inc.
a Corporation of the Commonwealth of Virginia, U.S.A.
501 Merritt 7
P.O. Box 5204
Norwalk, Connecticut 06856-5204
United States of America
Telephone No.: 203-229-2900
Facsimile No.: 203-229-2613

hereby appoints (appoint) the following person as: [X] agent ☐ common representative

Name and address
(*Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.*)

CARLSON, Dale Lynn; GANGEMI, Anthony P.; GARABEDIAN, Todd H.; GALLETTA, Elizabeth A.; OLSON, Timothy J.; ROSENBLATT, Gregory S.; SIMONS, William A.
WIGGIN and DANA LLP, One Century Tower, New Haven, Connecticut 06508-1832
United States of America
Telephone No. 203-498-4400
Facsimile No. 203-782-2889

to represent the undersigned before: [X] all the competent International Authorities

☐ the International Searching Authority only

☐ the International Preliminary Examining Authority only

in connection with the international application(s) identified below:

Title of Invention	Applicant's or Agent's File Reference	International Application Number (if already available)
POOL CHEMICAL TABLET	102578-105	

filed with the following Office, US, as Receiving Office and to make or receive payments on behalf of the undersigned.

Signature of the applicant(s) (*where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading the request or this power*):

ARCH CHEMICALS, INC.

By: Paul J Craney
Paul J. Craney
Executive Vice President

Date: Sept 12, 2005

From the INTERNATIONAL BUREAU

PCT

SECOND AND SUPPLEMENTARY NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO DESIGNATED OFFICES WHICH APPLY THE 30 MONTH TIME LIMIT UNDER ARTICLE 22(1)

(PCT Rule 47.1(c))

To:

GANGEMI, Anthony, P.
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
ETATS-UNIS D'AMERIQUE

RECEIVED
MAR 15 2007
By

Date of mailing *(day/month/year)*	
22 February 2007 (22.02.2007)	
Applicant's or agent's file reference	IMPORTANT NOTICE
102578-105	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2005/033307	15 September 2005 (15.09.2005)	19 October 2004 (19.10.2004)

Applicant

ARCH CHEMICALS, INC.

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does not apply, please see Form PCT/IB/308(First Notice) issued previously.

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93*bis*.1. The International Bureau has effected that communication on the date indicated below:
27 April 2006 (27.04.2006)

AU, AZ, BY, CN, CO, DZ, EP, HU, KG, KP, KR, MD, MK, MZ, NA, NG, PG, RU, SY, TM, US

In accordance with Rule 47.1(c *bis*)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93*bis*.1 :

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BW, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, JP, KE, KM, KZ, LC, LK, LR, LS, LT, LV, LY, MA, MG, MN, MW, MX, MZ, NO, NZ, OA, OM, PH, PL, PT, RO, SC, SD, SG, SK, SL, SM, TJ, TN, TR, TT, UA, UZ, VC, VN, YU, ZA, ZM, ZW

In accordance with Rule 47.1(c-*bis*)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS for entry into the national phase**

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For regular updates on the applicable time limits (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at http://www.wipo.int/pct/en/index.html.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer

Beate Giffo-Schmitt

e-mail: pt03.pct@wipo.int

European Patent Office
Postbus 5818
2280 HV RIJSWIJK
NETHERLANDS
Tel.: +31 70 340 2040
Fax: +31 70 340 3016

Europäisches Patentamt | European Patent Office | Office européen des brevets

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GANGEMI, Anthony, P.
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
ETATS-UNIS D'AMERIQUE

RECEIVED
MAR 0 8 2007
By

EPO Customer Services
Tel.: +31 (0)70 340 45 00

Date: 02.03.07

Reference	Application No./Patent No.
	05798864.4 - 1219 PCT/US2005033307
Applicant/Proprietor: Arch Specialty Chemicals, Inc.	

Entry into the European phase before the European Patent Office

These notes describe the procedural steps required for entry into the European phase before the European Patent Office (EPO). You are advised to read them carefully: failure to take the necessary action in time can lead to your application being deemed withdrawn.

1. The above-mentioned international patent application has been given European application No. 05798864.4.

2. Applicants without a residence or their principal place of business in an EPC contracting state may themselves initiate European processing of their international applications, provided they do so before expiry of the 31st month from the priority date (see also point 6 below).

   During the European phase before the EPO as designated or elected Office, however, such applicants must be represented by a professional representative (Arts. 133(2) and 134(1), (7) EPC).

   Procedural acts performed after expiry of the 31st month by a professional representative who acted during the international phase but is not authorised to act before the EPO have no legal effect and therefore lead to loss of rights.

   Please note that a professional representative authorised to act before the EPO and who acted for the applicant during the international phase does not automatically become the representative for the European phase. Applicants are therefore strongly advised to appoint in good time any representative they wish to initiate the European phase for them; otherwise, the EPO has to send all communications direct to the applicant.

3. Applicants with a residence or their principal place of business in an EPC contracting state are not obliged to appoint, for the European phase before the EPO as designated or elected Office, a professional representative authorised to act before the EPO.
   However, in view of the complexity of the procedure it is recommended that they do so.

4. Applicants and professional representatives are also strongly advised to initiate the European phase using EPO Form 1200 (available free of charge from the EPO). This however is not compulsory.

6. To enter the European phase before the EPO, the following acts must be performed. (N.B.: Failure validly to do so will entail loss of rights or other adverse legal consequences.)

6.1 If the EPO is acting as designated or elected Office (Arts. 22(1)(3) and 39(1) PCT respectively), applicants must, within 31 months from the date of filing or (where applicable) the earliest priority date:

a) Supply a translation of the international application into an EPO official language, if the International Bureau did not publish the application in such a language (Art. 22(1) PCT and R. 107(1)(a) EPC).
If the translation is not filed in time, the international application is deemed withdrawn before the EPO (R. 108(1) EPC).
This loss of rights is deemed not to have occurred if the translation is then filed within a two-month grace period as from notification of an EPO communication, provided a surcharge is paid at the same time (R. 108(3) EPC).

b) Pay the national basic fee and, where a supplementary European search report has to be drawn up, the search fee ; R. 107(1)(c) and (c) EPC).

c) If the time limit under Article 79(2) EPC expires before the 31-month time limit, pay the designation fee for each contracting state designated (R. 107(1)(d) EPC).

d) If the time limit under Article 94(2) EPC expires before the 31-month time limit, file the written request for examination and pay the examination fee; R. 107(1)(f) EPC).

e) Pay the third-year renewal fee if it falls due before expiry of the 31-month time limit (R. 107(1)-(g) EPC).

If the fees under (b) to (d) above are not paid in time, or the written request for examination is not filed in time, the international application is deemed withdrawn before the EPO, or the contracting-state designation(s) in question is (are) deemed withdrawn (R. 108(1) and (2) EPC). However, the fees may still be validly paid within a two-month grace period as from notification of an EPO communication, provided the necessary surcharges are paid at the same time (R. 108(3) EPC). For the renewal fee under (e) above, the grace period is six months from the fee's due date (Art. 86(2) EPC).

For an overview of search and examination fees, see the Notice from the European Patent Office dated 1 March 2006, OJ EPO 2006, 192.

6.2 If the application documents on which the European grant procedure is to be based comprise more than ten claims, a claims fee is payable within the 31-month time limit under Rule 107(1) EPC for the eleventh and each subsequent claim (R. 110(1) EPC). The fee can however still be paid within a one-month grace period as from notification of an EPO communication pointing out the failure to pay (R. 110(2) EPC).

9. If the applicant had a representative during the application's international phase, the present notes will be sent to the representative, asking him to inform the applicant accordingly.

All subsequent communications will be sent to the applicant, or - if the EPO is informed of his appointment in time - to the applicant's European representative.

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7. For more details about time limits and procedural acts before the EPO as designated and elected Office, see the EPO brochure

How to get a European patent
Guide for applicants - Part 2
PCT procedure before the EPO - "Euro-PCT"

This brochure, the list of professional representatives before the EPO, Form 1200 and details of the latest fees are now all available on the Internet under

http://www.european-patent-office.org

Receiving Section

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

FIRST NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION (TO) DESIGNATED OFFICES WHICH DO NOT APPLY THE 30 MONTH TIME LIMIT UNDER ARTICLE 22(1)

(PCT Rule 47.1(c))

To:

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GANGEMI, Anthony, P.
Wiggin and Dana LLP
One Century Tower
New Haven, CT 06508-1832
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)	
26 May 2006 (26.05.2006)	

Applicant's or agent's file reference	IMPORTANT NOTICE
102578-105	

International application No.	International filing date (day/month/year)	Priority date (day/month/year)
PCT/US2005/033397	15 September 2005 (15.09.2005)	19 October 2004 (19.10.2004)

Applicant

ARCH CHEMICALS, INC.

1. ATTENTION. For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does apply, please see Form PCT/IB/308(Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date)

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, because requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93*bis*.1. The International Bureau has effected that communication on the date indicated below:
27 April 2006 (27.04.2006)

CH

In accordance with Rule 47.1(c-*bis*)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, have not requested, as at the date of mailing of the present notice, that the communication of the international application be effected under Rule 93*bis*.1:

LU, SE, TZ, UG, ZM

In accordance with Rule 47.1(c-*bis*)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. TIME LIMITS for entry into the national phase:

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of 19 months from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 20 MONTHS from the priority date.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For regular updates on the applicable time limits (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at http://www.wipo.int/pct/en/index.html.

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.+41 22 740 14 35

Authorized officer

Beate Giffo-Schmitt

Facsimile No.+41 22 338 87 20

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference (if desired) (12 characters maximum) 102578-105

Box No. I TITLE OF INVENTION

POOL CHEMICAL TABLET

Box No. II APPLICANT ☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ARCH CHEMICALS, INC.
501 Merritt 7
P.O. Box 5204
Norwalk, Connecticut 06508-5204
United States of America

Telephone No. 203-229-2900
Facsimile No. 203-229-2613
Teleprinter No.
Applicant's registration No. with the Office

State (that is, country) of nationality: US

State (that is, country) of residence: US

This person is applicant for the purpose of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BLANCHETTE, David W.
87 Maplewood Road
Southington, Connecticut 06489
United States of America

This person is:
☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

GANGEMI, Anthony P.
WIGGIN and DANA LLP
One Century Tower
New Haven, Connecticut 06508-1832
United States of America

Telephone No. 203-498-4395
Facsimile No. 203-782-2889
Teleprinter No.
Agent's registration No. with the Office 42,565

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

GINN, G. Warren
62 Elm Avenue
Glen Cove, New York 11542
United States of America

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☒ inventor only *(If this check-box is marked, do not fill in below.)*

Applicant's registration No. with the Office

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

Applicant's registration No. with the Office

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

Applicant's registration No. with the Office

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

Applicant's registration No. with the Office

State *(that is, country)* of nationality:

State *(that is, country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

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Box No. V DESIGNATIONS

The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.

However,

☐ DE Germany is not designated for any kind of national protection

☐ KR Republic of Korea is not designated for any kind of national protection

☐ RU Russian Federation is not designated for any kind of national protection

(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the coming of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application:* regional Office	international application: receiving Office
Item (1) 19 October 2004 (19.10.04)	10/967,985	US		
Item (2)				
Item (3)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office)* identified above as:

☐ all items ☒ item (1) ☐ item (2) ☐ item (3) ☐ other, see Supplemental Box

* *Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):*

.....

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):*

ISA / US.....

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority):*

Date (day/month/year)	Number	Country (or regional Office)
19 October 2004 (19.10.04)	10/967,985	US

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) *(mark the applicable check-boxes below and indicate in the right column the number of each type of declaration)*:		Number of declarations
☐ Box No. VIII (i)	Declaration as to the identity of the inventor	:
☐ Box No. VIII (ii)	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	:
☐ Box No. VIII (iii)	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	:
☐ Box No. VIII (iv)	Declaration of inventorship (only for the purposes of the designation of the United States of America)	:
☐ Box No. VIII (v)	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:

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Box No. IX CHECK LIST; LANGUAGE OF FILING

This international application contains:

(a) on paper, the following number of sheets:

request (including declaration sheets)	:	4
description (excluding sequence listing and/or tables related thereto)	:	11
claims	:	2
abstract	:	1
drawings	:	2
Sub-total number of sheets	:	20
sequence listing	:	
tables related thereto	:	
(for both, actual number of sheets if filed on paper, whether or not also filed in electronic form; see (c) below)		
Total number of sheets	:	20

(b) ☐ only in electronic form (Section 801(a)(i))
- (i) ☐ sequence listing
- (ii) ☐ tables related thereto

(c) ☐ also in electronic form (Section 801(a)(ii))
- (i) ☐ sequence listing
- (ii) ☐ tables related thereto

Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the
- ☐ sequence listing: .....
- ☐ tables related thereto: .....

(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)

This international application is accompanied by the following item(s) *(mark the applicable check-boxes below and indicate in right column the number of each item)*: — Number of items

1. ☒ fee calculation sheet : 1
2. ☒ original separate power of attorney : 1
3. ☐ original general power of attorney :
4. ☐ copy of general power of attorney; reference number, if any: ..... :
5. ☐ statement explaining lack of signature :
6. ☐ priority document(s) identified in Box No. VI as item(s): ..... :
7. ☐ translation of international application into *(language)*: ..... :
8. ☐ separate indications concerning deposited microorganism or other biological material :
9. ☐ sequence listing in electronic form *(indicate type and number of carrier(s))*
   - (i) ☐ copy submitted for the purposes of international search under Rule 13*ter* only (and not as part of the international application) :
   - (ii) ☐ *(only where check-box (b)(i) or (c)(i) is marked in left column)* additional copies including, where applicable, the copy for the purposes of international search under Rule 13*ter* :
   - (iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column :
10. ☐ tables in electronic form related to sequence listing *(indicate type and number of carrier(s))*
    - (i) ☐ copy submitted for the purposes of international search under Section 802(b-*quater*) only (and not as part of the international application) :
    - (ii) ☐ *(only where check-box (b)(ii) or (c)(ii) is marked in left column)* additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-*quater*) :
    - (iii) ☐ together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column :
11. ☒ other *(specify)*: Transmittal Letter & Post Card ..... : 2

Figure of the drawings which should accompany the abstract: 3

Language of filing of the international application: English

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Anthony P. Gangemi

Anthony P. Gangemi, Reg. No. 42,565
Agent

For receiving Office use only

1. Date of actual receipt of the purported international application:

2. Drawings:
   - ☐ received:
   - ☐ not received:

3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:

4. Date of timely receipt of the required corrections under PCT Article 11(2):

5. International Searching Authority (if two or more are competent): ISA/

6. ☐ Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

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POOL CHEMICAL TABLET

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a particular shaped pool chemical tablet. More particularly, the present invention relates to a chemical tablet that is easily identifiable and provides consistent chemical dissolution in a body of water.

2. Brief Description of Art

Sanitization of water is important to everyday life. Drinking water, bathing water and swimming water need to be properly sanitized to prevent unhealthy levels of bacteria, fungi and other contaminants. A typical method for sanitizing bathing and swimming water employs dissolving a tablet, briquette, or solution comprising the desired sanitizing chemicals in the water.

A common problem in treating bodies of water, such as swimming pools, with sanitizing chemicals has been providing a dispensing article that allows uniform distribution of the sanitizing chemicals into the body of water. Attempts in the art have culminated in the use of pressed tablets of varying forms such as briquettes, circular, cylindrical, or elliptical blocks that have means for metering the sanitizing chemical into the surrounding water.

An additional concern in this field includes the safety of humans and animals when they are exposed to high amounts of highly concentrated pool chemicals. Therefore pool chemical tablets are preferably formed so as to allow an even, controlled dispersion of the chemicals in the body of water. Better control of the dispersion of the chemicals is always desired when tablets are created.

There is also a further need in the art for consumers to have the ability to distinguish different pool chemicals from others. It is known that the use of chemicals, even household products containing certain chemicals require some precautions. It would be helpful for a consumer to be able to visually distinguish one type of pool chemical tablet from another to avoid unwanted reactions. Differently shaped pool chemical tablets is one option of visual distinguishment.

U.S. Patent No. 4,876,003 to Casberg relates to a package for a water sanitizing chemical that permits the chemical to dissolve uniformly and over a substantially long period of time. This patent describes an elongated halogen compound containing tablet with an elongate central section connecting two opposing obliquely and inwardly tapered ends encased by a tablet shell of the same configuration but having openings in the ends. The openings in the shell allow the chemical to dissolve through into the body of water.

Likewise, U.S. Patent No. 4,928,813 to Casberg relates to a capsule and a method of making a capsule for use in the dissolution of a chlorine chemical into a body of water. This patent discloses a capsule that generally comprises a tablet section and a shell means. The tablet sections comprises at least one halogen chemical compound tablet. The tablet section has an elongate center section with two opposite end sections. The shell means is securely fitted about the tablet section. The shell means have two end portions adjacent to the tablet end sections. Each of the end portions comprises a tablet wall with an aperture therethrough and an extension having a conduit means or flow passage therethrough. This causes water to pass through the extensions and the apertures to access the tablet section such that the shell means reduces the dissolving rate of the halogen compound. This tablet was designed to last a longer time than other tablets and to dissolve at a relatively even rate

Additionally, U.S. Patent No. 5,137,731 to Casberg discloses a pool chemical tablet design which has a donut shape with a close-fitting peripheral water impervious barrier. The barrier is a certain size in relation to the tablet size and hole diameter to achieve a very even dissolving rate of a desired magnitude.

U.S. Design Patents Nos. 283,649 and 625,619 to Casberg demonstrate different shapes of pool chemical tablets used in the art to provide even distribution of pool chemicals into surrounding bodies of water that do not pose a danger to users of the water.

Despite the above-mentioned advancements in the art, what is needed is a pool chemical tablet that is shaped to be visually distinctive from other tablets, and shaped to allow easy handling while providing an even and safe distribution of pool chemicals into the surrounding body of water. Ideally the chemical tablet would not easily clog, trap, or otherwise interfere with any other components of a filtration system or the like.

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BRIEF SUMMARY OF THE INVENTION

Therefore, one aspect of the present invention is directed to a chemical tablet for use as a sanitizer in pool chemicals having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface.

Another aspect of the present invention is directed to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface wherein the chemical tablet comprises hydrated calcium hypochlorite.

Yet another aspect of the present invention is directed to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface, wherein the chemical tablet comprises a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate, wherein the blend comprises at least about 17% by weight of water based on the total weight of the blend, from about 0.1% to about 10% of lime based on the total weight of the blend, at least about 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite.

Yet another aspect of the present invention relates to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface, wherein the chemical tablet comprises a blend of hydrated calcium hypochlorite and an alkali metal phosphate.

A further aspect of the present invention relates to a chemical tablet having an upper flat surface and a lower flat surface connected by a first elongated cylindrical side surface and a second elongated flat or concave cut side surface wherein the chemical tablet comprises a blend of a hydrated calcium hypochlorite, a scale inhibiting solid alkali metal phosphate and a residue dispersing solid alkali metal phosphate.

Advantages to the present invention include: even dissolution of the sanitizing chemicals, scale inhibition, and residue dispersion. Another advantage of the present invention is controlled dispersion of the chemicals into the pool water it sanitizes. Easy recognition of this pool chemical tablet by its unique shape is yet another advantage of the present invention.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top perspective view of a pool chemical tablet with an elongated flat side surface according to the present invention;

FIG. 2 is a side perspective view of the pool chemical tablet of FIG. 1.

FIG. 3 is a view of the pool chemical tablet of FIG. 1 showing the cylindrical side surface of the chemical tablet.

FIG. 4 is a view of the pool chemical tablet of FIG. 1 showing the elongated flat side surface of the chemical tablet.

FIG. 5 is a top perspective view of a pool chemical tablet with an elongated concave cut side surface according to the present invention.

FIG. 6 is a side perspective view of the pool chemical tablet of FIG. 5.

FIG. 7 is a view of the pool chemical tablet of FIG. 5 showing the concave cut side of the chemical tablet.

DETAILED DESCRIPTION OF THE INVENTION

As used in the present specification and claims, the term "D-shaped" means an article is in the shape of the capital letter D.

As used in the present specification and claims, the term "moon shaped" means an article is in the shape of a crescent moon, namely one side of the article has a concave shape.

The term "tablet" as used in the present specification and claims covers any shape or size tablet, or other compressed shaped product made of sanitizing chemicals required in the present invention.

The term "blend" as used in the present specification and claims refers to an homogeneous or near homogeneous mixture of the materials as described herein.

The term "hydrated" as used in conjunction with calcium hypochlorite products in the present specification and claims refers to any calcium hypochlorite product that has a water content of at least 5% by weight of calcium hypochlorite product.

The term "average dissolving rate" as used in the present invention, unless otherwise identified, is used to mean the static average dissolving rate of the tabletted blends of the present invention in a standing volume of water.

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The term "coloring agent" as used in the present specification and claims refers to any chemical, pigment, dye, tint, or other substance, that provides color to the chemical tablet of the present invention.

Referring to FIG. 1, a chemical tablet 11 is shown which illustrates one embodiment of the tablet of the present invention. The chemical tablet 11, also illustrated in FIGS. 2-4, has a unique D-shaped structure.

FIGS. 1-4 illustrates one embodiment of a chemical tablet 11 of the present invention. The chemical tablet has an upper flat surface 10 and a lower flat surface 20. The upper flat surface 10 is connected to the lower flat surface 20 by a first elongated cylindrical side surface 40 and a second elongated flat side surface 30.

The second elongated flat side surface 30 has two edges 32 and 32' as shown in FIG. 4. Edges 32 and 32' aid in forming the particular shape of chemical tablet 11 as well as minimize stress that may cause cracking or breaking of the chemical tablet.

As shown in FIG. 1, upper flat surface 10 can be connected to an upper beveled edge 12. The upper flat surface and upper beveled edge are connected by an upper inner edge 13. The upper beveled edge 12 follows the perimeter of the upper flat surface of the chemical tablet. The width 14 of the upper beveled edge is about 0.25 inches as measured from an upper outer edge 16 to upper inner edge 13 as shown in FIG. 2..

As can be seen in FIG. 2, the lower flat surface 20 of the chemical tablet may also be connected to a lower beveled edge 22. The lower flat surface 20 is connected to lower beveled edge 22 by lower inner edge 23. The lower beveled edge 22 follows the perimeter of the lower flat surface of the chemical tablet. The width 24 of the lower beveled edge is about 0.25 inches as measured from a lower outer edge 26 to lower inner edge 23. Widths 14 and 24 are preferably the same size.

Preferably, chemical tablet 11 of the present invention has an upper beveled edge connected to the upper flat surface and a lower beveled edge connected to the lower flat surface as shown in FIG. 2. This particular shape aids in distinguishing the chemical tablet from other chemical tablets used in water sanitization.

Although other dimensions may be suitable for the chemical tablet of the present invention, preferably, chemical tablet 11 conforms to certain dimensions to maintain optimum average dissolving rate of less than 150 grams/day for a 100% by weight hydrated calcium hypochlorite tablet. Preferably chemical tablet 11 has a volume of 10.2 cubic inches and preferably its weight is about 300 grams. Ideally, chemical tablet 11 has

a surface area of 25.1 square inches. The surface area of chemical tablet 11 contacted by the water at the feeder's highest feed rate is 13.5 square inches. This contact area at a maximum flow rate of 2.0 gpm gives a desired feed rate of 20 lbs available chlorine per day for a straight 100% hydrated calcium hypochlorite tablet.

Additionally, while other dimensions may be suitable for the chemical tablet of the present invention, as shown in FIGS. 1 and 2, it is preferred that the elongated cylindrical side surface 40 is formed having a diameter of about 3 inches (if completely cylindrical) as noted by reference number 42. Additionally, it is preferred that the distance 34 from an apex 44 of the elongated cylindrical side surface 40 and the elongated flat surface 30 is about 2.37 inches. Further, it is preferred that the distance 18 from the upper flat surface 10 and the lower flat surface 20 is about 1.7 inches.

A preferred embodiment of the chemical tablet has an elongated cylindrical side surface 40 of a diameter of about 3 inches (if totally cylindrical in shape), a distance from an the apex 44 of the elongated cylindrical side surface 40 and the elongated flat surface 30 of about 2.37 inches, and a distance 18 from the upper flat surface 10 and the lower flat surface 20 of about 1.7 inches.

As shown in FIGS. 5-7, the chemical pool tablet of the present invention can alternatively be moon shaped, that is, having an elongated concave cut side surface instead of an elongated flat surface found in the prior embodiment. The pool chemical tablet of this alternative embodiment has an upper flat surface 110 and a lower flat surface 120. Upper flat surface 110 is connected to lower flat surface 120 by a first elongated cylindrical side surface 130 and a second elongated concave cut side surface 140. The concave cut side surface 140 can be of any concave curvature.

Any curvature may be used for this elongated concave cut side. The curvature may be created when the granular material is compressed into a mold to form the desired shape of the tablet. Preferably, the curvature of this concave cut is formed with a radius of 1.5 inches and cuts into a 3 inch round tablet such that there would be a distance of 2.24 inches from the opposite side of the tablet to the deepest point on the concave cut-out as shown in Fig. 5-7. This preferred shape provides an optimum surface area.

As shown in FIG. 5, upper flat surface 110 can be connected to an upper beveled edge 112. The upper flat surface and upper beveled edge are connected by an upper inner edge 113. The upper beveled edge 112 follows the perimeter of the upper flat surface of

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the chemical tablet. The width 114 of the upper beveled edge is about 0.25 inches as measured from an upper outer edge 116 to upper inner edge 113.

As can be seen in FIG. 6, the lower flat surface 120 of the pool tablet may also be connected to a lower beveled edge 122. The lower flat surface 120 is connected to lower beveled edge 122 by lower inner edge 123. The lower beveled edge 122 follows the perimeter of the lower flat surface of the pool tablet. The width 124 of the lower beveled edge is about 0.25 inches as measured from a lower outer edge 126 to a lower inner edge 123.

Preferably, chemical tablet 111 has an upper flat surface connected to an upper beveled edge and a lower flat surface connected to a lower beveled edge as shown in FIG. 6. This particular shape aids in distinguishing the chemical tablet from other chemical tablets used in water sanitization.

Although other dimensions may be suitable for this embodiment of the chemical tablet, preferably chemical tablet 111 conforms to certain dimensions to maintain optimum dissolving rate of less than 150 grams per day for a 100% hydrated calcium hypochlorite tablet. Preferably chemical tablet 111 has a weight of about 300 grams.

Ideally, chemical tablet 111 has a surface area of at least 25.1 square inches, but more preferably 25.9 square inches. The surface area of chemical tablet 111 contacted by the water at the feeder's highest feed rate is 13.5 square inches. This contact area at a maximum flow rate of 2.0 gpm gives a desired feed rate of 20 pounds of available chlorine per day for a 100% hydrated calcium hypochlorite tablet.

Additionally, while other dimensions may be suitable for the chemical tablet 111, as shown in FIGS 5 and 6, it is preferred that the elongated concave cut side surface 140 is formed having a diameter of about 3 inches (if the tablet were completely cylindrical) as noted by reference number 142. Additionally, it is preferred that the distance 134 from an apex 144 of the elongated side surface 130 and a point 146 on the elongated concave cut side surface 140 is about 2.24 inches. Further it is preferred that the distance 118 from the upper flat surface 110 and the lower flat surface 120 is about 1.75 inches.

One embodiment of chemical tablets 11 and 111 of the present invention preferably comprises only pressed granular hydrated calcium hypochlorite. Chemical tablet 11 may alternatively additionally contain a coloring agent such as ultramarine blue, phthalocyanine blue or phthalocyanine green besides the hydrated calcium hypochlorite.

Preferably the calcium hypochlorite is present in an amount that allows 47% of the chlorine to be available for sanitizing uses. This composition preferably contains at least about 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite. More preferably, the composition contains from about 25% to about 40% magnesium sulfate heptahydrate and about 60% to about 75% by weight of hydrated calcium hypochlorite. The amount of water in the blend should be at least about 17% by weight of the total blend; more preferably, about 18% to about 24% by weight of the blend. The granular magnesium sulfate heptahydrate is physically blended with granular hydrated calcium hypochlorite to produce an essentially homogeneous granular mixture.

This embodiment may also contain small amounts of other materials. One preferred material is lime ($Ca(OH)_2$) which may be included in amounts up to about 10% by weight preferably from about 01% to about 10% by weight, more preferably about 0.5% to about 3%, and most preferably about 1% to about 2% of the total amount of the blend of the two ingredients.

The amount of water in chemical tablets 11 and 111 may be calculated by any standard analytical method for measuring water in chemical products like these. Our preferred method is thermogravimetric analysis (TGA).

Additionally, the above-described embodiment may also comprise a coloring agent. A coloring agent added to the above-described embodiment would help consumer distinguish between this formula and others that are available. As mentioned above, the ability to distinguish between different chemicals is important to customer safety.

Coloring agents that are preferred include, but are not limited to, ultramarine blue, phthalocyanine blue, and phthalocyanine green. Preferably, the concentration of the coloring agent is between 0.01 and 0.5%. Ideally, the concentration is 0.05%.

Another embodiment of the present invention comprises hydrated calcium hypochlorite in an amount which allows approximately 68% of the chlorine to be available for sanitizing purposes. Preferably, commercial calcium hypochlorite product such as HTH® and CCH® products available from Arch Chemicals, Inc. of Norwalk, Connecticut have a minimum available chlorine content ranging from about 65 weight percent to about 75 weight percent. The remainder of such commercially available calcium hypochlorite products usually consists of water and inorganic calcium and alkali metal salts. Typically,

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the salts present include sodium chloride, calcium chloride, calcium hydroxide, and the like.

Additionally, the hydrated calcium hypochlorite in this embodiment can further be combined with an alkali metal phosphate. The alkali metal of the solid alkali metal phosphate may be lithium, sodium or potassium. Preferably the alkali metal in the alkali metal phosphate is sodium. The preferred alkali metal phosphate in the present embodiment is sodium tripolyphosphate (STPP). STPP is used to inhibit the development of scale deposits that sometimes occurs in using such calcium hypochlorite based tablets.

The hydrated calcium hypochlorite component in this embodiment is preferably at least about 95% of the total weight of all ingredients present in the tablet. Most preferably, the hydrated calcium hypochlorite component is from about 98.5% to about 99.5% of the total weight of the ingredients of the tablet. The alkali metal phosphate STPP is typically present in this embodiment in an amount of at least 0.1% but not more than 4.5% by weight, based on the weight of the total weight of the ingredients of the tablet. More preferably, the STPP is present in an amount from about 0.2% to 1.0% by weight, based on the total weight of the total weight of the ingredients of the tablet. Most preferably, the STPP is present in an amount of about 0.5% by weight based on the total weight of the ingredients of the tablet.

The above embodiment of the chemical tablet may also contain a coloring agent. Examples of suitable coloring agents include ultramarine blue, phthalocyanine blue, or phthalocyanine green.

In yet another embodiment, the hydrated calcium hypochlorite as described above that has approximately 68% available chlorine, may be blended with a combination of two or more alkali metal phosphates such as STPP and sodium hexametaphosphate (SHMP). SHMP is a residue-dispersing alkali metal phosphate.

Similar to the embodiment described above, the hydrated calcium hypochlorite component in this embodiment is preferably at least about 95% of the total weight of all ingredients present in the tablet. Most preferably, the hydrated calcium hypochlorite component is from about 98.5% to about 99.5% of the total weight of the ingredients of the tablet.

Each alkali metal phosphate is present in this embodiment in an amount of at least 0.1% but not more than 4.5% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment. More preferably, each alkali metal

phosphate is present in an amount of at least 0.2% but not more than 1.0% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment. Most preferably, each alkali metal phosphate is present in an amount no less or more than 0.5% by weight, based on the total weight of the ingredients present in the tablet of the present embodiment.

An advantage of this embodiment includes reduced scale deposits and blocked passageways of filters and the like, when the embodiment is used in water treatment applications in which feeding equipment is employed, such as swimming pools, hot tubs, and spas.

Likewise, a colorant agent such as the examples given above may be added to this chemical tablet embodiment that contains one or more alkali metal phosphates in combination with the hydrated calcium hypochlorite.

Typically a chemical tablet for use in water sanitization is formed by methods known in the art, including: using tableting equipment such as hydraulic presses or briquetting apparatus. Any suitable dwell times and pressures may be used in operating the hydraulic presses.

Preferably, the chemical tablet of the present invention is placed in a feeder or skimmer unit of a swimming pool. More preferably, the chemical tablet is placed in a "wave" technology chlorinator. The chemical tablet of the present invention may also be used in the sanitization of spas or hot tubs.

The chemical tablets II and III of the present invention has an average dissolving rate of less than about 150 grams/day for straight 100% hydrated calcium hypochlorite. In other words, a 300 gram tablet will take at least 2 days to dissolve completely in a standing (non-flowing) body of water. Preferably, the average dissolving rate is less than 100 grams per day for the tablets of the present invention. It should be recognized that the average dissolving rate of the chemical tablets II and III of the present invention will generally have higher dissolving rates in flowing water conditions such as in a skimmer or a feeder in a swimming pool.

The present invention is further described in detail by means of the following Examples. All parts and percentages are by weight and all temperatures are degrees Celsius unless explicitly stated otherwise.

EXAMPLES

EXAMPLE 1

The chemical tablet 11 as illustrated in FIGS 1 – 4 can be formed by using methods of tabletting known in the art, such as a hydraulic press or a briquetting apparatus. The D shaped tablet as shown in these figures can be easily distinguished from other tablets or briquettes that are used in water sanitization.

EXAMPLE 2

The chemical tablet 111 as illustrated in FIGS 5 – 7 can be formed by using methods of tabletting known in the art, such as a hydraulic press or a briquetting apparatus. The moon shaped tablet as shown in these figures can be easily distinguished from the other tablets or briquettes that are used in water sanitization.

While the invention has been described above with reference to specific embodiments thereof, it is apparent that many changes, modifications, and variations can be made without departing from the inventive concept disclosed herein. Accordingly, it is intended to embrace all such changes, modifications and variations that fall within the spirit and broad scope of the appended claims.

WHAT IS CLAIMED IS:

1. A chemical tablet (11) for use as a sanitizer in pool chemicals comprising:

an upper flat surface (10, 110); and

a lower flat surface (20, 120),

wherein the upper flat surface (10, 110) and the lower flat surface (20, 120) are connected by a first elongated side surface and a second elongated side surface, wherein the second elongated side surface is an elongated flat side surface (30) or an elongated concave cut side surface (140).

2. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) includes at least one of the following dimensions: a distance from an apex (44) of a first elongated cylindrical side surface (40, 130) and the elongated flat side surface (30) of about 2.37 inches; a distance from the upper flat surface (10, 110) and the lower flat surface (20, 120) of at least 1.7 inches; and a distance from the apex (44) of the first elongated cylindrical side surface (40, 130) and a point (146) on the elongated concave cut side surface (140) of about 2.24 inches.

3. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate, wherein the blend comprises at least about 17% by weight of water based on the total weight of the blend, from about 0.1% to about 10% of lime based on the total weight of the blend, at least 25% by weight of magnesium sulfate heptahydrate and less than about 75% by weight of hydrated calcium hypochlorite.

4. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises at least one of hydrated calcium hypochlorite and at least one alkali metal phosphate, said at least one alkali metal phosphate preferably comprising sodium tripolyphosphate, said sodium tripolyphosphate more preferably present in an amount from about 0.1% to about 4.5% by weight based on the total weight of the chemical tablet (11).

5. The chemical tablet (11) of claim 1 wherein the chemical tablet (11) comprises a blend of:

a hydrated calcium hypochlorite;

a scale inhibiting solid alkali metal phosphate, said scale inhibiting solid alkali metal phosphate preferably present in an amount from about 0.1% to about 4.5% by weight based on the total weight of the tablet, said scale inhibiting solid alkali metal phosphate more preferably comprising sodium tripolyphosphate; and

a residue dispersing solid alkali metal phosphate, said residue dispersing solid alkali metal phosphate preferably present in an amount from 0.1% to about 4.5% by weight based on the total weight of the tablet, said residue dispersing solid alkali metal phosphate more preferably comprising sodium hexametaphosphate.

6. The chemical tablet (11) of any one of the preceding claims wherein the chemical tablet (11) further comprises a coloring agent.

7. The chemical tablet (11) of claim 6 wherein the coloring agent is ultramarine blue, phthalocyanine blue or phthalocyanine green.

8. The chemical tablet (11) of any one of the preceding claims wherein said chemical tablet (11) dissolves at a rate of about less than 150 grams per day.

9. The chemical tablet (11) of any one of the preceding claims wherein at least one of the upper flat surface (10, 110) and the lower flat surface (20, 120) is connected to one of an upper beveled edge (12, 112) and a lower beveled edge (22, 122).

10. The chemical tablet (11) of claim 9 wherein the distance between the upper beveled edge (12, 112) and an upper outer edge (16, 116) of the chemical tablet (11) and the distance between the lower beveled edge (22, 122) and a lower outer edge (26, 126) of the chemical tablet (11) is about 0.25 inches.

ABSTRACT OF THE DISCLOSURE

One aspect of the present invention is directed to a solid chemical tablet (11) in a shape comprising an elongated cylindrical side surface (40, 130) and an elongated flat side surface (30) or an elongated concave cut side surface (140). Another aspect of the present invention is directed to a solid chemical tablet (11) comprising a blend of hydrated calcium hypochlorite with magnesium sulfate heptahydrate. This invention further relates to a solid chemical tablet (11) comprising a blend of solid calcium hypochlorite, and one or more solid alkali metal phosphate. (Drawing – Figure 3)

Brigard & Castro
BOGOTA COLOMBIA

PODER

Yo (nosotros) ARCH CHEMICALS INC.

domiciliado(s) en 501 Merrill 7 P O Box 5204, Norwalk, Connecticut 06856-5204 Estados Unidos de América

Nombro(amos) a JUAN PABLO CADENA SARMIENTO y/o BEATRIZ JARAMILLO y/o CARLOS H. PALACIO EASTMAN y/o HECTOR GOMEZ MEJIA, de Bogotá, Colombia, apoderados verdaderos y legales con poder especial amplio y suficiente, para recabar de las oficinas y autoridades colombianas administrativas, judiciales y de policía, en cualquier instancia o recurso, la obtención de patentes de invención, registros de marcas diseños industriales modelos de utilidad, depósitos de nombres comerciales y enseñas, registros de derechos de autor y contratos sobre los mismos obtención de certificados de obtentor de variedades vegetales, así como sus prórrogas, renovaciones, anotaciones de traspaso, cambios de nombre y/o domicilio; elaborar tramitar y registrar contratos de licencia y licencias de cualesquiera clases; intervenir como demandante o como demandado en cualquier instancia y recurso ante cualquier juez, corporación, funcionario público o autoridad en acciones judiciales, administrativas y de policía tales como: oposiciones al registro de marcas; acciones de caducidad, cancelación y nulidad; acciones reivindicatorias, acciones derivadas de la obtención o explotación de licencias; acciones de competencia desleal; demandas penales; acciones de indemnización de perjuicios, reclamos y observaciones a solicitudes de patentes, diseños industriales, modelos de utilidad en el ejercicio de medidas cautelares y en otras acciones o medidas similares

A este efecto, lo(s) faculto(amos) para elevar solicitudes, formular descripciones, enmiendas, protestas, declaraciones oposiciones cancelaciones, nulidades, apelaciones y reclamos; pagar impuestos, cuotas y gravámenes prescritos por la ley renunciar o desistir a derechos concedidos o en curso de concesión; recibir toda clase de documentos y valores, dando el descargo respectivo, y en general, para dar ante dichas autoridades todos los pasos necesarios al efecto indicado y tomar todas las medidas que creyeren conducentes al resguardo de mis (nuestros intereses), con todas las demás facultades legales necesarias.

Este poder comprende la facultad de ratificar o confirmar en mi (nuestro) nombre lo actuado así como la facultad de desistir transigir comprometer y la de sustituirlo en todo o en parte y revocar sustituciones. Asimismo nombre(amos) a JUAN PABLO CADENA SARMIENTO y/o BEATRIZ JARAMILLO y/o CARLOS H. PALACIO EASTMAN y/o HECTOR GOMEZ MEJIA, domiciliado(s) en la Carrera 7 No. 16-56 Piso 9, mis (nuestros) apoderados en Colombia, con facultades para recibir notificaciones y designar apoderados judiciales o extrajudiciales.

Otorgado y firmado en

hoy de de 200_

Firma

Nombre
Cargo

POWER OF ATTORNEY

I (We) ARCH CHEMICALS INC.,

domiciled in 501 Merrill 7 P.O Box 5204 Norwalk, Connecticut 06856-5204 United States of America.

Hereby appoints JUAN PABLO CADENA SARMIENTO and/or BEATRIZ JARAMILLO and/or CARLOS H. PALACIO EASTMAN and/or HECTOR GOMEZ MEJIA, of Bogotá, Colombia, my (our) true and lawful attorneys with special, ample and sufficient power to obtain from the Colombian administrative, judicial and police offices and authorities, in any instance, privileges of patents of invention, registration of trademarks, industrial designs and utility models; registration of commercial names and emblems, registration of copyright and contracts related thereto, certificates of obtainers of vegetables varieties, as well as extensions, renewals and recordal of assignments and changes of name and domicile related to the above; to prepare, prosecute and register licenses of any kind; to act as plaintiff or defendant in any instance or recourse, and before any judge, corporation, public official or authority in judicial, administrative and police actions, such as: oppositions to the registration of trademarks; caducity cancellation and nullity actions claim actions derived from the obtaining or exploitation of licenses, action of unfair competition; criminal proceedings actions for payment of damages; claims or observations on patent applications, models, industrial designs and utility models in the exercise of preventive measures and in other actions or similar proceedings.

To that effect they hereby empowered to file applications, formulate descriptions, amendments, protests, declarations oppositions, cancellations, nullities, appeals and claims, to pay taxes quotas and assessments prescribed by law, renounce or waive the rights granted or in the process of granting; to receive all kinds of documents and valuables, giving the respective release of receipt, and, in general to take before said authorities the necessary steps to such effect, and any measures that they may deem pertinent to the safeguard of my (our) interest(s) with all the other necessary legal powers.

This power includes the faculty to ratify or confirm deeds, suits and compromises on my (our) behalf and to substitute this power in whole or in part and to revoke substitutions. At the same time I (We) hereby appoints JUAN PABLO CADENA SARMIENTO and/or BEATRIZ JARAMILLO and/or CARLOS H. PALACIO EASTMAN and/or HECTOR GOMEZ MEJIA, domiciled in Carrera 7 No. 16-56, Piso 9, my (our) attorney(s) in fact, with powers to receive notifications and to designate judicial and extrajudicial attorneys.

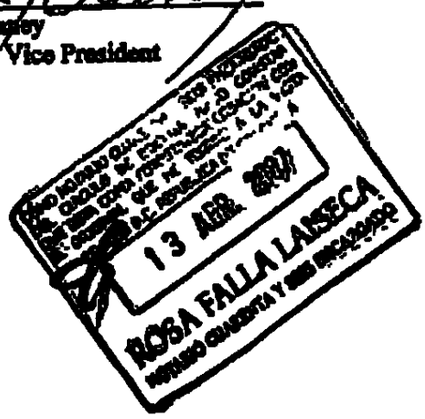
Granted and signed in Norwalk, Connecticut, U S.A.

this 4 day Oct of 2005

ARCH CHEMICALS INC.

Signature Paul J Cragley

Name Paul J Cragley
Title Executive Vice President



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APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1 Country The United States of America

THIS PUBLIC DOCUMENT

2 has been signed by NANCY O STEVENS

3 acting in the capacity of NOTARY PUBLIC

4 in the State of Connecticut for the term of June 21, 2001 to June 30 2006

CERTIFIED

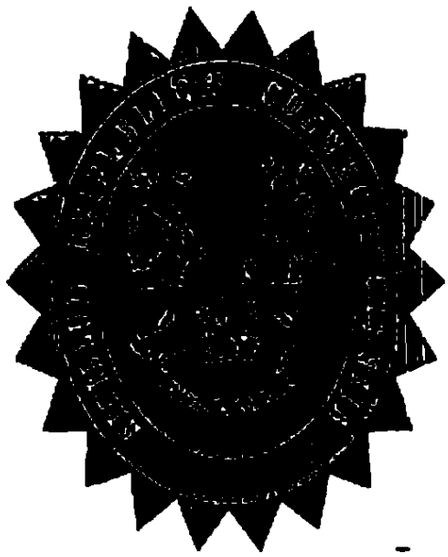
5 at Hartford, Connecticut

6 on October 13, 2005

7 by SUSAN BYSIEWICZ Secretary of the State of Connecticut

8 Number 2005 12690

9 Seal



10 Signature

Susan Bysiewicz

Secretary of the State

COLOMBIA

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I PAUL J CRANEY Certify

That ARCH CHEMICALS, INC
is a Corporation duly organized and legally existing under the laws of the Commowealth of Virginia, U S A

That the domicile of said Corporation
is 501 Merritt 7
P O Box 5204
Norwalk, Connecticut 06856-5204
U S A

I further certify that I am duly authorized to sign the forgoing instrument in the name of said corporation and that the purposes for which said instrument is granted are within the scope of the objects or activities of said corporation in accordance with the Articles of Amendment & Restatement of the Articles of Incorporation, issued in the City of Richmond Virginia, U S A and filed February 3 1999

Signed in Norwalk, Connecticut U S A
Dated 4 Oct, 2005

Paul J Craney
Paul J. Craney
Executive Vice President

STATE OF CONNECTICUT)
)
COUNTY OF FAIRFIELD)

On this 4th day October, 2005 before me a Notary Public in and for said County and State personally appeared PAUL J CRANEY who acknowledged himself to be the Executive Vice President of ARCH CHEMICALS, INC and that he as such Executive Vice President being authorized so to do executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Executive Vice President

In witness whereof I hereunto set my hand

Nancy O Stevens
Notary Public

Seal

My Commission Expires June 30

COMO NOTARIO QUE FUI ENCARGADO DE ESTA COPIA FOTOSTATICA CONCUERDA CON EL ORIGINAL QUE ME FUE PRESENTADO A LA VISTA
13 APR. 2007
ROSA FALLA LAL
NOTARIO CUARENTA Y SEIS D.N.C.

\88888888\710\65142.1

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TRADUCCION AL ESPANOL del Documento de Poder otorgado por ARCH CHEMICALS INC domiciliada en 501 Merritt 7 Norwalk Connecticut Estados Unidos de America

---

APOSTILLA

(Convención de La Haya del 5 de Octubre de 1961)

1 País Estados Unidos de América

ESTE DOCUMENTO PUBLICO

2 ha sido firmado por **NANCY O STEVENS**

3 actuando en capacidad de **NOTARIO PUBLICO**

4 en el Estado de Connecticut por el término de **junio 21 de 2001 a junio 30 de 2006**

CERTIFICADO

5 en Hartford Connecticut 6 **en octubre 6 de 2005**

7 por **SUSAN BYSIEWICZ** Secretaria del Estado de Connecticut

8 Número **2005-12690**

9 Sello

10 Firma

(Firma)

Secretario de Estado

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Yo, PAUL J. CRANEY certifico:

Que ARCH CHEMICALS, INC.
Es una corporación debidamente organizada y legalmente existente bajo las leyes de la Mancomunidad de Virginia, Estados Unidos de América.

Que el domicilio de dicha corporación
es 501 Merritt 7
Casilla Postal 5204
Norwalk, Connecticut 06856-5204
Estados Unidos de América

Certifico además que estoy debidamente autorizado para firmar el documento anterior en nombre de dicha corporación y que los propósitos para los cuales se concede dicho documento están dentro del alcance de los objetos o actividades de dicha corporación, de acuerdo con los Artículos de Enmienda & Restablecimiento de los Artículos de Incorporación, emitidos en la ciudad de Richmond, Virginia, Estados Unidos de América y presentados el 3 de febrero de 1999.

Firmado en Norwalk, Connecticut, Estados Unidos de América
Fechado: 4 de octubre de 2005

(Firma)
Paul J. Craney
Vicepresidente Ejecutivo.

ESTADO DE CONNECTICUT)
)
CONDADO DE FAIRFIELD)

Este 4 de octubre de 2005, ante mí un Notario Público en y para dicho Condado y Estado, personalmente apareció PAUL J. CRANEY, quien reconoció ser el Vicepresidente Ejecutivo de ARCH CHEMICALS, INC., y que él como tal Vicepresidente Ejecutivo, estando autorizado ara hacerlo, ejecutó el instrumento anterior para los propósitos allí contenidos, firmando a nombre de la corporación por sí mismo como Vicepresidente Ejecutivo.

En testimonio de lo cual he puesto mi firma

(Firma)
Notario Público

Sello:

Mi comisión expira: Junio 30 de 2006

13 ABR. 2007
ROSA FALLA
NOTARIO PÚBLICO

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
No. 07-037983- -00000-0000
Fecha: 2007-04-17 18:19:39 Dep: 2220 NUECREACION2
Tra: 11 PATENTES Cue: 378 FASENACIONALI
Act: 411 PRESENTACION Folios: 77

Industria y Comercio
SUPERINTENDENCIA

REQUISITOS MINIMOS PARA ADMISION A TRAMITE PCT

PATENTE DE INVENCION [✓] MODELO DE UTILIDAD [ ]

- Indicación de que se solicita la concesión de una patente [✓]
- Datos de identificación del solicitante o de la persona que presenta la solicitud [✓]
- Descripción de la invención [✓]
- Dibujos de ser estos pertinentes [✓]
- Comprobante de pago de las tasas establecidas [✓]

COMPLETA [ ] INCOMPLETA [ ]

DISEÑO INDUSTRIAL [ ]

- Indicación de que se solicita el registro de Diseño Industrial [ ]
- Datos de identificación del solicitante o de la persona que presenta la solicitud [ ]
- Representación gráfica y fotográfica del Diseño Industrial o muestra del material que incorpora el diseño [ ]
- Comprobante de pago de las tasas establecidas [ ]

COMPLETA [ ] INCOMPLETA [ ]

ESQUEMA DE TRAZADO [ ]

- Indicación de que se solicita el registro de un Esquema de Trazado [ ]
- Datos de identificación del solicitante o de la persona que presenta la solicitud [ ]
- Representación gráfica del esquema trazado [ ]
- Comprobante de pago de las tasas establecidas [ ]

COMPLETA [ ] INCOMPLETA [ ]

Claudia M Neva Cortes
Firma Responsable

Fecha_____

Carrera 13 No. 27-00 Piso 5, 7 y 10
Conmutador: 3 82 08 40
Fax: 350 52 20
E-mail: info@sic.gov.co
www.sic.gov.co
Bogotá, D.C., Colombia

REPUBLICA DE COLOMBIA

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

81

Bogotá,
2020

Doctor(a)
CADENA SARMIENTO JUAN PABLO
Apoderado(a) y/o Representante de
ARCH CHEMICALS, INC.

REFERENCIA	Radicación No.	07 37983
	Solicitud internacional	PCT/US2005/33307
	Fecha inicio fase nacional	19/05/2007
	Trámite	11
	Evento	378
	Actuación	430
	Oficio No.	07942

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. La solicitud no contiene la copia del documento en que consta la cesión del derecho a la patente del inventor al solicitante o a su causante. (Art. 26-k) Decisión 486. Cuando se trate de documentos otorgados en el extranjero, deben legalizarse de conformidad con lo dispuesto por los artículos 259 y 260 del Código de Procedimiento Civil.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.

CLARA C. DE JAIMES
Jefe de la división de Nuevas Creaciones (E)

El anterior requerimiento fue notificado por fijación en lista de fecha 6 JUL 2007
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