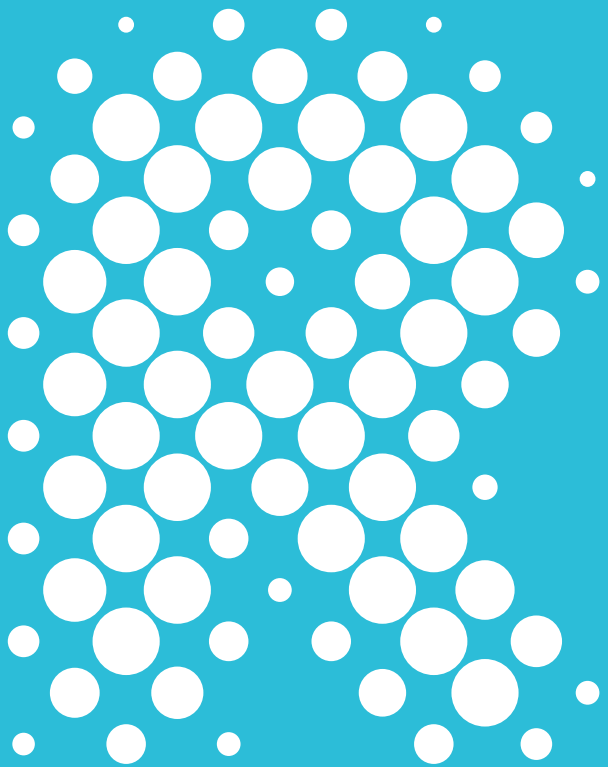


rotuba



Derived primarily from wood pulp, a renewable resource, Cellulosics can truly be called a natural polymer.



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Cellulosics - Technical Attributes

PRIMARY PROCESS

- MOLDING
- EXTRUSION
- SHEET
- FILM

SECONDARY PROCESS

- POLISHING
- POST FABRICATION
- CUTTING
- BONDING
- DRILLING
- EMBOSSING
- POLISHING
- PUNCHING
- PAINTING
- PANTOGRAPHING
- STAMPING

PERFORMANCE

- HEAT RESISTANCE
- FLEXIBILITY
- RIGIDITY
- TENSILE STRENGTH
- CHEMICAL RESISTANCE
- TOUGHNESS

PHYSICAL / SENSORY

- WOOD-LIKE FEEL / SOUND
- RICHNESS OF COLOR HUE
- SURFACE GLOSS
- CLARITY
- SCENT ENCAPSULATION
- SPECIAL EFFECTS - TORTOISESHELL

Glossy and tough,
yet soft and warm
to the touch.

Cellulosics - The Natural Polymer

Cellulosics was one of the first of the modern thermoplastics introduced into commercial production in 1929. Primarily derived from wood pulp, a renewable resource, it can truly be called a natural polymer.

Versatility of forming and performance characteristics along with its capability for secondary processing and fabrication, makes Cellulosics unique in its potential application.

Historically used across a range of products, from car steering wheels, eyewear and hair accessories to toothbrushes and tool handles.

More recently Cellulosics have been used for sports equipment, light fittings, as well as protective film for DVD's/CD's.

The most unique capability of Cellulosics is its suitability for scent encapsulation, which is far superior and longer lasting than with any other polymer.

Unique Capabilities

Probably the most unique capability of Cellulosics is its suitability for scent encapsulation, which is far superior and longer lasting than with any other polymer.

KEY ATTRIBUTES

Compatibility

The composite of Cellulosics, particularly Cellulose Acetate is ideally suited to use for scented plastic. One of the major components of Cellulose Acetate is the same as a key ingredient used to make most fragrances and aromas.

Breathe-ability

Cellulosics take on and give off moisture hygroscopically - with the interaction of air and moisture, fragrance is continuously being released from the material.

Longevity

Perhaps the major benefit of using Scented Cellulosics is that the encapsulated fragrance will be emitted for a long period of time, due to this inherent breathe-ability. To prove it, we have samples that are over twenty years old which have still retained their scent.

Scent Encapsulation

Scent loading can range from subtle to intense and can be tailored to suit space and proximity. Scent type is unlimited and we can literally recreate any aroma type. Scent can be used as an appetite depressant or enhancer as well as an alertness or relaxation tool. Scent can even be used as an authenticity signature.

Of course an important aspect of scent recognition is its relationship with color - a strawberry scent in a purple color sends the wrong message. In our color lab we can develop custom colors to match any color tone or hue.



Cellulosic sample 'midi'

The Opportunity

Rotuba can provide custom compounding solutions to enable our customers to take new and exciting products to market. Our aim is to work with our customers as collaborative partners from end to end to ensure a successful outcome of the final scented product.

US demand for flavors and fragrances is forecast to grow over 5% per annum approaching \$6 billion in 2007, driven by ongoing consumer preferences for natural ingredients, and rising interest in more complex and authentic flavors and fragrances. With this increasing emphasis on sensory products and experiences, Scented Cellulosics are ideally placed to respond.

As humans are capable of detecting over 10,000 different aromas, the opportunity for creating new and exciting scents is immense. This is why Rotuba has chosen to work with Givaudan, internationally renowned for their expertise in the creation of fragrances. Headquartered in Geneva with offices around the world, including a manufacturing and R & D facility located in Teaneck NJ. Givaudan has over 150 years experience in the manufacturing of unique scents and aromas.



Humans are capable of detecting over 10,000 different aromas.

TYPICAL APPLICATIONS
1. Hair accessories and jewelry
2. Home and kitchenware
3. Tools
4. Toys
5. Cosmetics
6. Promotional products

CELLULOSICS - SCENTED NATURAL POLYMER

Custom Compounders and Extruders

Rotuba is a privately owned company incorporated in 1945, with headquarters and manufacturing located in Linden NJ. We also have representation in Asia and Europe with warehousing facilities in Asia.

Rotuba is the largest independent producer worldwide of Cellulose Acetate (CA) and custom scent compounders of Cellulose Acetate Propionate (CAP) and Cellulose Acetate Butyrate (CAB).

Rotuba is also an industry leader in custom extrusions for the Lighting and the Point of Purchase display industries.

Our on site facilities and expertise include; in house tool and die machine shop, fully integrated Autocad system, on site color lab to develop custom colors and fragrances.

Our aim is to work with our customers as collaborative partners to provide end to end solutions.

Three Stage Sampling

Rotuba has developed a three stage process in sampling designed to minimize development time in matching scent type, level and color tone.

Stage 1

We will provide an individual vial of scent concentrate and an unscented Cellulosic 'mini' sample to match the requested color (using the Pantone color system or direct matching to a color swatch).



Stage 2

Upon selection of the scent we will combine the chosen fragrance with the preferred color in different scent loadings, scented Cellulosic mini sample in a flat press plate format.



Stage 3

Finally, we provide a molded sample in the selected scent loading and color, to more accurately demonstrate both the effect on the scent after going through a production process, as well as the true luster and clarity you can expect in a finished product.



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