

Chocolate FAQ

- **What is chocolate?**

In the U.S., chocolate we know (Hershey's, Reese's etc) are actually NOT chocolate, they are candy. Real chocolate (fine chocolate) contains no more than 5 ingredients usually in this order:

- 1) Chocolate, cocoa, or cocoa mass (mashed up bean)
- 2) option: extra cocoa butter
- 3) granulated cane sugar (more traditional and pure of taste)
- 4) optional: true vanilla
orchid seed pod
not "vanillian" not real deal - lumber by product
- 5) optional: soy lecithin (emulsifier)

- **What does the word "chocolate" mean?**

(Still in debate, the most cited version) The word Chocolate comes from the Aztec word *chocolātl*. This word comes from the Mayan word *xocolātl* meaning "bitter water". Chocolate was drunk bitter by the Aztecs.

- **How did the Aztec and Mayans use chocolate?**

The Aztec way of making chocolate was very similar to that of the Mayans. Priests presented cocoa beans as offerings to the gods and served cocoa drinks during sacred ceremonies like weddings. Cocoa was used as a gift to the deities, presented at royal burials to ensure comfort in the afterlife. Chocolate was also used as a medicine. All of the areas that were conquered by the Aztecs that grew cocoa beans were ordered to pay them as a tax, or as the Aztecs called it, a "tribute".



- **What is the difference between "cacao" and "cocoa"?**

"Cacao" is the bean that comes from the cacao tree, which is known by the scientific name of *Theobroma cacao*. "Cocoa" is what the bean is called after it has been processed. But most people today use the words intertwine-ly.

- **What are the varieties/categories of cacao? What are their differences?**

Today, there are 3 distinct varieties of cacao: Criollo, Forastero and Trinitario.

- **Criollo** ("Creole" in Spanish) Original cacao tree grown in Venezuela and Central America. It is known as the "prince of cacaos". Accounts for only 2% of the world production and is used by fine chocolate makers.
- **Forastero** ("Foreigner" in Spanish) this group is very diverse and is more resistant to disease and pests making it most productive. Originally grown in the high Amazon region, it is now predominant variety cultivated in Africa and accounts for more than 80% of world production.
- **Trinitario** ("from Trinidad") Baby of Criollo and Forastero! The quality of its cocoa varies with strong cocoa butter content. Represents 15% of world production, also used by fine chocolate makers.

- **Where does chocolate grow?**
“The cocoa belt”. It is located 20 degrees north and south of the equator. The vast majority of the beans come from West Africa, mostly Ghana, the Ivory Coast, Indonesia and South America.
- **Bean or seed?**
Cacao is a seed but is commonly called the cacao bean or the cocoa bean.
- **Picture of cacao fruit:**
Oval shaped and grow 7 to 14 inches long. Ripened pods are orange, yellow or red.



- **What's the white stuff in a cacao fruit?**
Cacao beans are covered in a thin layer of white pulp. People and animals used to only eat the pulp. It was said to taste like lychee.
- **Is cacao a fruit?**
Yes. The cacao pod is a fruit from the cacao tree.
- **Picture of a Cacao tree:**



- **How big are the leaves on a cocoa tree?**
20 to 35 cm long and 7 to 8 cm wide.

- **How many pods are on a cocoa tree?**
20~30.

- **How many beans are in a cocoa pod?**
25~40.

- **Growing cycle of cacao tree:**

Seedling

Growers will often plant cocoa seedlings beneath the canopy of larger crop-producing trees (banana, Cotton, rubber, coconut etc are referred to as “mothers of cacao”) because young cacao trees are very delicate and the diversity of plants also prevents pest infestations. It grows to about 5 meters within three years, and reaches 8 meters at about ten years. A tree lives normally for 30-40 years. In most plantations, new cocoa trees replace older trees at 25 year intervals.

Flowers

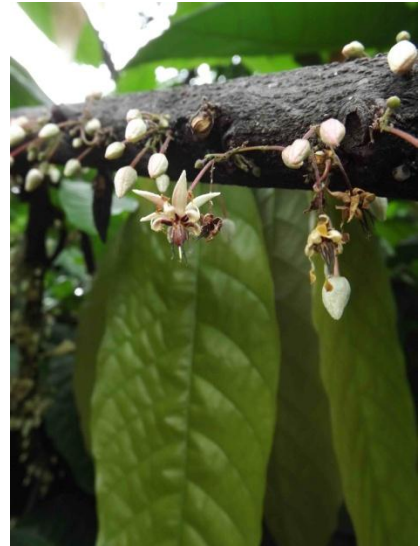
Cacao trees enter the reproductive stage after about 5 years. Flowers are small, white-pink. They develop from tissue on mature branches and the trunk and are pollinated by small insects.

Fruit

The fruit of the cacao tree is also known as the “pod”. Mature fruits form 5 to 7 months after pollination.

Harvest

Mature fruit can be harvested for 3 to 4 weeks until the seeds within the pod begin to grow. Pods are taken off the tree manually.



- **What is the life cycle of the cocoa pod – from seed through nib?**

Cacao trees can only grow in a specific area of the world which is called the cocoa belt. It takes 3 to 5 years after the seeds are planted and then the tree produces cacao pods from these flowers. After the pods are hand harvested from the trunk, they are cut open with seeds inside. These seeds, cacao beans, are covered in a thin layer of white pulp. Farmers will scrape out the pulp and the beans, wrap them in large green plantain leaves and put them under the sun to be dried for 1 week. The package becomes really hot causing the pulp to ferment, like alcohol! During this process, the pulp turns into liquid and seeps out of the tight package. The beans are then spread out to be further dried on a drying table and will be turned frequently. After the cacao beans are completely dry, they reach a factory to be cleaned and roasted. The next step is called winnowing. The beans are blown about to open up their shells and leave the inner part of the cocoa bean which is called the nib.

- **From raw cocoa to smooth chocolate, what does the chocolate making process entail?**

The nibs are then ground into a thick brown liquid called cocoa mass. The cocoa mass is then heavily pressed until the cocoa butter is squeezed out, and it is separated into cocoa liquor (powder) and cocoa butter. Cocoa butter and cocoa mass is combined in varying proportions and the sugar and milk for milk chocolate is added. The next step is conching. When the chocolate is conched, the chocolate is mixed constantly at a warm temperature for a few days. The chocolate then goes to be tempered where the chocolate is warmed and then cooled again for several hours. This is where your chocolate bar gets to it's nice shiny, smooth finish. The chocolate is now ready to go into the chocolate bar molds until they are completely cooled and then they get popped out of their molds, are usually wrapped in foil to keep their freshness.

- **What are the basic steps of modern chocolate manufacturing?**

Harvest > Ferment > Drying > Export
> Roasting > Broyage > Refine > Conching
> Molding > Cooling and Inverted > Packaging

- **What is conching?**

Conching is a process in the manufacture of chocolate. This is where the flavor and texture is refined by warming and grinding.

- **Are all cacaos organic?**

Organic in food products means there is no use of chemicals. Cacaos are mostly organic (see next page, 3rd bullet) but all imported goods to the U.S. need to be "sprayed". Depending on your definition of "organic", cacaos can be both.

- **What is drinking chocolate?**

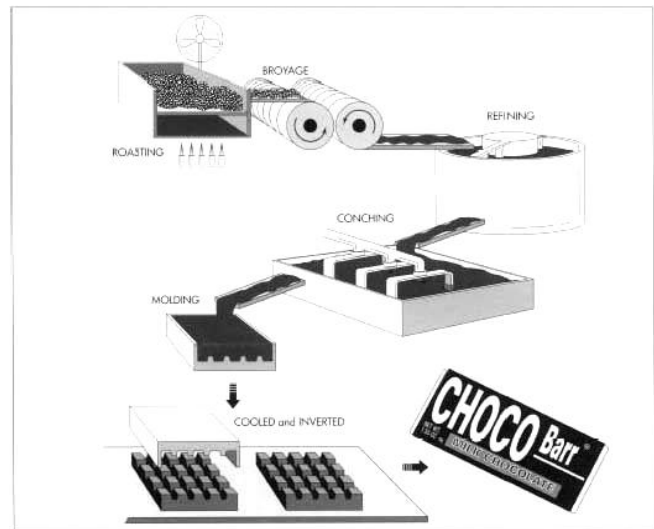
"Drinking chocolate" or "sipping chocolate" - it's made from chopped bits of chocolate or small chocolate pellets that are melted (slowly and painstakingly) and then blended with milk, cream and/or water.

- **Is there short supply of chocolate in the world?**

Because chocolate can only be grown in specific areas and as emerging markets like India and China rise, reporters estimate by 2020 it will be likely to have a short supply of chocolate in the chocolate industry.

- **Explain the industrial production of chocolate:**

In an industrial setting, chocolate is grown in monoculture. In order to mass produce cacaos, farmers create a fake ecosystem that mimics the tropical rainforest: with plastic canopy acts as shade because there are not enough trees. They have to spray because



there are no system/animals to keep the bugs in check. These cacao trees are genetically bred to have bigger output (affects flavor).

- **Are there any labor issue?**

As the chocolate industry has grown over the years, so has the demand for cheap cocoa. Today, some cocoa farmers barely make a living selling the beans and often resort to the use of child labor in order to keep their prices competitive.



- **What should I look for on the packaging so I am not feeding into the West African's poor ethical systems?**

You can look for fair trade and organic stamps, but it's still no guarantee. Buy fine productions! They taste better anyway. Farms are smaller and more sustainable by scale; plants are in a natural habitat instead of a fake ecosystem created by man. Fine productions are beyond organic, beyond fair trade.

- **Why does dark chocolate taste bitter?**

Raw cacao naturally tastes bitter and because dark chocolate contains the least amount of added substances like sugar and milk, it tastes bitter compared to other kinds of chocolate.

- **How many cocoa beans does it take to make a chocolate bar?**

Depending on the type of cacao beans (Bolivia cocoa bean is slightly smaller than average), percentage of cacao and other factors, roughly 400 cocoa beans can make a pound of chocolate.

- **What gets mixed in with ground cocoa nibs to make tasting chocolate?**

Depending on the type of chocolate, most cacaos are added sugar and other ingredients, such as milk, vanilla, vegetable oil or lecithin.

- **What is the difference between white, milk and dark chocolate?**

Dark chocolate contains the least amount of added ingredients and anywhere from 50%-100% cacao by weight. Milk chocolate has the most amount of milk powder (25% to 55%), and white chocolate contains cocoa butter, the most flavorings and no cocoa liquor.

- **What is the difference between bittersweet and semisweet chocolate?**

Both chocolates must contain a minimum of 35% *cacao* solids in the US. Some manufacturers that make both will often call their sweeter chocolate 'semisweet', although it's totally arbitrary and they can be used interchangeably in recipes.

- **When it says that a chocolate bar is 65%, 70%, or 85% cocoa, what does that mean?**

It refers to the total percentage of ingredients by weight in that product that comes from the cacao bean, including the chocolate liquor and cocoa butter. Remember, the higher the percentage does not necessarily means the better the chocolate.

- **How much cocoa does a candy bar contain?**

A normal Hershey's chocolate bar contains only about 5% cocoa.

- **Is white chocolate really chocolate?**

Technically no. White chocolate contains no cocoa liquor and gets its ivory color from the cocoa butter. According to FDA standards, real chocolate must contain chocolate liquor (the solid that results from finely grinding cocoa bean nibs). For years, The U.S. barred manufacturers from calling this product "chocolate" as it is called in Europe. If the "white chocolate" looks bright white, not ivory, it probably doesn't contain cocoa butter. They may have substituted a mixture of other vegetable fat.

- **What is couverture?**

Couverture is a special kind of chocolate that has more cocoa butter than regular chocolate, anywhere from 33% to 38% for a really good brand. This type of chocolate is used as a coating for things like truffles ("couverture" is French for "covering") There are two ways of coating candies, either by hand dipping into melted chocolate or enrobing, gently pouring chocolate over the treat.

- **What are truffles? What are chocolate truffles?**

They are not the same thing! A member of the fungi family, truffles are very expensive because of its scarcity. Chocolate truffles are made of chocolate ganache – a mixture of chocolate and cream melted together – that is rolled into balls.

- **What are the health benefits of chocolate? Which type of chocolate is the healthiest?**

All chocolate was not created equal! Dark chocolate (70% or higher) packs more of a health punch overall, providing antioxidant benefits and help prevent cancer, high-blood pressure and heart diseases. Dark chocolate can also boost your mood and lower stress! Most chocolate contains sodium, riboflavin, vitamin E, calcium and potassium and protein.

- **What is lecithin and why is it in my chocolate?**

Soy lecithin is a food additive extracted from soybeans, and is a by-product of soybean oil. Soy lecithin is an *emulsifier*, so it's added to chocolate to keep the cocoa and the cocoa butter together.

- **How long does chocolate last?**

Always follow the expiration date on the packaging. Depending on the climate and other factors, dark chocolate usually lasts for a couple years. That's in part due to the high amount of antioxidants, as well as the sugar, which is a preservative. Milk chocolate and white chocolate contain milk solids and should be used within a year.

- **What does it mean when my chocolate gets gray and streaky?**

That's called 'bloom' and it happens when the chocolate melts or gets warm, and then cools again without being tempered.



- **How can I tell the quality of the chocolate I have?**

4 steps!

- 1) How quickly does it **melt** in your mouth? The quicker the better. *(good chocolate have cocoa butter which melts at a much lower temperature than oil which is a substitute used in cheap chocolate.)*
- 2) How **smooth** does the chocolate feel as it melts? The smoother the better. *(Good chocolate goes through a longer conching)*
- 3) How intense is the **flavor**? The more intense and the more levels of flavors you can taste, the better the quality! *(Poor quality chocolate usually will be covered up with more sugar and vanilla to make up for the intensity of taste.)*
- 4) **Breathe!** Inhale and exhale. Good chocolate will leave after tastes in your mouth and tongue.



- **What's the best method to melt chocolate at home?**

There are two ways to melt chocolate, in a double boiler or in a microwave:

1. Double boiler method: A double boiler is basically two pots designed to fit together for melting wand warming fragile foods. The bottom pot holds a bit of water - never enough to touch the bottom of the second pot, the top holds the food, in this case chocolate. You should never place chocolate directly on a heat source, you run the risk of scorching it. Cut the chocolate up into small pieces, this will reduce the melting time. Adjust the heat so that the water in the bottom pot gets hot but doesn't begin to boil. Place the chocolate in the top pot and stir every so often. Dark and bittersweet chocolate are the most 'hardy' forms of chocolate, they will require less stirring than milk and white chocolates, which will burn very easily if you do not pay close attention.
2. Microwave method: Place chopped pieces of chocolate into a microwave proof bowl and heat it in the microwave for 30 seconds. Remove the bowl, stir what you can then return it to the microwave for another 30 seconds. Continue this until the chocolate is just about melted. You might be tempted to increase the time intervals, but remember that warmed chocolate will keep its shape, even if it is melted, unless it is stirred. Don't judge time on looks alone. When the chocolate is almost completely melted, remove it from the microwave and stir, letting the warmth of the bowl and surrounding chocolate complete the melting.

- **What is the best way to store chocolate?**

Ideally, chocolate should be stored in a slightly cool, dry and dark place. The perfect environment would be 60-70 degrees Fahrenheit, have low humidity, be out of direct sunlight and away from any other foods or substances with strong odors that could be

absorbed by the chocolate. Chocolate does not refrigerate or freeze well, do so only when you have to.

- **How much caffeine is in chocolate?**

There are about 30 milligrams of caffeine in your average chocolate candy bar, while a cup of coffee contains around 100 to 150 milligrams.

- **Does chocolate cause acne?**

While some people might be allergic to chocolate, or some of its ingredients, the belief that chocolate causes acne universally has been disproven by doctors for some time but is still in debate.

- **Is chocolate bad for my dog?**

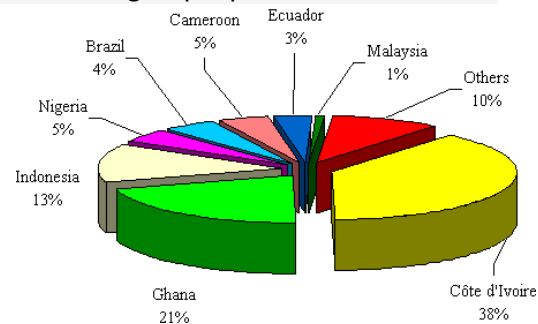
It is poisonous to dogs! However, the hazard of chocolate to your dog depends on the type of chocolate, the amount consumed and your dog's size. In large enough amounts, chocolate/cocoa products can kill your dog. The toxic component of chocolate is *theobromine*. Humans easily metabolize it but dogs process it much more slowly, allowing it to build up to toxic levels in their system.

- **Why do we “crave” chocolate?**

Chocolate, as it turns out, is a bubbling brew of 380 chemicals, a bunch of which are known to have an effect on mood. Researchers point to phenylethylamine (PEA), the so-called "love chemical" that people produce when they're in love or feeling especially happy and excited. A more likely story is the cannabinoids that chocolate contains. These chemicals, related to the THC found in marijuana, triggers a high of happiness and well-being that a lot of people feel after eating chocolate. Chocolate also contains *theobromine*, a compound similar to the caffeine that gets people addicted to coffee.

- **Where does most of the world's chocolate come from?**

More than 75% of the world's cocoa is grown in Africa. (Ghana and Ivory Coast) But the entire continent of Africa only accounts for less than 3% of its consumption.



- **Who consumes the most chocolate?**

Ranking changes from year to year. Europeans account for nearly half of all the chocolate the world eats (US alone- 20%). On average, every German consumes 11.39 kg of chocolate every year! (US, 5.09kg). (CNN 2008/9) (Most sites say Swiss consumes the most but without data)

- **What are some local Utah artisan Chocolate makers (Bean to bar)?**

Chocolot (Ogden) , Amano Artisan Chocolate (Orem), Chocolate Conspiracy(SLC) , Mezzo (SLC) , Milkcreek Chocolate (SLC), Solstice(SLC) , etc.

- **US fine chocolate (bean to bar) players?**

Ritual (Colorado) , Dick Taylor (California) , Potomac (Virginia) and Patric (Missouri), Askinosie(MO), TAZA (MA), Vosges (Chicago), etc.

- **World (Bean to bar) players?**

Amadei (Italy), Domori (Italy), Valrhona (French), Sompak (Spain), etc.

- **Chocolate history/timeline:**

1500~400 BCE: First recorded use of cacao bean by the Olmec Indians.

1200~1500: Cacao is an important part of the Aztec culture used for religious and trading purposes. "Xocolatl" (warm or bitter liquid) became popular among Aztec upper classes.

1502: Columbus is the first explorer to come in contact with cacao in Nicaragua. He thought cacaos were almonds and there is no indication that he ever tasted it!

1519: Spanish explorer Cortez recorded the cocoa usage in the court of Emperor Montezuma.

1544: Mayans brought gift jars of beaten cocoa, mixed and ready to drink to visit Prince Philip of Spain.. Spain and Portugal did not export the beloved drink to the rest of Europe for nearly a century.

1545: An Aztec document containing a list of price equivalents designated the value of a tomato as one cacao bean, while an avocado was worth three, and a "good turkey hen" was worth 100 "full" or 120 "shrunk" cacao beans.

16th century Europe: The Spanish began to add cane sugar and flavorings such as vanilla and cinnamon instead of chilies to their sweet cocoa beverages.

1570: cocoa gained popularity as a medicine and aphrodisiac.

1585: first official shipments of cocoa beans began arriving in Seville from Vera Cruz, Mexico.

1650s and 60s: The first chocolate house was opened in London by a Frenchman. Chocolate was considered a beverage for the elite class, costing 10 to 15 shillings a pound. Interestingly, the appearance of chocolate coincided with the arrival of coffee from the Middle East and tea from China.

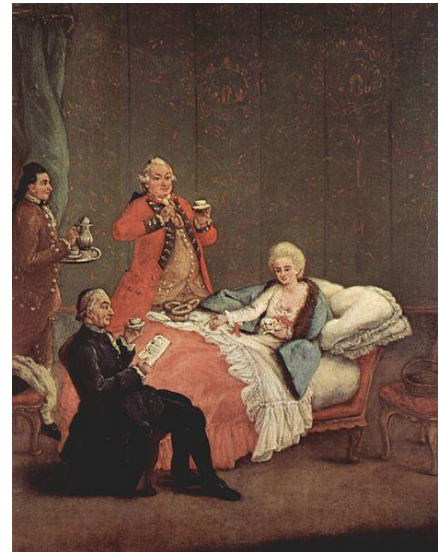
1674: eating solid chocolate was introduced in the form of chocolate rolls and cakes, served in chocolate emporiums.

1732: French inventor, Monsieur Dubisson invented a table mill for grinding cacao beans.

1756: chocolate was introduced to the U.S. John Hanan and James Baker. They built America's first chocolate mill and by 1780 the mill was making the famous BAKER'S Chocolate.

1795: Dr. Fry from England employed a steam engine for grinding cacao beans, an invention that led to the manufacture of chocolate on a large factory scale.

1828: Houten, a chemist and chocolate manufacturer in Amsterdam, removed almost half of the cocoa butter from chocolate liquor. This reduced the fat and made a hard cake that could be pulverized. Then he treated it with alkaline salts, which made the



color darker and removed some of the bitterness. This treatment came to be known as "Dutching."

1879: Daniel Peter and Henri Nestlé joined together to form the Nestlé Company. Same year, Lindt of Switzerland, produced a more smooth and creamy chocolate that melted on the tongue. He invented the "conching" machine. After chocolate had been conched for seventy-two hours and had more cocoa butter added to it, it was possible to create chocolate "fondant" and other creamy forms of chocolate.

1900: The first Hershey's milk chocolate bar is enjoyed by America.

1900~ 1930s: Chocolate bonbons, Kisses, the Tobleron bar, Belgian Chocolate, Chunky bar and many other varieties of chocolate started to rise.

1941-1945: At Milton Hershey's suggestion- the American military decided to include 3 4-ounce chocolate bars in a soldier's "D-Ration."



Fun Facts about Chocolate

- Cacao leaves can move 90 degrees from vertical to horizontal and back to get better sun access and to protect young leaves! This is done with a node at the base of the leaf which changes its stiffness with temperature.
- Theobroma Cacao is the tree that produces cocoa beans, and it means "food of the gods."
- The cacao flower, only about the diameter of a nickel, is complex in design and behavior, necessitating a special kind of animal to pollinate it. Midges, tiny flies that inhabit the damp, shady rain forest, are the only animals that can work their way through the complex cacao flower and pollinate it.
- Cacao trees can live to be 200 years old, but they produce marketable cocoa beans for only 25 years.
- Hawaii is the only place in the US that we can cultivate cacao.
- Cacao butter has a very unique triglycerides formation, melts right at body temperature.
- The biggest bar of chocolate ever made was created in 2000 and weighed 5,000 pounds. Turin is the city in Italy that can be proud of this accomplishment.
- Utah has the highest concentration of fine chocolate production in the U.S.
- German chocolate cake was named after Sam German, an American, and did not originate in Germany.
- 17,000 people in Belgium work in the chocolate industry.
- During WWII, the Germans designed an exploding, chocolate-covered, thin steel bomb designed to blow up seven seconds after a piece was broken off.
- Every Russian and US space voyage included chocolate bars.
- Chocolate manufactures use 40% of world's almonds and 20% of world's peanuts.
- Chocolate is technically responsible for the microwave. Scientists were experimenting with micro waves in hopes of creating better radar detectors and in the wake of WWII; scientists were testing devices called magnetrons. A scientist named Percy Spencer entered the lab with a chocolate bar in his pocket and realized it quickly began to melt. Spencer then realized that the magnetron could potentially be used to cook food.

- There are 10,000 chocolate companies. Only 30 are fine chocolate makers.
- Chocolate can taste like a variety of things: mocha, green bananas, leather, tobacco, etc, depending on the surrounding/soil of the tree. And people taste a same piece of chocolate differently too!
- A fine chocolate bar costs from \$5 to \$21.
- Fine chocolate has only been around since 1986.
- Chocolate has evolved into such a massive industry that between 40 and 50 million people depend on cacao for their livelihood.
- One chocolate chip can give a person enough energy to walk 150 feet.



Links for further reading:

General:

<http://www.thestoryofchocolate.com/index.cfm>

<http://www.chocolate.org/>

Timeline:

<http://www.chocolate.org/timeline/>

About the tree:

http://www.zchocolat.com/en/the_cocoa_tree.asp

<http://www.xocoatl.org/tree.htm>

About the issues:

<http://www.foodispower.org/slavery-chocolate/>

<http://www.oxfam.org.nz/what-we-do/issues/fair-trade/about-fairtrade/fairtrade-chocolate>

<http://www1.american.edu/ted/chocolate-slave.htm>

More award-winning bean to bar chocolate companies:

<http://www.internationalchocolateawards.com/>

<http://www.academyofchocolate.org.uk/>