Distillate Wax

20,834 tonnes per year

Synonyms: pyrolysis wax, polyethylene wax, polypropylene wax, synthetic crystalline wax, paraffin wax, micronized wax

Molecular Formula (carbon number) : The waxes have the formula $(CH_2)_nH_2$, where n ranges between about 18 and 60

Chemical Properties

Appearance: White or off white / cream solid at room temperature

Mp: 50-60°C

Bp: 350-400°C

Density: 0.89

refractive index: 1.446

Standard test: BS 4695

storage temp: Store at RT.

Stability: Stable. Substances to be avoided include strong oxidizing agents, peroxides, acids, organic solvents

Water Solubility: not miscible; soluble in non-polar organic solvents

CAS No - 09003-07-0

Detection Methods: GC / FID & DSC

Acid value (mg KOH/g) <1

Waxes Background

Waxes cover a wide range of products, both of natural- and artificial origin. These are solid substances characterized by melting point above 40°C (usually, from 40°C to 130°C). At such temperature they melt without decomposition. Most waxes show lattice composition. Waxes are characterized by quite good chemical resistance, limited solubility, and low viscosity at temperatures below the melting point. The weight of wax molecule ranges from a few hundred to a few thousands g/mol. The most popular hydrocarbon waxes of natural origin are the following: ceresin, microwaxes, Montana waxes, and Carnauba waxes, to mention also the most frequently used product – paraffin.
Paraffin is a mixture of high molecular hydrocarbons, from C18 to C36 (boiling point from 350°C to 560°C), with a little addition of cyclic hydrocarbons. Raw paraffin may be further developed, as a result of refining process, to macro and microcrystalline paraffin of molecular mass from 300 to 500. As a basic raw material for the paraffin synthesis, oil fractions of some types of crude oil, subjected to the distillation under lowered pressure, are used. Apart from machine oils, waxy crude is obtained as a result of distillation. Nowadays, due to decreased supply of paraffin waxes, caused by deepened processing of crude oils in the refineries, synthetic waxes gained importance, in particular synthetic hard paraffin and Polyethylene waxes.

Synthetic hard paraffin is a wax obtained from carbon oxygen and hydrogen, as a result of Fischer-Tropsch synthesis. Such paraffin is composed of n-paraffin hydrocarbons of molecule mass ranging from 700 to 1000. This paraffin is a non-polar substance, with melting point by 25°C – 45°C higher than melting point of typical paraffin obtained from crude oil.

Polyethylene waxes are hydrocarbon compounds, obtained in controlled thermal decomposition process of polyolefins in the presence of neutral gas. Such waxes are a mixture of higher paraffin hydrocarbons and input substances, which were not decomposed during the thermal process, usually having lowered molecule mass than input substances. Polyethylene waxes may also be obtained as a result of controlled polymerization of Ethylene to the products of molecule mass ranging from 1700 to 2500. Such waxes are characterized by more homogeneous composition, and thus they melt in quite limited temperature range.

Uses

Waxes are mainly consumed industrially as components of complex formulations, often for coatings. The main use of synthetic / polyethylene or polypropylene waxes is in the formulation of colorants for plastics.

Bitumen Modification

Waxes confer matting effects and wear resistance to paints. Polyethylene waxes are incorporated into inks in the form of dispersions to decrease friction. They are employed as release agents. They are also use approximately 45% of paraffin, waxes and related substances are used for production of candles and lights. Further 25% is used in the chemical, rubber, and cosmetics industry. The remaining amount is related to production of matches, wood industry (chipboards), paper industry (wax paper, paraffin wrappings), and smelting industry (casting waxes, parting waxes, greasing of metal-sheet, etc.), as slip agents, e.g. in furniture, and corrosion resistance.

Candles

Waxes and hard fats such as tallow are used to make candles, used for lighting and decoration.

Wood products

Waxes are used as finishes and coatings for wood products.

Other uses

Waxes are used to make wax paper, impregnating and coating paper and card to waterproof it or make it resistant to staining, or to modify its surface properties. Waxes are also used in shoe polishes, wood polishes, and automotive polishes, as mould release agents in mould making, as a coating for many cheeses, and to waterproof leather and fabric. Wax has been used since antiquity as a temporary, removable model in lost-wax casting of gold, silver and other materials.

Wax with colourful pigments added has been used as a medium in encaustic painting, and is used today in the manufacture of crayons and coloured pencils. Carbon paper, used for making duplicate typewritten documents was coated with carbon black suspended in wax, typically Montan wax, but has largely been superseded by photocopiers and computer printers. In another context, lipstick and mascara are blends of various fats and waxes coloured with pigments, and both beeswax and lanolin are used in other cosmetics. Ski wax is used in skiing and snowboarding. Also, the sports of surfing and skateboarding often use wax to enhance the performance.

Some waxes are considered food-safe and are used to coat wooden cutting boards and other items that come into contact with food. Beeswax or coloured synthetic wax is used to decorate Easter eggs in the Ukraine, Poland, and the Czech Republic. Paraffin wax is used in making chocolate covered bon-bons. Wax is also used in wax bullets, which are used as simulation aids.

Inks

Synthetic waxes have a wide range of applications in the ink and printing industries.

Waxes for PVC Manufacture

Wax products are often used as a plastic processing aide, especially in the manufacture of PVC. They also find many uses that require a high melt point paraffin to be dispersed in a formulation as a lubricant, viscosity control, anti-blocking agent, or other processing aide.

APP and APO Products

These are Atactic Polypropylene and Polyolefin products (APP and APO) that typically find uses in adhesives, roofing compounds, and laminating applications.

Adhesive Manufacture

Petroleum waxes can be formulated into numerous hot melt adhesive systems to modify viscosity, flow, and "set time" properties. Waxes can also influence an adhesive's bond strength and flexibility.

Barrier Coating

Petroleum based waxes and wax blends can be applied to numerous surfaces to reduce unwanted penetration or interactions of numerous liquids (water, grease, etc) and gases (oxygen, etc.).

Batteries

Amorphous poly alpha olefins are used in the construction of marine and off-road batteries to provide secure bonding and a measure of moisture protection.

Board Sizing

Petroleum based waxes are applied in molten or emulsion form to provide moisture repellency to wood composite boards (oriented strand, particle, hardboard, gypsum, and medium density fibreboard)

Bottle Cap Liner

Petroleum waxes can be utilized to coat and secure cap liners into plastic caps. The wax serves to form a watertight seal between the bottle and the outer cap to reduce leaking if the bottle is overturned.

Caulking Compound

Petroleum waxes are used in the formulation of caulks and sealants to enhance processability and functionality.

Chewing Gum Base

Paraffin wax is used to bind ingredients and serve as a rheology modifier to impart "chew" characteristics. Occasionally, microcrystalline waxes are blended to modify these properties as well. Go to our Paraffin wax and Microcrystalline wax sections.

Corrosion Inhibitor

Petroleum waxes possess excellent film forming and water repellent properties making them valuable components in rust preventative formulations.

Cosmetics (General)

Petroleum waxes serve as safe base material, solvent or carrier to provide moisture barrier, modify viscosity, or solidify formulations.

Crayons

Paraffin waxes serve as a pigment binder. They assist in the transfer of the pigment from the crayon to the desired substrate. Generally, a mid melt paraffin wax is useful for this application.

Dental Wax

Paraffin waxes and wax blends are formulated to be high quality premium modelling waxes for use in dentistry. The waxes are usually provided by specialty businesses that utilize the paraffin and microcrystalline waxes with other materials to make a finished dental wax

Drink Cups

Petroleum waxes provide structural rigidity and reduce liquid penetration through the paper substrate.

Explosives

Paraffin wax is used in dynamite wrappers as a moisture barrier. Microcrystalline waxes are used as a desensitizer in the manufacture of detonating fuses.

Fabric Finishing

Paraffin waxes and wax blends can be applied to fabric to add desired characteristics such as "drape", wrinkle or moisture resistance.

Fire logs

Petroleum waxes (primarily slack waxes) are used to bind compressed wood particles and maintain shape. Waxes ease ignition of the product and support the burn properties.

Floor Polishes

Petroleum based waxes enhance the gloss and buffability characteristics of a polish or paste primarily for wood floors.

Insulating Wax

Paraffin waxes are utilized in numerous electrical applications as a result of their insulating capabilities.

Investment Casting

Paraffin and microcrystalline waxes serve as binders in investment casting "waxes" and assist in the removal of the blend after the mould is produced. Investment casting waxes offer exceptional dimensional stability required in precision castings of metals.

Leather Treating

Crude scale and paraffin waxes are employed to soften and impart water repellency to leather goods.

Metal Coatings

Paraffin and crude scale waxes can be used on the surface of metals during production and shipping to provide lubrication and serve as a protective barrier (acid etching or moisture).

Paint and Varnish Removers

Crude scale and paraffin waxes reduce the evaporation of solvents prolonging their efficiency.

Physiotherapy

Low melt paraffin and crude scale waxes are used in physiotherapy to provide heat to an injured area. Waxes permit a greater release of heat for a longer period than water, completely surrounds the part being treated and the patient does not need to remain in a fixed position.

PVC Lubricant

Paraffin waxes provide external lubrication during the extrusion of PVC.

Road Marking Paint

Petroleum waxes and Atactic poly alpha olefins (APAO's) function as fillers and binders in thermoplastic road marking paints and tapes.

Rodenticides

Paraffin and crude scale waxes are used as binding agents for the active ingredients in rodenticides.

Shoe Polishes

Petroleum based waxes enhance the gloss and buff characteristics of a polish or paste.

Ski Wax

Paraffin waxes permit skiers to achieve much greater speeds through the production of a uniform, unblemished surface. Waxes are applied to the snow / ski interface to fill all voids in the ski base. The surface wax must be removed as it will actually stick to snow crystals reducing achievable speeds. The finished product is often a formulation of paraffin, microcrystalline, and natural waxes.

Stop-Off Wax for Etching

Paraffin or crude scale waxes are used to prevent "acid etching" of metals by forming a protective covering which later on can be easily removed.

Textile Treatment

Petroleum waxes are utilized in textile treatment to provide lubrication, resisting penetration of water or other liquids, and impacting the feel, look, or performance of the finished product.

Tissue Embedding

Paraffin wax has been used as an embedding medium in the study of tissue for over 100 years. It is a good embedding medium for routine histology because it can thoroughly permeate the tissue in its liquid form (when warm), and it solidifies (when cooled) with little damage to the tissue.

Toilet Bowl Gaskets

Crude scale and microcrystalline waxes are formed into rings designed to seal the connection between the toilet base and the drain flange.

Vine Grafting

Vine grafting is the process of bringing two different grape vines together. After a graft is made, some covering must be used to keep it from drying out. A special elastomeric material (grafting tape) can be wound around the graft, or the more economical approach is to dip or brush on a wax blend.