Histology Waxes

Personal Care

Sasol Performance Chemicals

About us

Sasol's Performance Chemicals business unit markets a broad portfolio of organic and inorganic commodity and speciality chemicals. Our business employs about 1,300 people in four key business divisions: Organics, Inorganics, Wax and PCASG (Phenolics, Carbon, Ammonia and Speciality Gases). Our offices in 18 countries serve customers around the world with a multifaceted portfolio of state-of-the-art chemical products and solutions for a wide range of applications and industries.

Our key products include surfactants, surfactant intermediates, fatty alcohols, linear alkyl benzene (LAB), short-chain linear alpha olefins, ethylene, petrolatum, paraffin waxes, pharmaceutical white oils, synthetic waxes, cresylic acids and high-quality carbon solutions as well as high-purity and ultra-high-purity alumina. Our speciality gases sub-division supplies its customers with high-quality ammonia, hydrogen and carbon dioxide as well as liquid nitrogen, liquid argon, krypton and xenon gases.

Our products are as individual as the industrial applications they serve, with tailor-made solutions creating real business value for customers. Ongoing research activities result in a continuous stream of innovative product concepts that help our customers position themselves successfully in future markets.

Our products are used in countless applications in our daily lives to add value, security and comfort. Typical examples include detergents, cleaning agents, personal care, construction, paints and coatings, leather and metal processing, hot-melt adhesives, bitumen modification and catalyst support for automotive catalysts and other diverse specialty applications including oil and gas recovery, aroma production, plastic stabilisation and polymer production. Every day, our researchers explore ways to improve our products and develop innovations that improve the quality of people's lives.

At a glance

Sasol Performance Chemicals, Wax Division is the leading specialist in innovative wax technology. Our products are supplied worldwide to many different markets and are used in a variety of applications.

Paraffin wax is the major raw material for the production of candles and is also used in the manufacture of rubber and tires, chipboard, plastics, foodstuffs, food packaging, printing inks and paints, textiles, asphalt and many other products. Sasol Performance Chemicals offers a comprehensive product range of pharmaceutical white oils, petroleum jellies and waxes. For decades, the Wax Division has been concentrating on the development and optimisation of paraffin and paraffin blends as well as petroleum jellies for a large number of different applications.

The products are renowned for a broad spectrum of applications. Their use ranges from relatively simple applications to process-oriented tailor-made products for state-of-the-art production equipment. Specialities are created for innovative solutions, e.g. as medium for latent heat storage.

Both macrocrystalline and microcrystalline paraffin and petroleum jellies represent complex multicomponent blends consisting of saturated hydrocarbons. Extracted from fossil raw materials, our products are processed to a high level of purity. These carefully refined products are subject to continuous quality control and comprehensive toxicological assessment. They pose no risk to health when used as intended and show attractive environmental properties since, generally, paraffin waxes are not toxic to aquatic organisms.

Product information

Origin

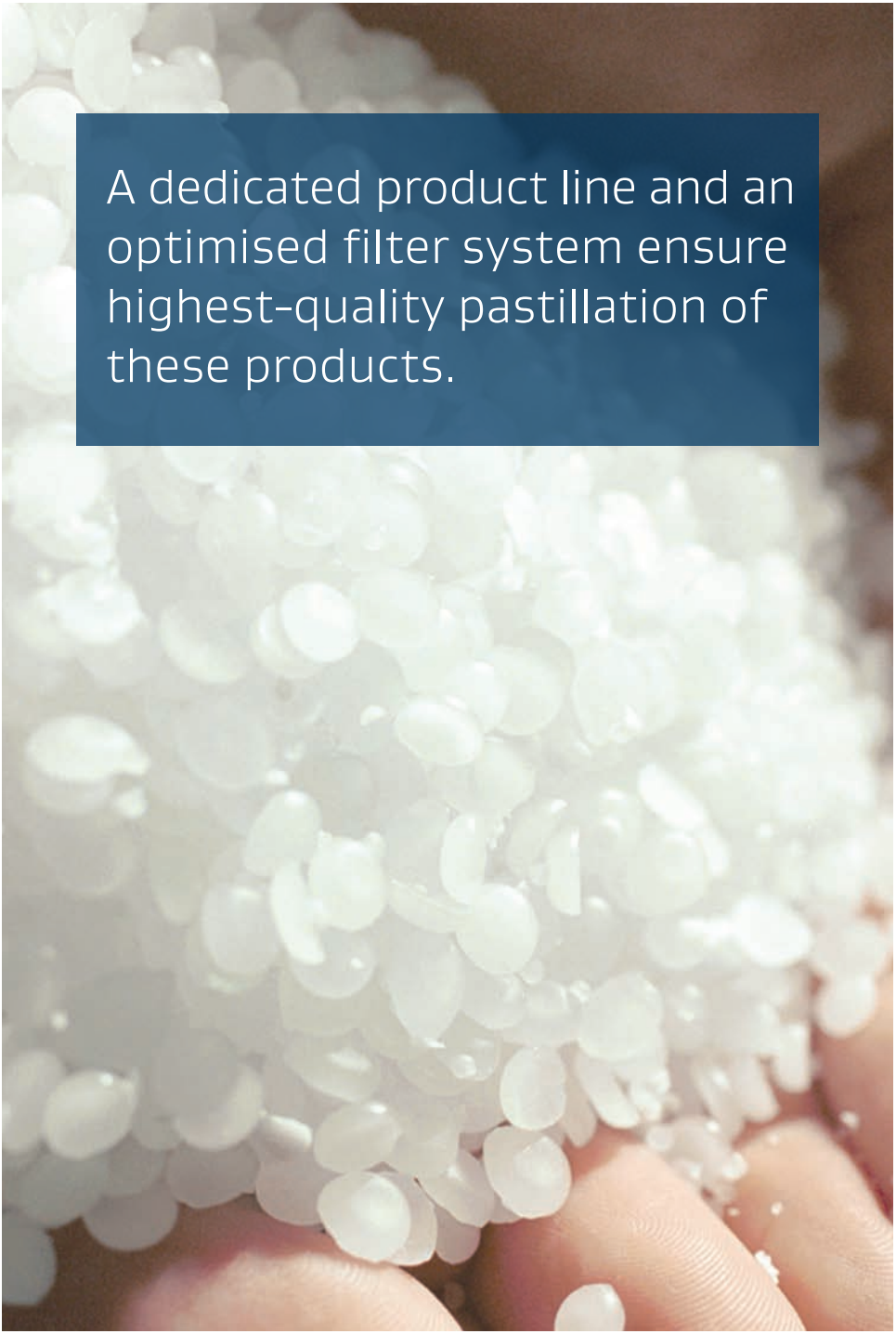
Histology waxes are produced by subjecting paraffin waxes to highly sophisticated refining processes, including unique distillation, crystallisation and de-oiling technologies.

Purity

Sasol Wax GmbH employs high-pressure hydrogenation, the most cutting-edge purification process, to produce histology waxes without any impurities. This production method guarantees a pure white product that is ideal for use in histological laboratories. A dedicated product line and optimised filter system ensure the highest-quality pastillation of the product to match the most exacting requirements.

Chemical structure

Histology waxes are essentially complex multicomponent combinations of saturated hydrocarbons, with medium-length hydrocarbon chains. The purity and inert properties of the waxes guarantee the perfect handling of all tissue samples.



A dedicated product line and an optimised filter system ensure highest-quality pastillation of these products.

General properties for embedding waxes

- Fast and straightforward embedding process
- Good compatibility with the infiltrated sample
- Easy positioning of the tissue sample
- Excellent microtome sectioning results
- Gentle on microtome blades
- Highly soluble in xylene

Sasolwax 0583

- Simple dyeing of the tissue sample
- Increased flexibility
- Enhanced with micro-wax

Sasolwax 0587

- Exceptional flexibility
- Easy demoulding
- Excellent suppression of crystallisation
- Enhanced with polymers
- Faster tissue penetration

Sasolwax 0599

- Exceptional flexibility
- Easy demoulding
- Excellent suppression of crystallisation
- Enhanced with polymers
- Increased melting point: particularly suitable for use in high-temperature environments

Infiltration

	Congealing point °C	Clear melt °C
Sasolwax 0582	54 – 56	60

- Due to the low molecular weight, a fast infiltration of the tissue sample is possible
- Perfectly compatible with the embedding wax (e.g. SW 0587/SW 0599)
- Reduced viscosity
- Great flexibility when sectioning

Embedding

	Congealing Point °C	Clear melt °C	Water bath temperature °C
Sasolwax 0583	54 – 56	60 – 62	40 – 45
Sasolwax 0587	54 – 56	60 – 62	40 – 45
Sasolwax 0599	58 – 60	65	45 – 55

FAQ

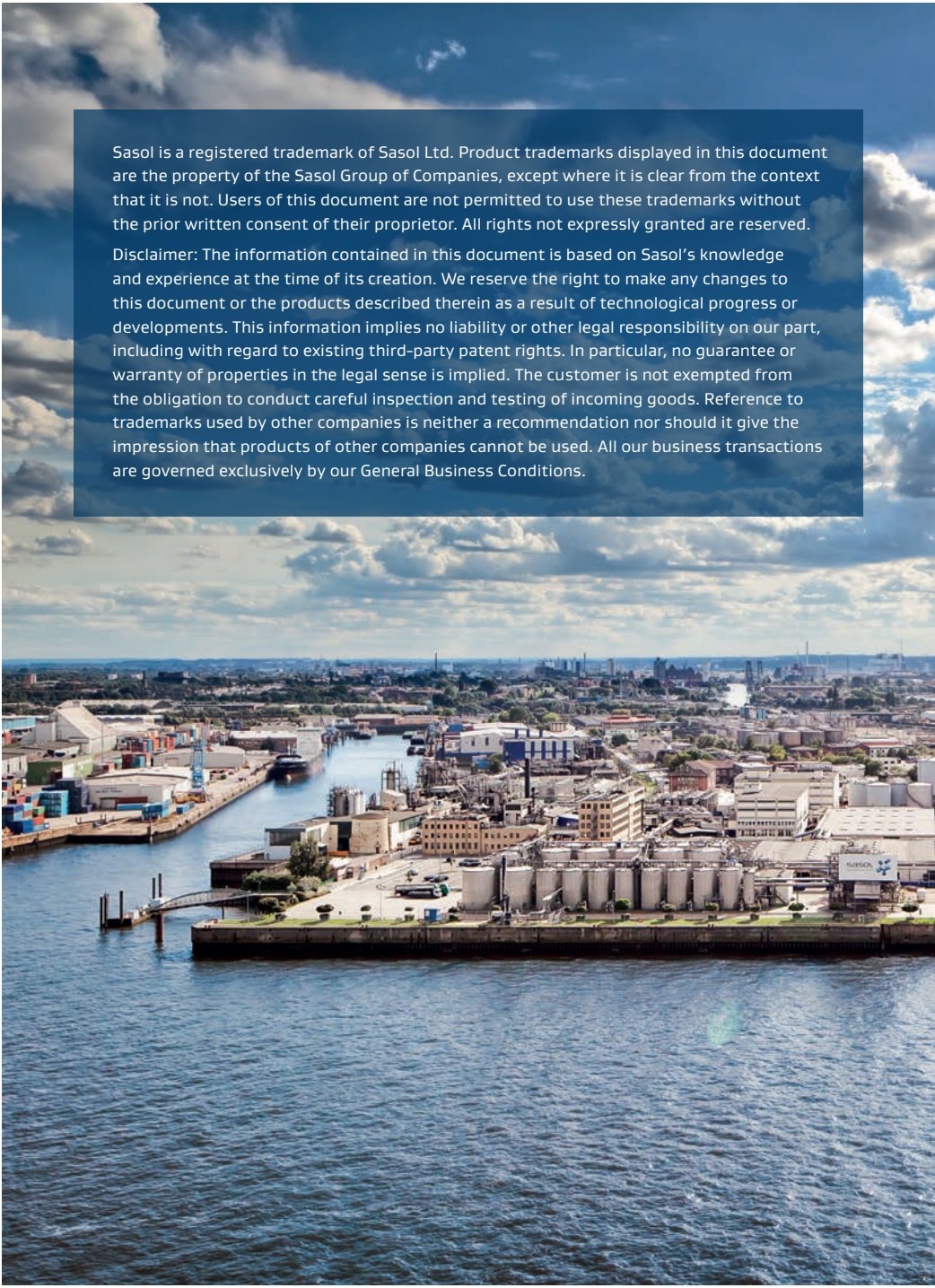
Frequently asked questions

QUESTION	ANSWER
How long should the tissue samples be kept in the fixation bath?	24 to 26 hours, minimum 24 hours.
What happens if I shorten the time for fixation?	Reducing the time for fixation can lead to considerable problems with producing the microtome sections.
How long should dehydration last?	For optimum results, no tissue samples should be subjected to dehydration for periods longer than 12 hours (or the time recommended by the manufacturer). It depends on the thickness of the tissue; very small tissue can be dehydrated in a couple of hours. Super-mega sections need much longer for dehydration.
Why is it so beneficial to use pure paraffin wax for infiltrating?	As an intermediary product, all xylene must be completely removed from the tissue sample. Undoped (high-purity) paraffin is an ideal means for this purpose. The sample must not emit any odour of xylene! Even trace amounts of xylene can lead to cracking or holes in the sample.
Why should the paraffin wax for infiltration be changed regularly?	Xylene and tissue residue can have a negative effect on the infiltration of the new sample. Xylene traces in the sample can also lead to cracks and holes in the tissue sample.
Why should different paraffin waxes be used for infiltration and embedding?	Embedding typically uses a different type of paraffin wax (blended with special additives for the purposes) than infiltrating. These additives have a positive effect on crystallisation and the flexibility of the wax. They also enable better cutting results with the embedded sample. The reduced viscosity and lower molecular weight guarantee the effective infiltration of the tissue sample.

FAQ

Frequently asked questions

QUESTION	ANSWER
Why should tissue samples be embedded at warm temperatures?	The tissue sample and embedding frames should be kept in a container heated to approx. 60°C to avoid any interference coming from a difference in the temperatures of the tissue, the frames and the paraffin wax used for embedding. The metal mould is filled with the liquid paraffin wax to the first rim. Tissue samples should then be positioned quickly in the already-settling wax. The forceps used for handling the sample should also be (pre-) heated to prevent the tissue sample or paraffin wax from sticking to the instrument. All of these precautions are necessary to ensure a good bond between the infiltrated sample and the embedding wax.
Why should the temperature of the paraffin not exceed 62°C during embedding?	This is the ideal temperature for embedding the tissue sample in the paraffin wax. The paraffin wax settles optimally at this temperature for a better connection between the wax and the infiltrated sample.
Is there any advantage in choosing a very low temperature for the cooling plate to speed up the cooling process?	There is no advantage! A large difference in temperatures can lead to cracking of the paraffin block, which would affect the tissue sample. After regular cooling, the paraffin and the tissue sample should have reached the desired temperature. The paraffin wax shrinks during cooling, which allows the block to be removed from the mould and the blocks to be cut in the microtome. Ten minutes are recommended as the optimum cooling period (at a temperature of –4°C) for paraffin blocks of approx. 7 g.



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