

sasol
reaching new frontiers



Sasol Wax

Wax is all we do. So we do it best.

Lubricants for PVC

Lubricants for PVC

The Sasol Wax range of external lubricants has been specially developed for use during PVC processing, and includes the unique Sasolwax Fischer-Tropsch products as well as Paraffin and Microcrystalline waxes.

The Sasolwax Fischer-Tropsch products are synthesised using Sasol's proprietary Fisher-Tropsch technology, which reacts carbon monoxide and hydrogen to form unsaturated and unbranched molecules. The linear structure of these synthetic hydrocarbons is responsible for the many desirable properties of Sasol Wax, for example, the low viscosity of these products make them very efficient external lubricants in PVC.

The Sasolwax paraffin and microcrystalline waxes are low softening-temperature petroleum-based waxes. The branched-chain microcrystalline waxes are particularly effective in PVC systems containing high levels of calcium stearate.

The Function of Lubricants in PVC

The "melting" behaviour of PVC is different from that of semicrystalline polymers. PVC granules have a particulate structure; each granule is an agglomerate of primary particles ("globules"). Each primary particle has an internal fine structure made up of fibrils ("nodules"). The properties of any article fabricated from PVC depend on the original coarse powder structure being destroyed and replaced with a new connected microstructure. This process is known as fusion. Under- or over-fusion results in poor mechanical properties and so it is important to ensure that fusion takes place at the right time during processing. Internal lubricants, which coat the surfaces of the globules to assist the breakdown of the particulate structure, accelerate the fusion process that may lead to over-fusion and polymer degradation. External lubricants, which act between the polymer and metal surfaces, delay fusion. The right choice of internal and external lubricants is therefore critical in the manufacture of products from PVC.

Product Overview: Fischer-Tropsch Waxes

Sasolwax	Drop Melting Point	Acid Value (ASTM D 1386/7) mg KOH/g	Dosage	Applications
H1 (flakes, pastilles, powder)	112 °C	< 0.1	0.2 - 0.8 phr	PVC-U (Pb, Sn, CaZn systems) Extrusion - pipes and profiles Injection Moulding - fittings
H1N6 (powder) < 1180 microns	112 °C	< 0.1	0.2 - 0.8 phr	PVC-P Extrusion - cable compounds etc. Injection moulding - footwear compounds
C105 (pastilles)	117 °C	< 0.1	0.2 - 0.8 phr	PVC-U (Pb, Sn, CaZn systems) Extrusion - pipes and profiles Injection Moulding - fittings
B52 (powder)	110 °C	3	0.2 - 0.8 phr	PVC-U (Pb, Sn, CaZn systems) Extrusion - pipes and profiles Injection Moulding - fittings
B39 (powder)	112 °C	14	0.2 - 0.8 phr	PVC-U (Pb, Sn, CaZn systems) Extrusion - pipes and profiles Injection Moulding - fittings
A28 (powder)	109 °C	29	0.2 - 0.8 phr	PVC-U (Pb, Sn, CaZn systems) Extrusion - pipes and profiles Injection Moulding - fittings

Benefits

- Efficiently controls the fusion of PVC (when correctly formulated with internal lubricants), hence allowing optimal processing and physical properties to be achieved. The efficiency of Sasolwax Fischer-Tropsch products may allow lower concentrations of the external lubricant to be used, particularly when alternative systems lead to blooming.
- Provides a metal release effect during processing
- Reduces the formation of "hot spots" resulting in thermal degradation
- Improves surface gloss
- Reduces power consumption

Product Overview: Sasolwax **Paraffin Waxes** and **Microcrystalline Waxes**

Sasolwax Paraffin Waxes	Drop Melting Point	Congeeing Point (DIN ISO 2207 ASTM D 938)	Viscosity (DIN 51562 ASTM D 445) 100 °C (mm ² · s ⁻¹)	Oil Content (%) (DIN ISO 2908 ASTM D 721)
3501 (bulk liquid)	58 °C	55 - 57 °C		0.5 % max
5603 (bulk liquid, pastilles, powder)	59 °C	56 - 58 °C		0.5 % max
5803 (bulk liquid, pastilles, powder)	61 °C	58 - 60 °C		0.5 % max
2222 (bulk liquid, powder)	81 °C	68 - 72 °C	5.0 - 6.0	0.5 % max
7040 (bulk liquid, powder)	78 °C	68 - 72 °C	6.0 - 7.0	
8775 (bulk liquid, powder)	90 °C	76 - 80 °C	4.0 - 6.0	
Sasolwax Microcrystalline Waxes				
1800 (pastilles)	80 °C	68 - 73 °C	12.0 - 15.0	1.0 % max
3279 (bulk liquid)	83 °C	76 - 82 °C	13.0 - 19.0	2.0 % max
3280 (powder)	83 °C	78 - 83 °C	12.0 - 16.0	2.0 % max

General Guidelines

It is essential that proper processing conditions be used in order to take full advantage of the benefits offered by Sasolwax products. The level of Sasolwax products required in any application will need to be determined such that the fusion time of the polymer is matched with the optimised process conditions, e.g., line speed.



DISCLAIMER:

Sasol Wax: Polymer Additives provides this information in good faith, but makes no representation as to its comprehensiveness or accuracy. Individuals receiving the information must exercise their independent judgement in determining its appropriateness for a particular purpose. Accordingly, Sasol Wax: Polymer Additives will not be responsible for damages resulting from use of or reliance upon this information.

(vers Eur3 2003)

For Further Information:

GBU Polymers

www.sasolwax.com