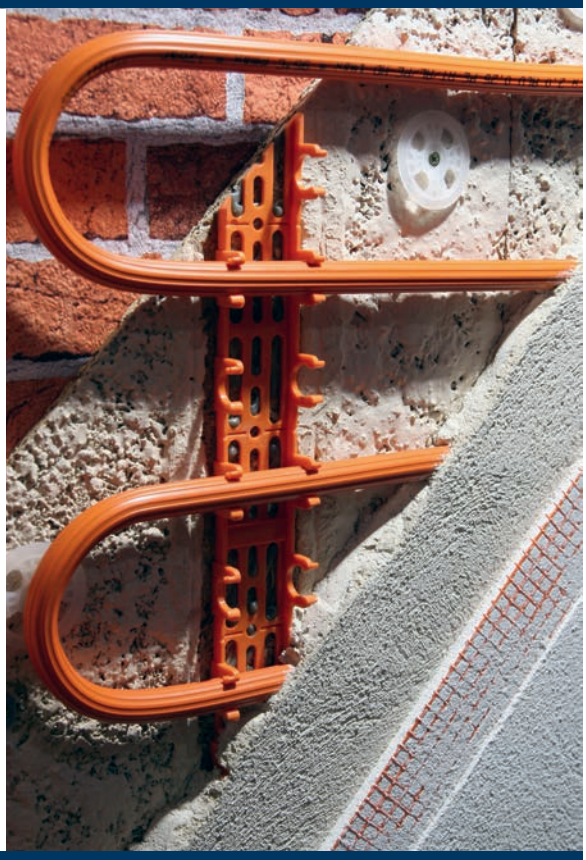
PARAFOL $C_{12}-C_{22}$

High purity normal paraffins

Sasol Performance Chemicals



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1. About us

Sasol's Performance Chemicals business unit markets a broad portfolio of organic and inorganic commodity and speciality chemicals. Our business employs about 1300 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 multi-faceted 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, synthetic waxes, cresylic acids, 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 CO_2 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.

2. General information

PARAFOL single cut paraffins are high purity, linear paraffins available from renewable resources.

PARAFOL single cut paraffins are an excellent choice when looking for a phase change material for latent heat storage applications including functional textiles and construction.

The performance profile of **PARAFOL** single cut paraffins is characterised by:

- sharp melting profiles as shown in Figure 1
- adjustable melting points by chain length in the desired temperature range
- high latent heat of fusion as shown in Figure 2
- non-tendency to segregation
- chemical inertness
- non-corrosiveness to conventional storage and construction material
- non-degradation throughout melt/freeze cycles
- non-tendency to supercooling

PARAFOL single cut paraffins are an alternative choice when looking for non-polar solvents, oils or wax additives based on renewable resources for environmentally friendly formulation concepts.

Figure 1:
DSC thermogram – melting profile

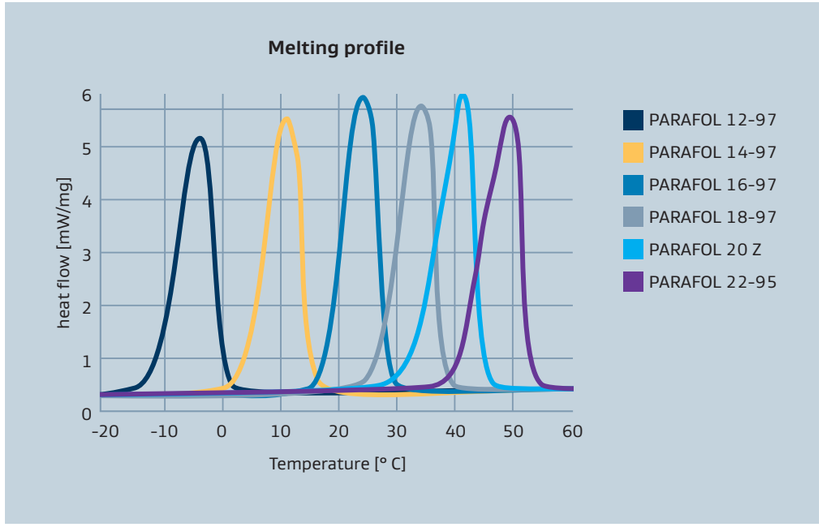
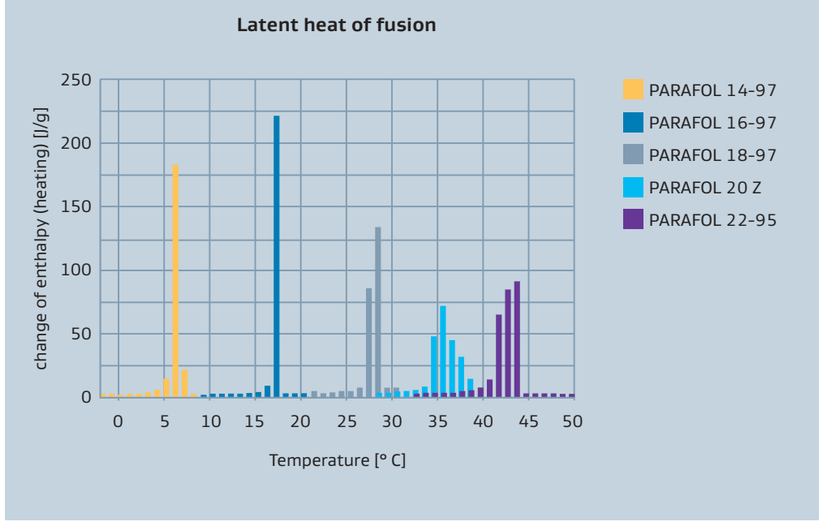


Figure 2:
Detailed DSC measurements in intervalls of 1° C



3. Applications

Latent heat storage

- Construction
- Solar energy
- Automotive
- Functional textile
- Medical therapy
- Bedding
- Cooling

Cosmetics

Paints, inks, coatings and adhesives

Metalworking

Solvents

4. Other products and trademarks

Sasol Germany GmbH markets the linear alcohols worldwide under the following trademarks:

NACOL	Pure cuts of linear alcohols C_6 to C_{22}
NAFOL	Blends of linear alcohols C_8 to C_{28}

Based on the linear alcohols Sasol Germany GmbH is producing the following specialities:

GALENOL	Self emulsifying blends of linear alcohols
ISOFOL	Defined branched Guerbet alcohols C_{12} to C_{32}
ISOCARB	Defined branched Guerbet acids C_{12} to C_{32}
LINPLAST	Plasticizers made from alcohols
NACOL Ether	Linear di-n-alkyl ethers C_{12} to C_{36}

Product specific brochures are available with detailed information for **NACOL** alcohols, **NAFOL** alcohols, **ISOFOL** alcohols, **ISOCARB** acids and **NACOL** ethers.

Additional information on **GALENOL** and **LINPLAST** can be requested by contacting the local sales office listed on the back of the brochure.

Our products are used in countless applications in our daily lives to add value, security and comfort.

5. PARAFOL

Liquid paraffin		**PARAFOL 12-97**	**PARAFOL 14-97**	**PARAFOL 16-97**
Chemical name		n-dodecane	n-tetradecane	n-hexadecane
Feedstock		oleochemical	oleochemical	oleochemical
Appearance at ambient temperature		clear, colourless liquid	clear, colourless liquid	clear, colourless liquid
Sales specification				
Purity	[wt. %]	min. 97	min. 97	min. 97
Onset temperature	[° C]	approx. -10.5	approx. 4.5	approx. 16.5
Latent heat	[J/g]	min. 210	min. 210	min. 220
Additional properties				
Molecular weight	[g/mol]	approx. 170	approx. 198	approx. 226
Colour	[Hazen]	max. 20	max. 20	max. 20
Boiling point	[° C]	approx. 216	approx. 253	approx. 287
Flash point	[° C]	approx. 84	approx. 115	approx. 135
Kauri Butanol Value		approx. 15	approx. 12	approx. 8

Solid paraffin		**PARAFOL 18-97**	**PARAFOL 20 Z**	**PARAFOL 22-95**
Chemical name		n-octadecane	n-eicosane	n-docosane
Feedstock		oleochemical	synthetic	oleochemical
Appearance at ambient temperature		colourless, solid	colourless, solid	colourless, solid
Sales specification				
Purity	[wt. %]	min. 97	min. 90	min. 95
Onset temperature	[° C]	approx. 27.5	approx. 32.5	approx. 41.5
Latent heat	[J/g]	min. 220	min. 200	min. 220
Additional properties				
Molecular weight	[g/mol]	approx. 254	approx. 282	approx. 310
Colour	[Hazen]	max. 20	max. 20	max. 20
Flash point	[° C]	approx. 165	approx. 176	approx. 184

6. Viscosity & Density

The kinematic viscosity is the resistance to flow of a fluid under gravity. It is determined by measuring the time for a volume of liquid to flow under gravity through a calibrated glass capillary viscometer.

The temperature dependant kinematic viscosity **PARAFOL** is shown in Figure 3.

Density is a measure of how much mass is contained in a given unit volume. The formal definition of density is mass per unit volume. Usually the density is expressed in grams per mL. In general, density can be changed by changing either the pressure or the temperature. Increasing the pressure will always increase the density of a material. Increasing the temperature generally decreases the density, but there are notable exceptions to this generalisation.

The temperature dependant density of **PARAFOL** is shown in Figure 4.

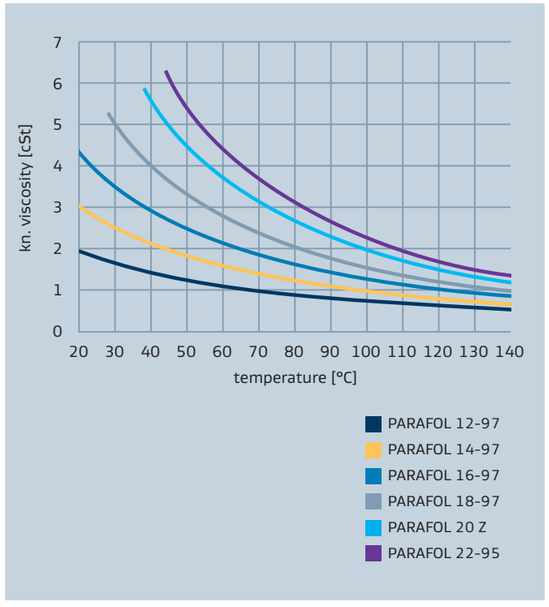


Figure 3: PARAFOL viscosity vs temperature

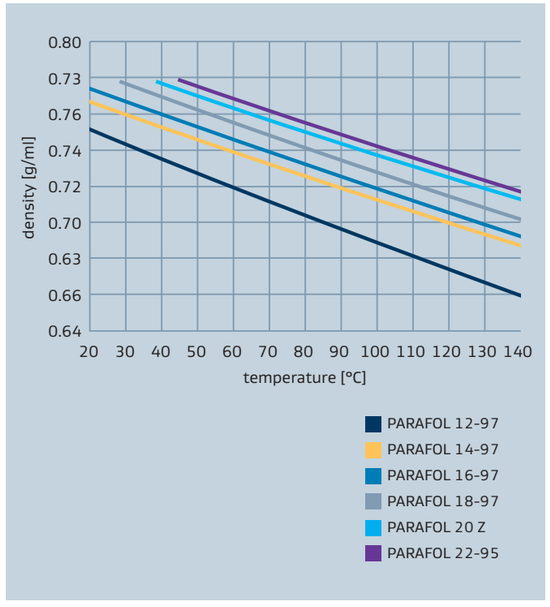


Figure 4: PARAFOL density vs temperature

7. Analytical methods

		Sasol method	with reference to
Boiling point		600-21	DIN 51 751
Colour		600-40	EN ISO 6271-2
Density		600-23	DIN EN ISO 12 185
Flash point			
Pensky-Martens	65° C–165° C	600-26 b	EN ISO 2719
Cleveland	> 165° C	600-26 c	ISO 2592
Kauri Butanol Value		–	ASTM D 1133
Latent heat		600-87	DIN 53 765
Molecular weight		600-19	
Needle penetration		–	DIN 51 579
Onset temperature		600-87	DIN 53 765
Purity		850-14	Gas chromatographic method
Viscosity		600-25	ASTM D 7042

8. Packaging and delivery

Filled products

1. In steel drums

- Filling quantity: 155 kg/drum
- Pallet capacity: 4 drums (screw-cap) on a CP3 pallet covered by stretch hood.
- Inside coating using epoxyphenolic lacquer

2. In Intermediate Bulk Containers (IBCs)

- Capacity of approximately 1 kg or m3
- Pallet capacity: 1 container securely mounted onto a CP1 pallet
- EVOH Barrier for guaranteed permeation protection

9. Handling and storage

Storage temperature all goods shipped in barrels or drums

5 < T < 30° C

41 < T < 86° F

10. Registration

For registration status, please refer to the material safety data sheet or contact

Sasol Performance Chemicals
info@de.sasol.com
Phone +49 40 63684-1000

Our global footprint

At your service

Sasol Performance Chemicals
Organics Division
Anckelmannsplatz 1, 20537 Hamburg, Germany
info@de.sasol.com Telephone +49 40 63684 1000 Fax +49 40 63684 3700

Italy
sasol.italy@it.sasol.com
Telephone +39 025 8453-1
Fax +39 025 8453-285

Spain/Portugal
carlos.cabeza@de.sasol.com
Telephone +34 934 876 092
Fax +34 934 876 485

United Kingdom
info.uk@sasol.com
Telephone +44 1564 78 3060
Fax +44 1564 78 4088

Benelux
henk.verschuuren@de.sasol.com
Telephone +31 74 278 2873
Fax +31 74 259 0361

France
jean-francois.petit@fr.sasol.com
Telephone +33 1 44 010-537
Fax +33 1 47 662-425

Poland/Baltic States
janusz.duda@pl.sasol.com
Telephone +48 22 860 6146
Fax +48 22 860 6148

Slovakia
sloveca.sk@sloveca.sk
Telephone +421 2 544 30 219
Fax +421 2 544 30 315

North America
info@us.sasol.com
Telephone +1 281 588 3000

South America
alvanei.martins@us.sasol.com
Telephone +55 11 4612 8199

Middle East
abbas.haroon@sasol.com
Telephone +97 14 8086 300
Fax +97 14 8086 400

Pacific Region
jackson.ding@cn.sasol.com
Telephone +852 3971 5988
Fax + 852 2530 4660

P. R. China
liangbo.lu@cn.sasol.com
Telephone +86 (21) 5108 6747
Fax +86 (21) 5836 5602

Japan
yoshihiro.ito@jp.sasol.com
Telephone +81 (3) 3248 6711
Fax +81 (3) 3248 6715

Russia
anna.kogut@de.sasol.com
Telephone +7 495 221 5142
Fax +7 495 926 4807

www.sasol.com

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