# Linear Alkyl Benzene Sulphonate Salts

## MARLON A, ANIODAC, SOLFODAC

Sasol Performance Chemicals

# About Us

Sasol Performance Chemicals develops and markets a broad portfolio of organic and inorganic commodity and specialty chemicals and comprises three key business divisions: Organics, Advanced Materials and Wax. 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.

Surfactants, surfactant intermediates, fatty alcohols, linear alkylbenzene (LAB), short-chain linear alpha olefins, mineral oil-based and synthetic paraffin waxes, high-purity and ultra-high-purity alumina as well as high-quality carbon solutions form the basis of our key product range.

As individual as the industrial applications they serve, the tailor-made solutions offered by our products create 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, inks and coatings, metalworking and lubricants, hot-melt adhesives, bitumen modification and catalyst support for automotive catalysts and refineries as well as other specialty applications including oil and gas recovery, agriculture, plastic stabilization, and polymer production. Every day, our researchers explore ways to improve our products and develop innovations that improve the quality of people’s lives.

# 1. Application Fields of Linear Alkyl Benzene Sulphonates

Linear alkylbenzene sulphonates (LAS) and their salts have their major application in the area of washing and cleaning for household and industrial use. They are used as emulsifiers in the emulsion polymerisation process, as additives in the production of paints and lacquers, as textile and dyeing auxiliaries, in the metalworking and plastics industries, as dispersants for drilling muds in gas and oil production, as well as in the cement industry. Additional specific applications complete the widespread use of LAS salts.

The Sasol Performance Chemicals product line of linear alkylbenzene sulphonates salts (LAS) is branded in the global market as **MARLON A, MARLON AMI, MARLOPON A, ANIODAC DSN25** and **SOLFODAC DBC-60.**

The LAS salts are obtained by neutralisation of the corresponding sulphonic acid. The chain length distribution of the parent n-alkylbenzene is as follows:

$C_9$ < 1 %, $C_{10}$ 8–16 %, $C_{11}$ 26–38 %, $C_{12}$ 26–38 %, $C_{13}$ 15–27 %, $C_{14}$ < 1 %

Weight %, measured by GC

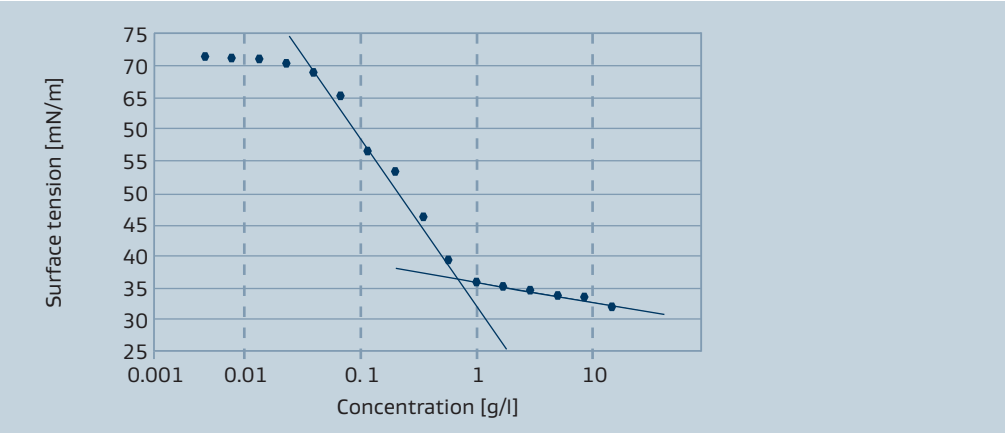
## Product Range Linear Alkyl Benzene Sulphonate Salts (LAS)

Based on a linear $C_{10\text{-}13}$ alkylbenzene sulphonate, the following salts are available.

| Product | Cation | Active content [wt. %] | Appearance at 20 °C | Delivery form |
|---|---|---|---|---|
| MARLON A 315 | Na | 15 ± 0.5 | Liquid, clear | Stainless road tankers |
| MARLON A 323 | Na | 23 ± 0.5 | Liquid, clear | Stainless road tankers |
| MARLON A 325<br>ANIODAC DSN25 | Na | 25 ± 0.5<br>25 ± 1.0 | Liquid, clear | Stainless road tankers |
| MARLON A 330 | Na | 30 ± 0.5 | Flowable paste, inhomogeneous | Containers or stainless road tankers |
| MARLON A 350 | Na | 50 ± 0.5 | Flowable paste, inhomogeneous | Drums, containers or stainless road tankers |
| MARLON A 360<br>SOLFODAC DBL-60 | Na | 60 ± 0.5<br>54.5–56.5 | Flowable paste, inhomogeneous | Stainless road tankers |
| MARLON A 365 | Na | 65 ± 1 | Flowable paste, inhomogeneous | Drums |
| MARLON A 375 | Na | 75 ± 1 | Viscous paste, inhomogeneous | Drums |
| MARLON AMI 80 | MIPA | 75–78 | Liquid, clear | Drums, containers or stainless road tankers |
| MARLOPON AT 50 | TEA | 51–53 | Liquid, clear | Containers or stainless road tankers |
| MARLON ARL | Na | 79 ± 1 | White to yellowish powder | PE bags, pallets, big bags |

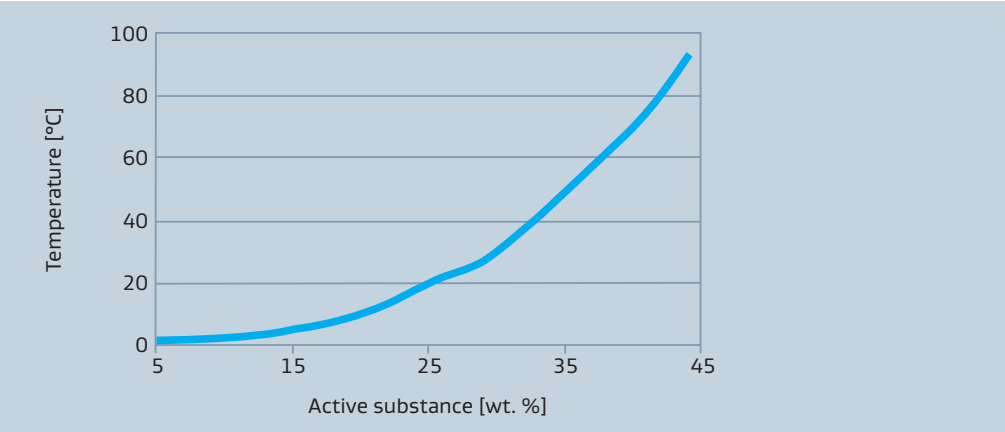
# 2. Physico-Chemical Properties

**Figure 1:**
Surface tension of **MARLON A** according to DIN EN 14370



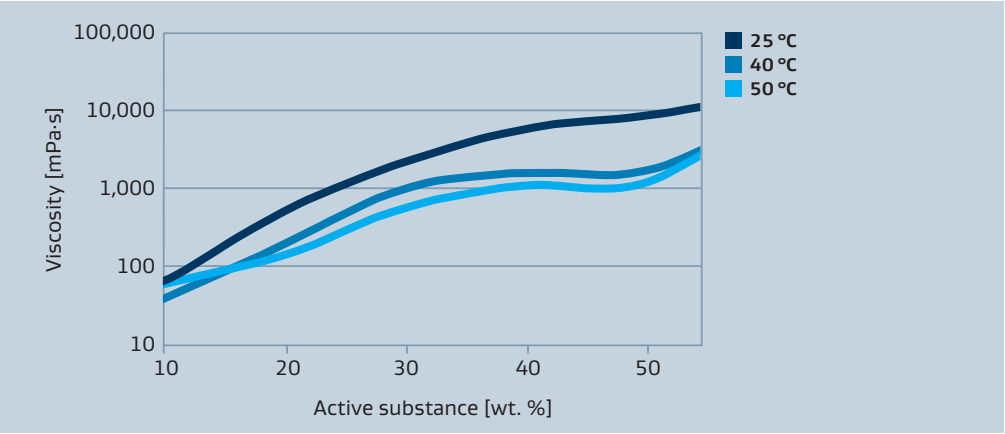

An important characteristic of the surfactants is their ability to decrease the surface tension of aqueous solutions. The critical micelle concentration (CMC) is at 650 mg/l.

**Figure 2:**
Clear melting point of **MARLON A** grades, measured in fully demin. water, according to DGFC – IV 3a.




The solubility behaviour of **MARLON A** in water is characterised by its clear melting point. **MARLON A** solutions up to approximate 25 wt. % are still clear at room temperature. At higher concentrations, the product turns cloudy at room temperature.

**Figure 3:**
Viscosity of **MARLON A** grades at a shear rate of 10 $s^{-1}$, measured with a rotary viscometer with a plate-plate geometry




The viscosity of the aqueous solutions is highly dependent on the **MARLON A** concentration.

# 3. Information on Food Contact Status (FDA)

## MARLON A

Based on the chemical composition, **MARLON A** is in compliance with the regulations and recommendations mentioned below.

**FDA Regulations: Part 21 CFR**

| | |
|---|---|
| §175.105 | Adhesives |
| §175.300 | Resinous and polymeric coatings |
| §175.320 | Resinous and polymeric coatings for polyolefin films |
| §176.170 | Components of paper and paperboard in contact with aqueous and fatty foods |
| §176.180 | Components of paper and paperboard in contact with dry food |
| §176.210 | Defoaming agents used in the manufacture of paper and paperboard |
| §177.1010 | Acrylic and modified acrylic plastics, semi-rigid and rigid |
| §177.2600 | Rubber articles intended for repeated use |
| §178.3400 | Emulsifiers and/or surface active agents |
| §177.1630 | Polyethylene phthalate polymers |

Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food PM/REF: 33801 n-Alkyl (C10-C13) benzenesulphonic acid, SML: 30 mg/kg

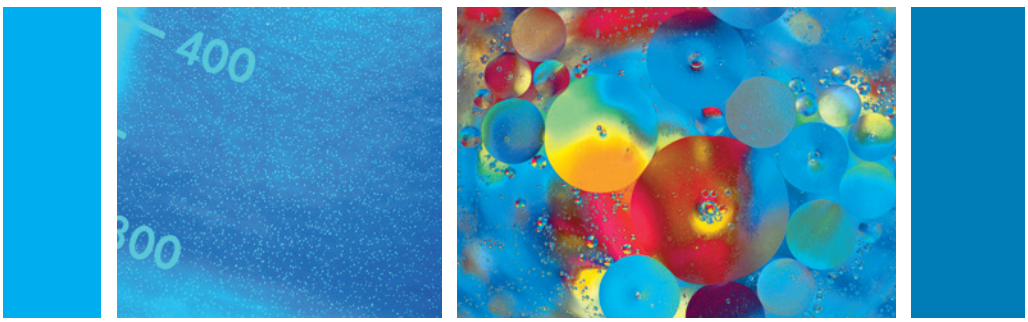
BfR Recommendations on Food Contact Materials
(formerly 'Plastics Recommendations') (Germany):

| | |
|---|---|
| XIV | Plastics dispersions |
| XXI | Commodities based on natural and synthetic rubber |
| XXXVI | Paper and board for food contact |

## MARLOPON AT 50

BfR Recommendations on Food Contact Materials
(formerly 'Plastics Recommendations') (Germany):
Based on the chemical composition, **MARLOPON AT 50** is in compliance with:

| | |
|---|---|
| XIV | Plastics dispersions |
| XXI | Commodities based on natural and synthetic rubber |
| XXXVI | Paper and board for food contact |



# 4. Product Descriptions

## MARLON A

**MARLON A is the sodium salt of a linear alkylbenzene sulphonic acid (MARLON AS 3).**

- LAS, sodium salts
- Active matter 15–75 %*
- Appearance Liquid – pasty*

*available in different concentrations

**MARLON A** is known for its high wetting and foaming capacity as well as its strong detergency to textiles and hard surfaces. Depending on their usage and on the customer's process conditions, **MARLON A** is available in different concentrations.

**MARLON A** is commonly used in combination with nonionic surfactants to increase the detergency performance significantly.

### Property and Application Profile

- Excellent wetting and cleaning efficiency on textiles and hard surfaces
- High foaming capacity
- A controlled foaming profile can be achieved in combination with nonionic surfactants (e.g. MARLIPAL 24 or SAFOL 23 E)
- Strong detergency performance
- Used for cleaners, laundry, inks, paints, coatings and many more applications

REACH No: 01-2119489428-22-0000, CAS-No: 68411-30-3; substance name (REACH/CLP): benzenesulphonic acid, C10-13-alkyl derivs., sodium salts, DID-no. 2001 (vers. 2016)

## MARLON ARL

- LAS, sodium salt
- Active matter 78–80 %
- Appearance White-yellowish powder
- Sodium toluene sulphonate 14 %
- Bulk density 470 g/l

**MARLON ARL** is a free-flowing, yellowish powder with an active content of 78–80 %. **MARLON ARL** contains about 14 % of sodium toluene sulphonate. This additive improves the flowability of the powder and promotes dissolution in water.

The powder is produced on a drum dryer with subsequent milling of the flakes, yielding a product with a broad particle size distribution. Besides its use in detergent applications, e.g. post dosing of laundry powders, sanitary cleaning products and scourcing powders, **MARLON ARL** is also used in the cement industry and in formulations of textile auxiliaries.

REACH No: 01-2119489428-22-0000, CAS-No: 68411-30-3; substance name (REACH/CLP): benzenesulphonic acid, C10-13-alkyl derivs., sodium salts, DID-no. 2001 (vers. 2016)

MARLON A 323 (23 %)

MARLON A 350 (50 %)

MARLON A 375 (75 %)

MARLON ARL (79 %)

## MARLON AMI 80

**MARLON AMI 80 is a water-free monoisopropanolamine salt of alkylbenzene sulphonate (LAS-MIPA).**

- LAS, monoisopropanolamine salt
- Active matter 75–78 %
- Appearance (at 20 °C) Liquid, clear
- pH (2 % in water) 6–8
- Propylene glycol Approx. 22 %
- Water max. 1 %
- Viscosity (at 25 °C) Approx. 2,000 mPa·s

### Property and Application Profile

- High active matter content
- Low viscosity
- High foaming power
- No phase separation and excellent storage stability
- Strong detergency on textile and hard surfaces
- Suitable for high-active/water-free formulation concepts
  - Laundry liquids
  - Monodose units (laundry capsules, etc.)
  - Liquid toilet cleaners with fragrances
  - Ultra-concentrated cleaner formulations (professional cleaning)

REACH No: 01-2119489428-22-0000, CAS-No: 1471311-60-0; substance name (REACH/CLP): benzenesulphonic acid, 4-C10-13-sec-alkyl derivs.-, compd. with 1-aminopropane-2-ol; DID-no. 2001 (LAS) and DID-no. 2581 (propylene glycol), vers. 2016

## MARLOPON AT 50

**MARLOPON AT 50 is the triethanolamine salt of linear alkylbenzene sulphonic acid with 52 % LAS actives.**

- LAS, triethanolamine salt
- Active matter 51–53 %
- Appearance (at 20 °C) Viscous liquid, clear
- pH (2 % in water) 6–8
- Clear melting point ≤ 5 °C
- Water content Approx. 40 %
- Viscosity (at 25 °C) 2,000–3,000 mPa·s

### Property and Application Profile

- Favourable storage behaviour due to very low clear melting point and low viscosity
- Viscosity decreases rapidly at elevated temperatures
- Acts as virtual buffer in the presence of alkalis
- Excellent for car wash formulations, textile auxiliaries and I&I cleaning

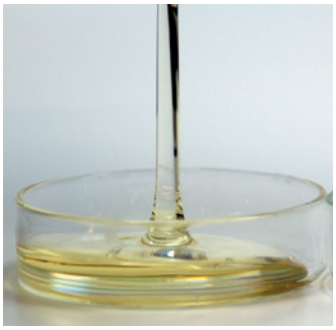
## MARLON AFC 50

**MARLON AFC 50 is a pumpable surfactant blend containing alkylbenzene sulphonate, sodium salt of alkyl polyethylene glycol ether sulfate and alkyl polyethylene glycol ether.**

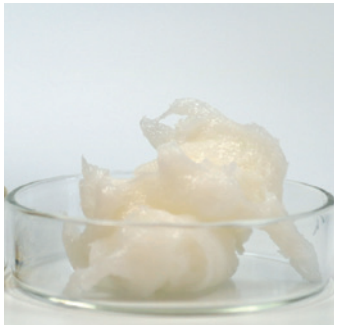
- Active matter 51 %
- Appearance (at 20 °C) Turbid, fluid paste
- pH (2 % in water) 8–10
- Clear melting point (60 % as is) ≤ 15 °C
- Water content Approx. 50 %
- Viscosity at 25 °C (60 % as is) 1,000 mPa·s

### Property and Application Profile

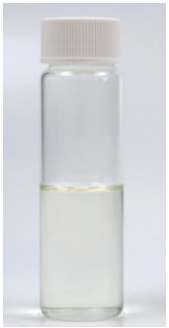
- Concentrated surfactant blend allows easy production of cleaner formulations
- Combination of anionics and nonionics to get excellent cleaning performance



MARLON AMI 80
(75–78%)



MARLON A 375
(75 ± 1 %)



MARLOPON AT 50
(51–53 %)

# At Your Service

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