Technical Data Sheet
Tionox 104

General information

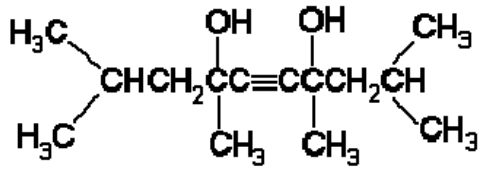
Tionox 104 is a series of unique non-ionic surface active agents, which provide both wetting and defoaming in the same product. Due to the multifunctional properties the **Tionox 104** series provides performance benefits in many application areas, such as paints, inks, adhesives and various other chemical formulations.
The **Tionox 104** series us composed of products, all based on same active material but formulated in different solvent compositions. The active material is designed as **Tionox 104**.

Typical properties Tionox 104:

Composition	2,4,7,9-Tetramethyl-5-decyne-4,7-diol
Appearance	Waxy like, white solids
Melting range, °C	52-56
Density, 25°C (kg/ m^3)	890- 910
Purity (GC)	>> 99,0%
Color, Gardner	< 1

Key properties:

Structural Formula:



Tionox 104 is a non-ionic surfactant.

Pimentsolution GmbH
Jägerstraße 18
4840 Vöcklabruck

Tionox 104 has the multi-functional properties, such as:

- wetting
- defoaming
- dispersing
- flow and levelling

Applied in aqueous formulations, **Tionox 104** can significantly reduce the surface tension, already at low use levels. It shows excellent foam control properties as well as promoting dispersion of solids, improved wetting, decreasing wetting time, and for instance for pigment dispersions and minimizing the viscosity of concentrated polymer solutions, emulsions and dispersions.

Compared to traditional surfactants **Tionox 104** is less water-sensitive.

Main applications generally involve water/oil or water/solid interfaces, where interfacial tension reduction is required. Application examples are in inks, paints, heat sensitive adhesives, fountain solutions, compounded materials for leather, emulsion polymerization, pigment grinding aids, cleaners, agricultural chemicals, shampoo, metalworking fluids, adhesives, paper coatings, pigment dispersions, colorants, latex dipping drilling needs, coatings and the like.

Surface Tension

Tionox 104 demonstrates low dynamic and static surface tension in water. It can lower the system`s dynamic and static surface tension quickly, and move the surface tension to the system surface in order to assure the better wetting.

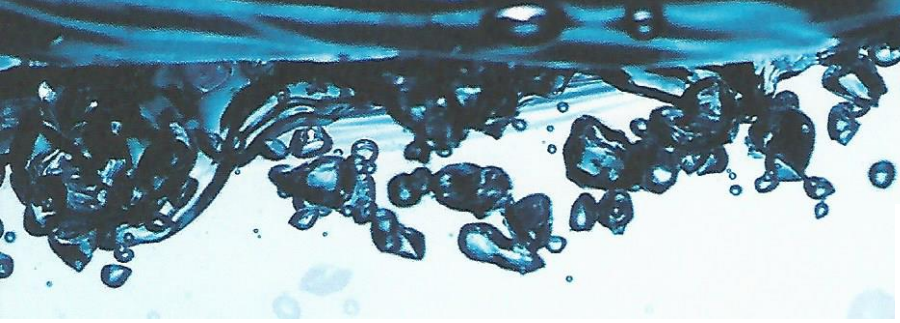
Tionox 104:surface tension (ST)

aq. solutions, mN/m

Concentration %	*Static ST*	*Dynamic ST*
0.01	51.1	55.3
0.05	37.1	39.0
0.1	33.1	36.4

Above table shows that the dynamic surface tension of the Tionox 104 solution is close to the static surface tension.

Pimentsolution GmbH
Jägerstraße 18
4840 Vöcklabruck



Defoaming

The effectiveness of conventional defoaming agents is affected by changes in application temperature conditions. The activity of **Tionox 104** is less temperature related. There is no cloud point to **Tionox 104**, so it can be used in a wider range of temperature. **Tionox 104** has low solubility in water and can be used with traditional defoaming agents together in order to optimize performance.

Applications

- **Coatings**

Tionox 104 can solve many formulation problems, including foaming and wetting. It can lower the dynamic surface tension, which indicates that **Tionox 104** has good wetting properties, also in case of fast created new interfaces.

Industrial maintenance coating

Tionox 104 is used for water-based industrial paint to decrease foam formulation; furthermore it enhances flow and levelling.

- **Printing ink**

Tionox 104 is useful in flexo ink and offset printing. It helps ink penetration into substrate, such as paper, or wetting onto PET. Furthermore it acts as a defoamer.

- **Pen inks**

Tionox 104 keeps the stability of viscosity and dispersing in the ink. It has good dynamic wetting ability to keep the writing smoothly. Because of the good defoaming property, it can defoam when producing and packing. It is much lower water-sensitive then other surfactants.

- **Water-based wood painting**

Tionox 104 is useful in the water-based wood painting. It can solve the problems of foam, bad levelling, low water-sensitive, low adhesion.

- **Fountain solutions**

Tionox 104 protects fountain solution from emulsifying and foaming.

Pimentsolution GmbH
Jägerstraße 18
4840 Vöcklabruck

- **Hot melt pressure sensitive adhesives**

Tionox 104 has better wetting properties which makes the glue on the plastic.

- **Leather chemicals**

Water based leather chemicals requires good wetting agent, especially dynamic wetting property. **Tionox 104** can be used in products, such as leather finishes, shoe polishes.

Use level

Use levels for **Tionox 104** depend on the application but are typically in the range between 0,1 %-2 % by weight of the total formula.

Tionox 104-Series

Tensid	*Konzentration*	*Lösungsmittel*
Tionox 104	100 %	2,4,7,9-tetramethyl-5-decyn-4,7-diol
Tionox 104-A	50 %	2-ethyl-hexanol
Tionox 104-BC	50 %	2-butoxy ethanol
Tionox 104-DPM	50 %	dipropylen glycol monomethyl ether
Tionox 104-E	50 %	ethylene glycol
Tionox 104-H	75 %	ethylene glycol
Tionox 104-PA	50 %	isopropyl alcohol
Tionox 104-PG	50 %	propylene glycol

Handling

Store in typical warehouse conditions, 15-30 °C, to ensure a useful shelf life at least one year.

PIGMENTSOLUTION
Custom designed technology
Pimentsolution GmbH
Jägerstraße 18
4840 Vöcklabruck