

---

Polyethylene Glycol Fatty Acid Ester Type Nonionic Surfactants,  
Exhibiting Excellent Emulsifiability, Dispersibility and Smoothness

---

# IONET D Products

# IONET M Products

## Preface

IONET D and IONET M products are polyethylene glycol fatty acid ester types of nonionic surfactants. IONET D products are fatty acid diesters of polyethylene glycol, and IONET M products are fatty acid monoesters of polyethylene glycol. They are used as emulsifiers, dispersants, leveling agents, and other agents in a wide range of fields such as the metal, cosmetic, pulp and paper, and textile industries.

<Lists of IONET D and IONET M products>

	Product Name *	Active Ingredient	
		Chem./Tech. Name	INCI ** Name
IONET D Products	IONET DL-200	Polyoxyethylene dilaurate	PEG-4 DILAURATE
	IONET DO-400	Polyoxyethylene dioleate	PEG-8 DIOLEATE
	IONET DO-600		PEG-12 DIOLEATE
	IONET DO-1000		PEG-20 DIOLEATE
IONET M Products	IONET MO-200	Polyoxyethylene monooleate	PEG-5 OLEATE
	IONET MO-400		PEG-9 OLEATE
	IONET MO-600		PEG-14 OLEATE
	IONET MS-400	Polyoxyethylene monostearate	PEG-9 STEARATE
	IONET MS-1000		PEG-23 STEARATE

\* The numbers found in the product name indicate the approximate number-average molecular weight of polyethylene glycol groups.

\*\* International Nomenclature of Cosmetic Ingredients

---



---

Typical Property

---



---

1. Typical Properties

Tables 1-a. and 1-b. show the typical properties of IONET D and IONET M products. The values are representative.

Table 1-a. Typical Property

Product Name	Appearance (20 ± 5 °C)	Flash Point (open type)	pH <sup>*1</sup>	HLB	Cloud Point <sup>*2</sup> °C	Melting Point <sup>*3</sup> °C
IONET DL-200	Yellow liquid	230	6.5	6.6	< 20	8
IONET DO-400	Pale straw-colored liquid	300	7.0	8.4	< 20	5
IONET DO-600	Brown liquid	282	6.0	10.4	< 20	20
IONET DO-1000	Pale yellow solid	230	6.5	12.9	35	40
IONET MO-200	Pale straw-colored liquid	156	7.0	8.4	< 20	< 10
IONET MO-400	Pale straw-colored liquid	211	7.0	11.8	< 20	15
IONET MO-600	Pale straw-colored liquid	211	7.0	13.7	53	15
IONET MS-400	Pale yellow solid	253	7.0	11.9	< 20	28
IONET MS-1000	Pale yellow solid	220	6.5	15.7	> 100	41

\*1 Measured using a 1 wt % aqueous solution.

\*2 Measured using a 2 wt % aqueous solution.

\*3 Each melting point is not clear because these products are composed of more than one compound.

Table 1-b. Typical Property

Product Name	Surface Tension mN/m	Penetrating Property s	Foam Height mm		Solubility *		
			Immediately	After 5 min	Water	Methanol	Liquid Paraffin
IONET DL-200	–	–	13	12	C	A	A
IONET DO-400	34.9	> 300	14	13	C	A	A
IONET DO-600	36.2	> 300	17	16	B	A	A – B
IONET DO-1000	37.8	> 300	88	72	A	A – B	B – C
IONET MO-200	–	> 300	–	–	C	A	A – B
IONET MO-400	35.3	230	29	26	B	A	A – B
IONET MO-600	36.3	93	58	57	A – B	A	A – B
IONET MS-400	33.9	> 300	21	20	C	A – B	B – C
IONET MS-1000	40.0	> 300	63	58	B	A	C

\* A: completely dissolved      B: mostly dissolved      C: slightly dissolved, or dispersed

Testing Methods:

Surface tension

Each aqueous surfactant solution containing 1 wt % active ingredient described above was adjusted to 30 °C, and the surface tension was measured with a Wilhelmy-type automatic surface tension analyzer.

Penetrating property

A degreased cotton canvas (size: 15×15 mm) was placed on the surface of 200 mL of aqueous surfactant solution containing 0.5 wt % active ingredient (adjusted to 30 °C). The time required for the canvas to begin to sink was measured in seconds. The shorter the time, the higher the penetrating property.

Foam height

Each aqueous surfactant solution containing 0.5 wt % active ingredient described above was adjusted to 30 °C. Then, according to the Ross-Miles method, the foam height was measured immediately after being generated and 5 min later again.

---

---

Application

---

---

### 1. Cosmetic Industry

IONET D and IONET M products are suitable for hair conditioners, creams, lotions, etc.  
In addition, the lower HLB products are applicable as W/O (water-in-oil) type emulsifiers, and the higher HLB products are applicable as O/W (oil-in-water) type emulsifiers.

Formula 1 for hair conditioners:	wt %
IONET MS-400:	0.5
CATION S * <sup>1</sup> :	3.0
TG-C * <sup>2</sup> :	6.0
Glycerin:	3.0
Perfume:	Proper quantity
Colorant:	Proper quantity
Water:	Balance
<hr/>	
Total:	100.0

\*1 Stearyldimethylbenzylammonium chloride

\*2 Glyceryl monostearate

Formula 2 for hair conditioners:	wt %
IONET MS-400:	1.0
LEBON TM-16 * <sup>3</sup> :	10.0
Glycerin:	5.0
Perfume:	Proper quantity
Colorant:	Proper quantity
Water:	Balance
<hr/>	
Total:	100.0

\*3 Cetyltrimethylammonium chloride

### 2. Metal Industry

These products can be used as cleaning and degreasing agents for metals, oiliness improvers for metal working oil, and emulsifiers

Formula for cleaning and degreasing agents:	wt %
Kerosene:	94.0
IONET MO-200:	5.0
SANMORIN OT-70 * <sup>4</sup> :	1.0
<hr/>	
Total:	100.0

\*4 Di-2-ethylhexylsulfosuccinate sodium salt (penetrating agent)

Formula for metal working oil:	wt %
Mineral oil:	70.0
IONET MO-600:	7.5
IONET S-80 * <sup>5</sup> :	15.0
Oleic acid:	4.5
Triethanolamine:	3.0
<hr/>	
Total:	100.0

\*5 Sorbitan monooleate

Formula for emulsion type cleaner:	wt %
Kerosene:	85.0
IONET MO-400:	5.0
Triethanolamine oleate:	10.0
<hr/>	
Total:	100.0

### 3. Textile Industry

These products can be used as various raw materials for spin finish in fiber forming processes, spinning processes, etc. because they exhibit excellent emulsifiability with mineral oil, vegetable oil, etc. and impart smoothness to fabrics.

### 4. Synthetic Resins Industry

These products can be used as emulsifiers of paraffin wax. Furthermore, they can be used as an emulsifier for emulsion polymerization because they have an effect on the emulsification of monomers.

Formula for emulsifiers of paraffin wax:	wt %
Paraffin wax:	25.0
IONET MO-600:	10.0
Water:	65.0
<hr/>	
Total:	100.0

### 5. Others

These products have been widely used in other industries by taking advantage of their good emulsifiability with mineral oil, wax, etc.

For example, IONET DO-1000, which exhibits an excellent emulsifiability with animal and vegetable oil, has been used as a finishing agent for synthetic leather.

Formula for finishing agents for synthetic leather:	wt %
Beef tallow:	85.0
IONET DO-1000:	15.0
<hr/>	
Total:	100.0

Important :

Before handling these products, refer to the Safety Data Sheet for recommended protective equipment, and detailed precautionary and hazards information.

---

*This brochure has been prepared solely for information purposes. Sanyo Chemical Industries, Ltd. extends no warranties and makes no representations as to the accuracy or completeness of the information contained herein, and assumes no responsibility regarding the suitability of this information for any intended purposes or for any consequences of using this information. Any product information in this brochure is without obligation and commitment, and is subject to change at any time without prior notice. Consequently anyone acting on information contained in this brochure does so entirely at his/her own risk. In particular, final determination of suitability of any material described in this brochure, including patent liability for intended applications, is the sole responsibility of the user. Such materials may present unknown health hazards and should be used with caution. Although certain hazards may be described in this brochure, Sanyo Chemical Industries, Ltd. cannot guarantee that these are the only hazards that exist.*

---

For detailed information, please contact below.

Head Office & Research Laboratory of Sanyo Chemical Industries, Ltd.

Address: 11-1, Ikkyo Nomoto-cho, Higashiyama-ku, Kyoto 605-0995, Japan

Tel: +81-75-541-4311 Fax: +81-75-551-2557



Tokyo Branch Office of Sanyo Chemical Industries, Ltd.

E-mail: [sanyoproduct@sanyo-chemical.group](mailto:sanyoproduct@sanyo-chemical.group)

Address: 24th Fl., Hibiya Fort Tower, 1-1-1, Nishi-shimbashi, Minato-ku, Tokyo 105-0003, Japan

Tel: +81-3-3500-3411 Fax: +81-3-3500-3412

URL <https://www.sanyo-chemical.co.jp/eng>

---

B742311