



**Orange Oil & d-Limonene Emulsifier System**

Facilitates easy formulation of clear liquid micro-emulsions

**E-Muls O** - is a revolutionary surfactant system designed to facilitate the simple formulation of water-based d-Limonene or Orange Oil fluid micro-emulsions (Oil in Water) of exceptional clarity and stability. Due to the sensitive nature surrounding the formation of clear and stable micro-emulsions E-Muls O is intended to be used as the single and only surfactant in the finished product. Solvent based micro-emulsions are amongst the most powerful and effective cleaning and de-greasing systems and as such there is no need nor point in attempting to add any further components to your finished product - attempting to do so will usually result in a de-stabilisation and consequential loss of performance of the finished emulsion!

**Note:** Although naturally derived, Orange Oil & d-Limonene are common Allergens, many people are sensitive to contact and will mostly present with a reddening of the skin along with an associated burning sensation. Effects are usually not severe or harmful.

**E-Muls O is:**

- Safe & simple to use.
  - All in One Detergent and Emulsifier system.
  - Safe and environmentally acceptable.
  - Produces powerful de-greaser systems at near neutral pH.
- Does not contain Formaldehyde.

**Chemical Identification & Physical properties**

Active Ingredients:	Anionic & Nonionic Surfactants & Solvent
Active content:	100%
Appearance:	Amber, transparent fluid
pH (as manufactured):	9.0 - 10.0
Odour:	Amine
S.G. (at 20°C):	0.98 - 0.99 g/ml
Stability in formulation:	Stable at pH 7.5 - 11.0
Shelf Life as supplied:	At least 1 year at ambient conditions.

This data does not constitute a specification - please see current "Certificate of Analysis". For further data please also request a copy of the MSDS (Material Safety Data Sheet)



**Directions for Use**

E-Muls O is simply blended to the Oil phase (Orange Oil or d-Limonene) at a ratio of 1.5 to1 (that is 1.5 parts of E-muls O to 1 part of Oil, e.g.- 15kg E-muls O mixed with 10kg Orange Oil). After blending the two products together until a homogenous blend occurs, this oil phase can simply be added to the water phase, under continuous and thorough stirring, until a clear and uniform product results. Total active content of your formula is simply determined by the actual amount of Oil phase added to the water phase - calculated as a percentage; Orange Oil/d-Limonene content is then simply calculated as 40% of the total Oil phase.

Properties:	up to 25% active	(1-10% Orange Oil)	- Thin liquid.
	25 - 40% active	(10-16% Orange Oil)	- Viscous
	40 - 60% active	(16-24% Orange Oil)	- Gel

**Packaging**

**E-Muls O is available in:**  
 25 Kg HDPE blowpack  
 200 Kg HDPE blowpack  
 1000 Kg IBC (Flowbin)

**Disclaimer / Non-warranty**

This product has been subjected to limited stability tests and has been shown to perform well. However formulators should establish their own long term stability and functionality tests. The information contained herein is to our best knowledge true and accurate, but since the conditions of use are beyond our control, Ecwamix Chemical Systems cc. disclaims any liability in connection with the use of this product and/or information. Warranty extends only as far as to the replacement of material shipped if not compliant with the specification as set out in the attached "Certificate of Analysis" and within the expiry period of the said product. All recommendations or suggestions are made without guarantee. It is good practice to conduct one's own safety/stability tests on all final Formulations prior to marketing.





### BLENDING INSTRUCTIONS

#### The EASY way to Produce Transparent, Liquid Micro-Emulsion Environmentally-Safe Cleaning Products & Degreasers :

**STEP 1:** In Tank A, blend 1 Part Orange Oil /d-Limonene with 1.5 Parts **Ecwa-Muls O** : (OIL PHASE)

**STEP 2:** In Tank B, add the Water portion (including preservative, chelates, etc.), and Stir until fully Dissolved. (WATER PHASE)

**STEP 3:** Now add the Blend in Tank A(OIL PHASE) to the Water(Tank B), with moderate to fast stirring. Once fully dissolved, a Clear Emulsion is formed.

**THUS** : BLEND 1 PART to 1.5 PARTS Ratio of any amount of Orange Oil / d-Limonene to **Ecwa-Muls O** , for example:

**ORANGE OIL: (1 PART) x Ecwa-Muls O (1.5 PARTS) +WATER = FINISHED d-LIMONENE PRODUCT**

2%	3%	95%	- Fluid
3%	4.5%	92.5%	- Fluid
5%	7.5%	87.5%	- Fluid
7%	10.5%	82.5%	- Fluid
10%	15%	75%	- Fluid
15%	22.5%	62.5%	- Thicker Liquid
20%	30%	50%	- Gel

**NOTE: It is recommended that one should add to the Water Phase( Tank B):**

1. **Preservative – EcwaCide IT** : A formaldehyde-free alternative @ 0.1%.g
2. **Tetrasodium EDTA** @ 0.1% will help to prevent any future discolouration of your product due to Iron content in the water.

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## Guideline Formulations

All formulations on this page are simply blended together, in the order given, until uniformity and clarity are attained.

***(Blend A)***

**d-Limonene Concentrate**

Order	Product	% Use
1	<b>E-Muls O</b>	60.0%
2	d-Limonene	40.0%
		100.0%

***(Blend B)***

**Orange Oil Concentrate**

Order	Product	% Use
1	<b>E-Muls O</b>	60.0%
2	Orange Oil	40.0%
		100.0%

The above formulations create a blend that is infinitely soluble in water. It can either be sold as a water dilutable concentrate, or used as stock solution for the production of many differing varieties of water-based d-Limonene/Orange Oil cleaners and degreasers - as per the examples below:

**2% d-Limonene Cleaner**

(5% Total Activity)

Order	Product	% Use
1	Water	94.9%
2	Preservative	0.1%
3	Blend A	5.0%
		100.0%

**4% Orange Oil Cleaner**

(10% Total Activity)

Order	Product	% Use
1	Water	89.9%
2	Preservative	0.1%
3	Blend B	10.0%
		100.0%

**5% d-Limonene Cleaner**

(12.5% Total Activity)

Order	Product	% Use
1	Water	87.4%
2	Preservative	0.1%
3	Blend A	12.5%
		100.0%

**8% Orange Oil Cleaner**

(20% Total Activity)

Order	Product	% Use
1	Water	79.9%
2	Preservative	0.1%
3	Blend B	20.0%
		100.0%

**10% d-Limonene Cleaner**

(25% Total Activity)

Order	Product	% Use
1	Water	74.9%
2	Preservative	0.1%
3	Blend A	25.0%
		100.0%

**12% Orange Oil Cleaner**

(30% Total Activity)

Order	Product	% Use
1	Water	69.9%
2	Preservative	0.1%
3	Blend B	30.0%
		100.0%

**16% d-Limonene Cleaner**

(40% Total Activity)

Order	Product	% Use
1	Water	59.9%
2	Preservative	0.1%
3	Blend A	40.0%
		100.0%

**20% Orange Oil Cleaner**

(50% Total Activity)

Order	Product	% Use
1	Water	49.9%
2	Preservative	0.1%
3	Blend B	50.0%
		100.0%