

## **PELEMOL® D5R-V**

(INCI: Propanediol Dicaprylate/Caprates (and) Diisostearyl Malate)

**PELEMOL® D5R-V** has been developed as an effective 100% vegetable derived replacement for Cyclomethicone D<sub>5</sub>. **PELEMOL® D5R-V** is composed of a scientifically chosen blend of **PELEMOL® P-810** (Propanediol Dicaprylate/Caprates) and **PELEMOL® DISM-V** (100% Vegetable Derived Diisostearyl Malate) to achieve identical flow, spreadability, initial feel, softness and cushion on rub-in that is associated with Cyclomethicone D<sub>5</sub>.

The product has virtually identical solubility characteristics and, in addition, the refractive index for **PELEMOL® D5R-V** (1.4435) is higher than that (1.3895) for Cyclomethicone D<sub>5</sub> resulting in **PELEMOL® D5R-V** creating a more glossy appearance on skin.

### **Applications for PELEMOL® D5R-V encompass:**

- Antiperspirants
- Deodorants
- Hair Sprays
- Cleansing Creams
- Skin Creams, Lotions and Stick Products
- Bath Oils
- Suntan and Shaving Products
- Make-up
- Perfumes
- Colognes
- Pre-Shaves

Three formulations were evaluated in which PELEMOL D5R-V was substituted for Cyclomethicone D<sub>5</sub> on a 1:1 basis with excellent comparative results. The comparative formulations are described in this Phenomenon.

- Sunscreen Spray Milk
- Light Body Lotion
- Moisturizing Skin Cream

**PELEMOL® D5R-V** is REACH pre-registered and is suitable as a 1:1 replacement for Cyclomethicone D<sub>5</sub>.

Trade Name	<b>PELEMOL® D5R-V</b>
INCI	Propanediol Dicaprylate/Caprates (and) Diisostearyl Malate
CAS #	1118558-49-8 , 67763-18-2

**TYPICAL PROPERTIES**  
(Not To Be Taken As Specifications)

Appearance @ 25°C	Clear Liquid
Color (Gardner)	2
Acid Value, mg KOH/g	1
Saponification Value , mg KOH/gm	310
Odor	Characteristic
Refractive Index	1.4435
Specific Gravity	0.9212
Viscosity, cps. Brookfield-LVT-sp.1/60 rpm	12

**SOLUBILITY**

	<b>PELEMOL® D5R-V</b>	Cyclopentasiloxane
Water	i	i
Propylene Glycol	i	i
Ethanol 200 Proof	m	m
Mineral Oil	m	m
Isododecane	m	m
Isopropyl Myristate	m	m
Castor Oil	m	d
Cyclomethicone	m	m
Dimethicone	s	m
Isononyl Isononanoate	m	m
Pentaerythrityl Tetraethylhexanoate	m	m

i=insoluble    m=miscible (all %s)    s=soluble (@ 5%)

**SAFETY**

<b>*RIPT</b> Study (50 human subjects) conclusions follow:	
SKIN IRRITATION	NON-PRIMARY IRRITANT
SKIN SENSITIZATION	NON-PRIMARY SENSITIZER

**PELEMOL® D5R-V** can be considered for use in hypoallergenic products.

\* Studies conducted by AMA Labs., 216 Congers Rd. New City, NY 10956

## FORMULATIONS

### SUNSCREEN SPRAY MILK (COLD PROCESS)

	ARL-16-31-A	ARL-16-31-B
	%	%
Phase A		
Water	18.0	18.0
<b>PECOSIL PS-112 *</b>	4.0	4.0
<b>PHOENOMULSE 100 *</b>	45.0	5.0
Phase B		
<b>PELEMOL D5R-V *</b>	20.0	--
Cyclopentasiloxane (D-5)	--	20.0
Octinoxate (Ethylhexyl Methoxy Cinnamate)	7.5	7.5
Octisalate ( Ethylhexyl Salicylate)	5.0	5.0
Microkill COS **	0.5	0.5
<b>Total</b>	<b>100</b>	<b>100</b>

\* Phoenix Chemical, Inc.

\*\* Arch Chemical

**PROCEDURE:** Mix Phase A @ 600-700 rpm on prop-mixer for 10 minutes. Add preblended Phase B to Phase A with mixing for 10 minutes. Homogenize at 2000 rpm for 5-10 min. on Ross or Silverson Homogenizer.

The following table gives comparisons:

Formulations	Sunscreen	Spray Milk
Prepn. Reference #	ARL-16-31-A	ARL-16-31-B
<b>Properties:</b>		
<b>Appearance</b>	Milky thin emulsion	Milky thin emulsion
<b>Stability RT, Fresh</b>	Very Good	Very Good
<b>Stability RT, One Week</b>	None to Negligible Surface Oil Fine globules	Negligible Surface Oil Slightly Larger globules
<b>Centrifuge Test, 10 min/ 1000 rpm.</b>	Very Good No separation or creaming	Very Good No separation or creaming
<b>Viscosity, Brookfield, LVT, cps. Spindle 1/ 30 &amp; 60 rpm</b>	12 -14 cps.	12 -14 cps

## FORMULATIONS

### LIGHT BODY LOTION (COLD PROCESS )

	ARL-16-32-A	ARL-16-32-B
Phase A		
Water	49	49
<b>PECOSIL PS-112 *</b>	4	4
Carbopol 934 ** ( 2% aq. Solution)	25	25
Phase B		
Triethanolamine,99%	1	1
Phase C		
<b>PELEMOL D5R-V *</b>	20	--
Cyclopentasiloxane (D-5)	--	20
Phase D		
Microkill COS ***	1	1
Total	100	100

\* PHOENIX CHEMICAL INC.

\*\* Noveon

\*\*\* Arch Chemical

**PROCEDURE:** Charge Water. Add PECOSIL PS-112 . Mix and dissolve. Add Carbopol solution and mix. Some particulates are visible. Stir well @ 400-500 rpm. Add Phase B to Phase A. Stir well. All particulates of Carbopol are fully hydrated and thickened clear gelled mass is formed. Prop mix @ 400-500 rpm. Add Phase C with good mixing @ 500 rpm. Slowly increase mixing to 1000 rpm on prop mixer. Add Phased D with good mixing.

The following table gives comparisons

Formulations	Light Body Lotion	
	ARL-16-32-A	ARL-16-32-B
Prepn. Reference #		
Properties:		
Appearance	Cream, Whitish Opaque	Cream Opaque Translucent
Stability RT, Fresh	Very Good	Very Good
Stability RT, One Week	Very Good	Very Good
Centrifuge Test,		
10 min/ 1000 rpm.	Very Good	Very Good
	No separation	No separation
	No Creaming	No Creaming
Viscosity, Brookfield, LVT, cps.		
Spindle 4/ rpm		
6 rpm	22000	20,000
12 rpm	13000	11500
30 rpm	6800	6200
60 rpm	4200	3700

## Moisturizing Body Cream/ Skin Cream

	ARL-16-33-A	ARL-16-33-B
Phase A		
Water	64.70	64.70
Glycerine	4.0	4.0
Disodium EDTA	0.05	0.05
Xanthan Gum (Keltrol CG-T/CP Kelco)	0.25	0.25
Phase B		
<b>PELEMOL GTIS</b> * (Triisostearin)	5.0	5.0
<b>PELEMOL GMB</b> * (Glyceryl Monobehenate)	5.0	5.0
<b>PHOENOXOL T</b> * (Cetearyl Alcohol & Steareth-30 & Ceteth-10 )	5.0	5.0
<b>PELEMOL D5R-V</b>	15.0	--
Cyclopentasiloxane (D-5)	--	15.0
Phase C		
Microkill COS (Arch Chemical )	1.0	1.0
Total	100	100
* PHOENIX CHEMICAL, INC.		

**PROCEDURE:** Charge Water. Add Disodium EDTA and dissolve. Disperse Xanthan Gum in Glycerin to wet the polymer thoroughly. Add this mixture of Glycerine and Xanthan Gum to the Water-EDTA mixture. Mix well @ 500-600 rpm. Allow the gum to hydrate. Heat to 70-75 C. Mix Phase B separately and bring to 75-80 C. Add Phase B to Phase A with mixing at 500-600 rpm. Increase mixing to 700-750 rpm and continue mixing. Cool to 40C with mixing. Add Phase C to Phase AB. Mix well. Cool to 30 C.

The following table gives comparisons

	<b>Moisturizing Skin Cream</b>	
<b>Formulations</b>	<b>ARL-16-33-A</b>	<b>ARL-16-33-B</b>
<b>Prepn. Reference #</b>		
<b>Properties:</b>		
<b>Appearance</b>	Cream	Cream
<b>Stability RT, Fresh</b>	Very Good	Very Good
<b>Stability RT, One Week</b>	Very Good	Very Good
<b>Centrifuge Test,</b>		
<b>10 min/ 1000 rpm.</b>	Not run. Very Viscous Cream	Not run. Very Viscous Cream
<b>Viscosity, Brookfield, LVT, cps.</b>		
<b>Spindle 4/ rpm</b>		
<b>6 rpm</b>	19000	17000
<b>12 rpm</b>	11500	11500
<b>30 rpm</b>	7000	7200
<b>60 rpm</b>	5000	5100

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