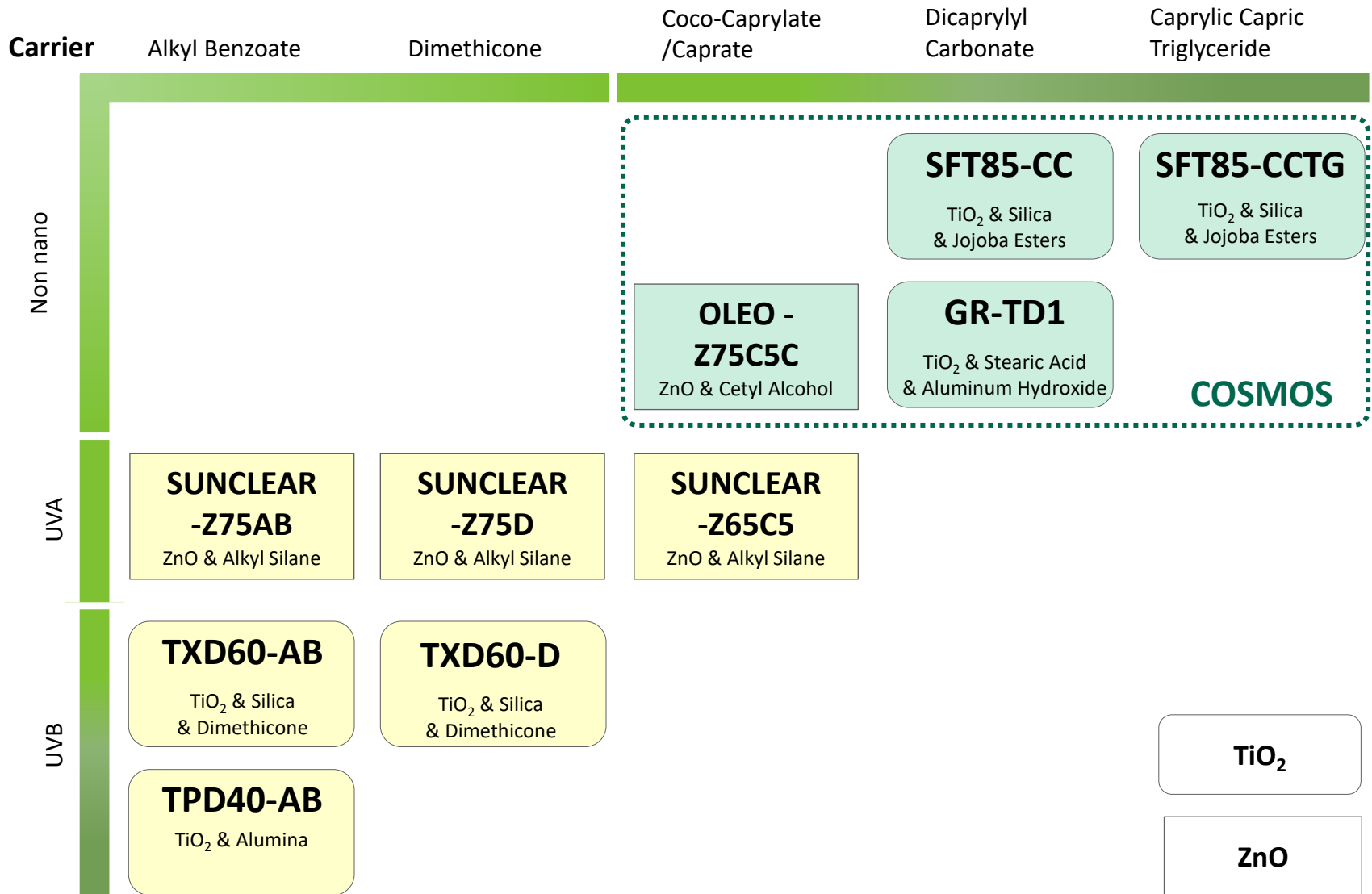


# TiO<sub>2</sub> & ZnO Dispersions

**SUNJIN BEAUTY SCIENCE**  
**AUG. 2020**

# TiO<sub>2</sub> & ZnO Dispersions



# TiO<sub>2</sub> Dispersion Overview

	TPD40-AB	TXD60-D	TXD60-AB	SFT85-CCTG	SFT85-CC	GR-TD1
Carrier	Alkyl Benzoate	Dimethicone	Alkyl Benzoate	Caprylic Capric Triglyceride	Dicaprylyl Carbonate	Dicaprylyl Carbonate
Net TiO <sub>2</sub> %	35%	48%	56.5%	48%	48%	30%
TiO <sub>2</sub> coating	Alumina	Silica & Dimethicone	Silica & Dimethicone	Silica & Jojoba Esters	Silica & Jojoba Esters	Aluminum Hydroxide & Stearic Acid
Dispersing agent	Polyhydroxy stearic acid	PEG-10 Dimethicone	Polyhydroxy stearic acid	Polyhydroxy stearic acid	Polyhydroxy stearic acid	Polyglyceryl-3 Diisostearate
Critical wavelength	364nm	385.8	380.5	388.2	387.4	384.3
Remarks	The most Transparent	SCCS grade TX-85 used	SCCS grade TX-85 used	EWG COSMOS RSPO	EWG COSMOS RSPO	EWG COSMOS RSPO

# ZnO Dispersion Overview

	SUNCLEAR-Z75AB	SUNCLEAR-Z75D	SUNCLEAR-Z65C5	OLEO-Z75C5C
Carrier	Alkyl Benzoate	Dimethicone	Coco-Caprylate /Caprate	Coco-Caprylate /Caprate
Net ZnO %	76%	72.5%	60%	72%
Crystal size	50nm	50nm	50nm	200nm
Surface treatment	Triethoxycaprylyl silane	Triethoxycaprylyl silane	Triethoxycaprylyl silane	Cetyl Alcohol
Dispersing agent	Polyhydroxy stearic Acid	PEG-10 Dimethicone	Polyhydroxy stearic Acid	Polyglyceryl-6 polyhydroxystearate & Polyglyceryl-6 Polyricinoleate
Critical wavelength	377.9	378.3	379.2	383.8
Remarks	SCCS grade SUNZnO-NAS used	SCCS grade SUNZnO-NAS used	SCCS grade SUNZnO-NAS used	Non-nano EWG COSMOS RSPO

# TPD40-AB

The most transparent  
 $\text{TiO}_2$  dispersion  
in the world



# 1. Transparency

The most transparent  
TiO<sub>2</sub> dispersion  
in the world

**TPD40-AB:** C12-C15 Alkyl Benzoate & Titanium dioxide &  
Aluminum Stearate & Polyhydroxystearic Acid & Alumina

**Nano**

**SUNJIN**

Net TiO<sub>2</sub>: 35%



**Dispersion "C":** C12-C15 Alkyl Benzoate & Titanium dioxide  
& Aluminum Stearate & Polyhydroxystearic Acid & Alumina

**Nano**

**Company "C"**

Net TiO<sub>2</sub>: 35%



W: White Index  
Higher White index means  
less transparency

# Nano TiO<sub>2</sub> in Alkyl Benzoate

TPD40-AB provides better transparency on skin than any other grade of TiO<sub>2</sub> currently available

	TPD40-AB
Carrier	C12-15 Alkyl Benzoate
Solid %	45%
Net TiO <sub>2</sub> %	35%
TiO <sub>2</sub> coating	Alumina
Dispersing agent	Polyhydroxy stearic acid
Non Nano	-
Comply with European and American regulations	😊
SPF/PFA Critical Wavelength	4.44 364nm
ECOCERT certified	-
Alumina Free	-

## Key Features

1. Nano TiO<sub>2</sub> dispersion with the best transparency
2. High SPF
3. **Incorporated in oil phase to make O/W and W/O(W/S) formula**
  - No need to have 2 different kinds of dispersions to make O/W or W/O
  - simple inventory management

# High SPF by in vivo

## Test Formula

TPD40-AB 20% @ O/W sun cream

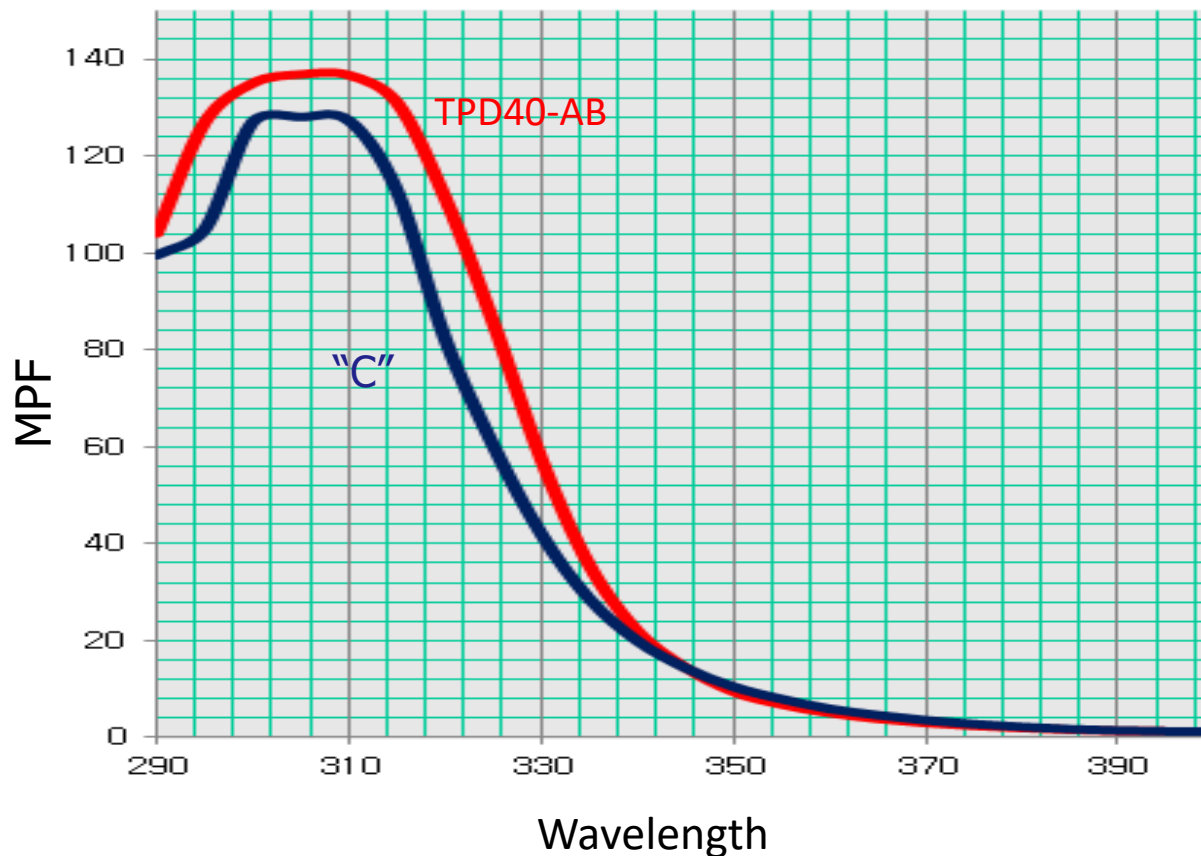
Part	Trade Name	%	%
A	D.I-Water	49.7	49.7
	P.G	4.0	4.0
	Carbopol 940 2%	8.0	8.0
B	Arlacel 60	0.5	0.5
	Tween 60	2.7	2.7
	Kalcohol 6870	1.0	1.0
	TCG-M	8.0	8.0
	Myristic Acid	2.5	2.5
	Arlacel 165	2.0	2.0
C	TPD40-AB	20.0	-
	Benchmark "C"	-	20.0
D	TEA	0.2	0.2
	Sepiplus 400	0.5	0.5
E	Phenoxyethanol	0.8	0.8
	Fragrance	0.15	0.15
In vivo SPF		19	16



Test Result	TPD40-AB	Benchmark "C"
In vivo SPF	<b>19</b>	<b>16</b>
In vitro SPF	15.23	10.95
In vitro UVA PF	3.9	3.6
SPF / UVA PF	=19/3.9 =4.87	=16/3.6 =4.44
C.W	368.5	363.3



## 2. High SPF by in vitro test



20% of Tested Products @ O/W sun cream

# SFT-85AB

Do you want  
Non Nano  
but not necessarily  
ECOCERT?



# SFT-85AB, Nano Free

Used TiO<sub>2</sub> in making SFT-85AB is T80AS

So SFT-85AB inherits all of the virtues of T80 series

	SFT85-AB
Carrier	Alkyl Benzoate
Solid %	60%
Net TiO <sub>2</sub> %	48%
TiO <sub>2</sub> coating	Silica / Triethoxy caprylylsilane
Dispersing agent	Polyhydroxy stearic acid
Non-Nano	☺ <b>T-80AS USED</b>
EU UVA Protection	☺
SPF/PFA ≤3.0 C.W. ≥370nm	<b>1.62 ≤ 3.0</b> <b>377nm</b>
ECOCERT	-
Alumina Free	☺

Non Nano TiO<sub>2</sub> dispersion in Alkyl Benzoate has 6 Benefits...

1. Non Nano
2. UVA/UVB < 3.0
3. Critical Wavelength > 370nm
4. UVB protection as good as 15nm TiO<sub>2</sub>
5. UVA protection better than 40nm ZnO
6. No Alumina
7. Transparency

# Tested Samples

T-80AS from SUNJIN  
used to make SFT-85AB



**SFT-85AB:** Titanium dioxide & C12-C15 Alkyl Benzoate & Polyhydroxystearic Acid & Triethoxy caprylylsilane & Silica

**Non Nano  
No Alumina  
SUNJIN  
Net TiO<sub>2</sub>: 48%**

**Dispersion “X”:** Titanium dioxide & C12-C15 Alkyl Benzoate & Polyhydroxystearic Acid & Stearic Acid & Alumina

**Non Nano  
Company “C”  
Net TiO<sub>2</sub>: 48%**

**Dispersion “C”:** C12-C15 Alkyl Benzoate & Titanium dioxide & Aluminum Stearate & Polyhydroxystearic Acid & Alumina

**Nano  
Company “C”  
Net TiO<sub>2</sub>: 35%**

# Tested Formula & Test Result

20% of Tested Products  
@ O/W sun cream

	Trade Name	%
A	D.I-Water	50.15
	P.G	4.0
	Carbopol 940 2%	8.0
B	Arlacel 60	0.5
	Tween 60	2.7
	Kalcohol 6870	1.0
	TCG-M	8.0
	Myristic Acid	2.5
	Arlacel 165	2.0
C	TEA	0.2
D	SFT85-AB vs. Dispersion X vs. Dispersion C	20.0
E	Phenoxyethanol	0.8
	Fragrance	0.15

	Non Nano	Nano	
Test Result	SFT85-AB	"X" "C"	
in vivo SPF	25	21 16	
in vitro SPF	33.29	25.62 10.95	
in vitro UVA PF	15.47	15.05 3.6	
SPF / UVA PF	=25/15.57 =1.62	=21/15.05 =1.40	=16/3 =4.44
C.W	377	381 363.3	

UVA/UVB < 3.0

Critical Wavelength > 370nm

# SFT85-CC & SFT85-CCTG

Do you want  
ECOCERT Sun Care  
And...not oily  
not sticky one?



# ECOCERT Dispersion Overview

	SFT85-CCTG	SFT85-CC
Carrier	Caprylic Capric Triglyceride	Dicaprylyl Carbonate
Solid %	60%	60%
Net TiO <sub>2</sub> %	48%	48%
TiO <sub>2</sub> coating	Silica / Jojoba Esters	Silica / Jojoba Esters
Dispersing agent	Polyhydroxy stearic acid	Polyhydroxy stearic acid
Non-Nano	☺ <b>T-80JJ USED</b>	☺ <b>T-80JJ USED</b>
EU UVA Protection	☺	☺
SPF/PFA $\leq 3.0$ C.W. $\geq 370\text{nm}$	<b>1.58 <math>\leq</math> 3.0</b> <b>377nm</b>	<b>1.58 <math>\leq</math> 3.0</b> <b>377nm</b>
ECOCERT	☺	☺
Alumina Free	☺	☺

Cetiol-CC(Dicaprylyl Carbonate) is an innovative, fast spreading, dry emollient that can significantly improve the sensory performance of the final formulation, therefore often used as a silicone oil alternative. It smoothes the skin, leaving a velvety sensation, and is highly compatible with many different skin types. Its ability to dissolve crystalline UV filters and to disperse pigments makes it particularly suitable for sun care products