# TEGOLON® 12-10
# TEGOLON® 12-20

Polyamide-12 Powders for Beauty Care

- Lowest water absorption of all commercially available polyamides
- Very good resistance to fats, oils, salt solutions, and many other solvents
- Reduces shine in emulsions and sun screen formulations with a high oil or UV filter content
- Optimal fine particle size grade for use in color cosmetics

Personal Care

**INCI names (CTFA names)**

TEGOLON® 12-10 Nylon-12
TEGOLON® 12-20 Nylon-12

| Chemical and physical properties (not part of specifications) | TEGOLON® 12-10 | TEGOLON® 12-20 |
|---|---|---|
| Form | powder | powder |
| Water absorption (ISO 62)<br>100°C, saturation (%)<br>23°C, 96% RH (%)<br>23°C, 50% RH (%) | <br>1.93<br>1.33<br>0.52 | |
| Oil number linseed oil<br>ISO 787-5 (ml/100g)<br>ISO 787-5 (g/100g) | <br>90<br>84 | <br>85<br>79 |

## Properties

TEGOLON® products are polyamide-12 fine powders manufactured via a patented process that is unique in the world. These products are specifically developed for cosmetics.
Thanks to the special precipitation process, TEGOLON® powders have a microporous surface that can be adjusted precisely. The particle size, particle size distribution, and porosity are adjusted to the demands of the different fields of cosmetic applications.
Both TEGOLON® types are identical in composition and are free of stabilizers, but differ only in particle size distribution and porosity. The particle size distributions of TEGOLON® products are shown in Figure 1.

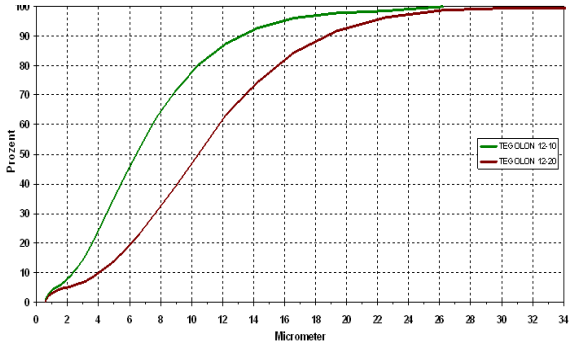


**Fig. 1: TEGOLON® particle size distribution measured with the Malvern Mastersizer**

## Preparation

In foundations we recommend to incorporate TEGOLON® together with other powders.

When Methyl Methacrylate Crosspolymer is used, this should be added and stirred to clarity before the addition of TEGOLON®.

## Application

TEGOLON® 12-10 is preferably used in powder preparations, foundations, nail polishes and aerosols. Specifically in color cosmetics, the trend is directing towards finer particle sizes.
TEGOLON® 12-20 can be used in skin care and sun care creams and lotions as well as in lipsticks.

In powder based foundations or eye shadows, TEGOLON® can be incorporated at 80-82°C when the formulation only contains an oil phase.

When preparing emulsions, it is recommended to add TEGOLON® below 40°C to the combined phases and homogenize for a short time at low shear rates.

Application of high shear rates at temperatures above 40°C increases the risk of agglomeration.

TEGOLON® powders, with their pH of approximately 6, are adapted to the human skin. Their microporous surface adsorbs active ingredients in the formulation and releases them after the cream is applied to the skin. Because of their finely divided structure, these powders provide a good skin feel, while smoothing the skin and reducing shine.

TEGOLON® powders also influence the flow behavior and viscosity of product, and help to reduce separation in emulsions.

Make-up preparations are intended to provide care as well as cover existing wrinkles and skin blemishes. TEGOLON® powders, as ingredient in formulations of loose and pressed facial powder, make-up, and blusher, are eminently suited for supporting the mechanisms of action of these preparations. Thanks to the particle size distribution and the fineness of the powders, uneven areas are smoothed out, leaving the skin looking smoother. The porosity of TEGOLON® powders supports pigment adsorption and allows perspiration and sebaceous oil to be adsorbed, reducing undesired shine. In addition TEGOLON® facilitates the compaction of facial powders.

Lipsticks, eye shadow, and masking sticks contain not only fats, oils, and pigments but also a large number of additives such as vitamins, and perfumes. All of these ingredients are adsorbed on the surface of TEGOLON® powders and released evenly again on application. Consequently, by increasing viscosity, the powders contribute to the strength of the sticks and increase their stability, as they prevent fats and oils from being exuded.

## Recommended usage concentration

1.0 - 6.0 % of the different TEGOLON® types.

## Packaging

375 kg pallet (25 x 15 kg carton)

## Handling and Storage

The products should be stored in rooms protected from moisture, heat, or cold. A storage temperature of 30 °C should not be exceeded. Shelf life is at least two years after the production date, provided the packaging is not damaged or opened. The product should be processed by the first in, first out principle.

## Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in case of accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

**Guide Line Formulations**

| **High Solid Cream-to-Powder Foundation CC 1079** | |
|---|---|
| **Phase A** | |
| TEGOSOFT® OP (Ethylhexyl Palmitate) | 14.60 % |
| TEGOSOFT® CO (Cetyl Ethylhexanoate) | 5.00 % |
| Phenyl Trimethicone | 14.00 % |
| Copernicia Cerifera | 4.70 % |
| ABIL® Wax 2434 (Stearoxy Dimethicone) | 4.00 % |
| TEGOSOFT® SH (Stearyl Heptanoate) | 2.85 % |
| PVP/Eicosene Copolymer | 1.00 % |
| **Phase B** | |
| Methyl Methacrylate Crosspolymer (Covabead LH85, Sensient Technologies) | 6.00 % |
| AEROSIL® 200 (Silica, Evonik Degussa ) | 0.25 % |
| Zinc Oxide | 7.00 % |
| Talc, Dimethicone, Trimethylsiloxysilicate (Talc Covasil 4.05, Sensient Technologies) | 9.50 % |
| Acrylates Copolymer (Polytrap Q5-6603, Amcol Health & Beauty Solutions) | 2.00 % |
| TEGOLON® 12-10 or TEGOLON® 12-20 | 2.00 % |
| Aluminum Starch Octenylsuccinate | 9.50 % |
| Iron Oxides | 3.10 % |
| Titanium Dioxide, Dimethicone (Titanium Dioxide W.877 3.05, Sensient Technologies) | 14.50 % |

**Preparation**:

1. Melt phase A at 80 – 82 °C and stir until a clear phase is obtained.
2. Add Methyl Methacrylate Crosspolymer, stir and homogenise for at least 10 min.
3. Add the remaining ingredients of phase B one after the other under stirring.
4. Stir and homogenise for 30 min. at 80 – 82 °C.
5. Pour into suitable packaging.

| **Compact Cream Rouge CCR 040** | |
|---|---|
| **Phase A** | |
| ABIL® WE 09 (Polyglyceryl-4 Isostearate; Cetyl PEG/ PPG-10/1 Dimethicone; Hexyl Laurate) | 2.10 % |
| TEGOSOFT® liquid (Cetearyl Ethylhexanoate) | 13.65 % |
| TEGOSOFT® P (Isopropyl Palmitate) | 11.00 % |
| TEGOSOFT® CT (Caprylic/Capric Triglyceride) | 11.25 % |
| TEGOSOFT® SH (Stearyl Heptanoate) | 3.00 % |
| Jojoba (Buxus Chinensis) Oil | 3.75 % |
| Petrolatum | 2.75 % |
| Cyclopentasiloxane | 2.80 % |
| Carnauba Wax 2442 L (Carnauba Wax) | 1.65 % |
| Candelilla Wax 2039 Y (Candelilla Wax) | 2.20 % |
| C18-36 Acid Triglyceride | 2.10 % |
| **Phase B** | |
| TEGOLON® 12-10 | 1.85 % |
| Methyl Methacrylate Crosspolymer (Covabead LH85, Sensient Technologies) | 13.65 % |
| Talc, Dimethicone, Trimethylsiloxysilicate (Talc Covasil 4.05, Sensient Technologies) | 9.10 % |
| Soft-Tex White C47-7756 (Titanium Dioxide; CI 77891, Sun Chemical) | 2.95 % |
| Soft-Tex Red C33-7775 (Iron Oxides) | 0.50 % |
| Soft-Tex Yellow C33-7773 (Iron Oxides) | 0.60 % |
| Soft-Tex Brown C33-7715 (Iron Oxides) | 1.05 % |
| Soft-Tex D&C Red No. 30 Al (D&C Red No. 30 Aluminum Lake) | 0.45 % |
| Sicopearl Fantastico Ruby (CI 77941; Silica, BASF) | 13.60 % |

**Preparation**:

1. Combine all ingredients of phase A and heat to 80 – 82 °C under stirring. Avoid evaporation of Cyclomethicone.
2. Add Polymethylmethacrylates, stir and homogenise for at least 10 min.
3. Add the remaining ingredients of phase B one after the other under stirring.
4. Stir and homogenise for 30 min. at 80 – 82 °C.
5. Adjust the loss of Cyclomethicone.
6. Pour into packaging.

| Volatile Silicone Cream Eye Shadow Stick<br>CES 020 | |
|---|---|
| **Phase A** | |
| TEGOSOFT® APM<br>(PPG-3 Myristyl Ether) | 7.00 % |
| ABIL® WE 09<br>(Polyglyceryl-4 Isostearate; Cetyl PEG/PPG-10/1 Dimethicone; Hexyl Laurate) | 1.00 % |
| Cyclomethicone | 38.50 % |
| Dimethicone (20 mPas) | 2.50 % |
| Cera Alba | 4.50 % |
| Carnauba Wax | 4.00 % |
| A-C Copolymer 400<br>(Ethylene / VA Copolymer, Honeywell Spec. Chemicals) | 2.50 % |
| Ozokerite | 5.80 % |
| C18-36 Acid Triglyceride | 2.00 % |
| Liquipar Oil<br>(Isobutylparaben; Isopropylparaben; Butylparaben) | 0.20 % |
| **Phase B** | |
| TEGOLON® 12-10 | 2.00 % |
| Titanium Dioxide | 5.00 % |
| Chromium Oxide Green | 10.00 % |
| CI 77491; Aluminum Powder; Silica | 5.00 % |
| CI 77891; CI 77288; Mica | 10.00 % |

**Preparation:**

1. Combine all ingredients of phase A and heat to 80-82°C under stirring.
2. Add the ingredients of phase B one after the other under stirring.
3. Stir and homogenise for 30 min. at 80-82°C.
4. Adjust the loss of Cyclomethicone.
5. Pour into packaging.

| O/W Shine Control Face Cream<br>MK 60/05-3 | | |
|---|---|---|
| **Phase A** | | |
| AXOL® C 62 | (Glyceryl Stearate Citrate) | 1.50 % |
| TEGO® Alkanol 1618 | (Cetearyl Alcohol) | 3.00 % |
| TEGIN® M Pellets | (Glyceryl Stearate) | 2.00 % |
| TEGOSOFT® DC | (Decyl Cocoate) | 9.50 % |
| TEGOSOFT® CT<br>(Caprylic/Capric Triglyceride) | | 9.50 % |
| TEGOSOFT® CR | (Cetyl Ricinoleate) | 4.00 % |
| Ceramide III B | (Ceramide NP) | 1.00 % |
| TEGOLON® 12-10 | | 2.00 % |
| Tocopheryl Acetate | | 0.50 % |
| **Phase B** | | |
| Water | | 61.00 % |
| Glycerin | | 5.00 % |
| **Phase C** | | |
| TEGO® Carbomer 134 | (Carbomer) | 0.20 % |
| TEGOSOFT® DC | (Decyl Cocoate) | 0.80 % |
| **Phase D** | | |
| Sodium Hydroxide (10 % in water) | | q.s. |
| **Phase Z** | | |
| Preservative, Parfum | | q.s. |

**Preparation:**

1. Heat phase A and B separately to approx. 80°C.
2. Add phase A to phase B with stirring[1)].
3. Homogenise.
4. Cool with gentle stirring to approx. 60°C and add phase C.
5. Homogenise for a short time.
6. Cool with gentle stirring and add phase D below 40°C.

[1)] Important: If phase A has to be charged into the vessel first, phase B must be added **without stirring**.

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