



# Easy Clean Coating ECC-7000

## For Ceramic and Glass Substrates

### Introduction

3M™ Easy Clean Coating ECC-7000 is an air-dried, clear, colorless treatment for ceramic tiles, sanitary fixtures and glass surfaces that can be used to provide “Easy to Clean” performance. This fluoropolymer will react with the surface to create a low surface energy coating that is not easily wetted with liquids. The treatment is stable and cannot be removed except by harsh cleaners or reagents, such as abrasive cleaners.

ECC-7000 coatings are typically applied from a very diluted solution containing about 1.0% by weight of product, resulting in a coating thickness of 20 to 100 nm. ECC-7000 coatings can be applied by spray application or dip coating. The treatment provides a hydrophobic surface that allows simple rinsing away of soils and sludge from the surface with no residual surface staining. The treated surface does not change surface, is highly repellent to oils and water and durable to alkaline cleaners and detergents.

### Application

ECC-7000 coatings can be applied to ceramic and glass surfaces at room temperature to provide low surface energy benefits.

#### The treated substrate will have:

##### 1. Surface protection

ECC-7000 coatings can be used for ceramic materials such as sinks, toilets, tiles (not floor tiles), showers tubs and other sanitary fixtures. It may also be used for indoor glass applications such as shower panels and mirrors.

##### 2. Oil- and water-repellency

ECC-7000 coatings can be used to obtain repellency against any liquid having a surface tension greater than about 15 mN/m (dynes/cm). This includes water, oils, ketones, and aromatic and aliphatic hydrocarbons.

##### 3. Easy-to-clean properties

A ECC-7000 coating provides an easy to clean surface, resulting in consumer advantages such as:

- stain resistance
- easy removal of hard water deposits
- no need for aggressive cleaners

Note: “Easy-to-Clean” does not mean the surface is “self-cleaning.”

##### 4. Enhanced lubricity

Soils and liquids tend to “slide off” surfaces treated with an ECC-7000 coating, helping to prevent build-up and extend the time between cleanings.

**3M™ Easy Clean  
Coating ECC-7000**

ECC-7000 can be described as a fluoropolymer solution.

**Typical Physical  
Properties**

Not for  
Specification  
Purposes

| Properties       | ECC-7000                           |
|------------------|------------------------------------|
| Appearance       | Clear colorless liquid. Faint odor |
| Specific gravity | 1.4 kg/l                           |
| Flash point      | Not applicable                     |
| Type             | Nonionic                           |
| Composition      | 10% fluoropolymer / 90% HFE-7200   |

The ECC-7000 coating formulation can be diluted with alcohols, ketones, esters or other solvents to give slightly hazy mixtures.  
ECC-7000 can be diluted with hydrofluoroethers (HFE) to give clear solutions.

All values  
determined at  
25°C and  
1 atmosphere  
unless otherwise  
specified

| Typical Performance Data on Ceramic Materials                            | ECC-7000         |
|--|------------------|
| Initial contact angles (water/hexadecane)                                | 95°-110°/55°-65° |
| Contact angles after abrasion <b>50,000 cycles with WC-eend *cleaner</b> | 80°-95°/45°-50°  |
| <b>40 cycles with Cif**</b>  | 70°-80°/40°-45°  |
| Contact angles after exposure <b>24 hrs in 18% HCl at 20°C</b>           | 90°-95°/50°-55°  |
| <b>16 hrs in 0.1 N NaOH at 20°C</b>                                      | 90°-95°/50°-55°  |

\* "WC-eend cleaner" is a trademark of Bolton Group  
\*\* "Cif" is a trademark of Lever Fabergé

| Typical Performance Data on Glass                                 | ECC-7000           |
|---|--------------------|
| Initial contact angles (water/hexadecane)                         | 100°-120°/ 60°-70° |
| Tilt angle (water)  | 15°-20°            |
| Contact angles after abrasion <b>2000 cycles with brush/water</b> | 100°-110°/50°-60°  |
| <b>4000 cycles with brush/water</b>                               | 90°-100°/50°-60°   |
| Contact angles after exposure <b>24 hrs 18% HCl at 20°C</b>       | 90°-100°/50°-60°   |

**Storage and  
Shelflife**

It is recommended that the ECC-7000 formulation be stored in a closed bottle, away from direct sunlight, in a cool, dry place (temperatures between 10-25°C/50-77°F). Avoid contact with moisture. Shelf life is 1 year from date of 3M manufacture.

**Product Safety  
and Handling**

Before using this product, please read the Material Safety Data Sheet (available through your local 3M representative) and the precautionary information and directions for use on product packaging. Follow all applicable precautions and directions for use.

## For Ceramic and Glass Substrates

### Substrate Preparation

Before treatment the part should be cleaned (using aqueous detergents, acetone or ethanol), in order to remove dust and other contaminations. This cleaning step is not necessary for freshly prepared glass.

The temperature of the ceramic substrate or glass should preferably be 15–30°C (60 – 85°F).

### Coating Solution Preparation

**In a glass, stainless steel or plastic vessel, combine:**

- 980 g or 990 g ethanol for ceramics or glass respectively (use ethanol with less than 0.1% water; can be denatured with alcohols, ethers or ketones)
- Add 10 g or 2 g of 18% HCl for ceramics or glass respectively, mix well
- Add 10 g or 8 g ECC-7000 for ceramics or glass respectively
- Mix well to obtain a slightly hazy solution.

Avoid contamination of any unused portion of the ECC-7000 formulation with water or HCl; if contaminated, the product will become useless.

Use separate sampling utensils (e.g. syringes, pipettes, etc.) for each fluid. This solution is stable for several days.

### Coating Solution Preparation

- Spray the glass part uniformly with a very fine spray of the prepared solution at a pressure of about 2 bar (29 psi). Distance from spray pistol to the substrate should be approximately 10–20 cm (4–8").
- The consumption of the solution should be approximately 30–40 g/m<sup>2</sup> (0.10–0.13 oz/ft<sup>2</sup>) for machine application and about 40–60 g/m<sup>2</sup> (0.13–0.20 oz/ft<sup>2</sup>) for manual application.
- Let the coating dry at room temperature for 10-30 minutes before handling or packaging.
- Check the aesthetics of the treated part; if excess coating is present, clean it off thoroughly with plenty of water. Excess coating can also be removed with ethanol.

It may take up to 48 hours before final performance is achieved.

**Note:** For glass shower doors, the perception that the finished product is “Easy-to-Clean” will be strongest when the glass is treated on both sides. The ECC-7000 coating protects not only against hard water deposits and soap scum but also against oil-based stains.

For detailed information, contact your 3M technical service representative

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