



## Guideline to professional vehicle cleaning formulations



## General about vehicle cleaning

Besides surfactants there are other components in a vehicle cleaning formulation, such as builders, chelating agents and solvents. Some of these products are used to increase the pH and buffer formulation upon the dilution:

*Sodium hydroxide* - a very strong base, strongly enhances grease removal. Corrosive to metals like aluminium and zinc, in excessively high concentrations it may cause damage to car wheels or other light metal car parts. Depending on type of water in the recycling plant, may interact negatively with plant parts, resulting in corrosion.

*Silicates* - sodium metasilicate is one of the most common alkalis on the market. Must not be allowed to dry on glass. Formulations containing silicates need to be thoroughly rinsed. Interacts with polyaluminium chloride (waste water flocculant), resulting in hard abrasive particles that might slowly decline the functionality of the pumps in the recycling plant.

*Amines* - monoethanolamine (MEA) and triethanolamine (TEA) can be used when the two alkalis above need to be avoided. More common in household formulations, they can also be used to neutralize fatty acids to anionic surfactants.

Complexing agents are used for binding to the free metal ions in the water and thus preventing those to interfere with the surfactants. They may also enhance the cleaning effect.

*EDTA* - a very strong complexing agent, widely used in Central and Southern Europe, is often substituted with milder alternatives in the Nordic countries.

*NTA* - widely used in whole Europe, provides good performance by cost.

*IDS* - with no environmental label, this complexing agent is an interesting alternative. However, shows slightly worse properties than EDTA and NTA, and is more expensive.

*Phosphates* - are also good dispersing agents, find their use in both professional and personal care products.

*Citrates, gluconats* - are generally considered to be very weak chelating agents, but also very mild and environmentally friendly.

## Formulations

Different steps in vehicle cleaning desire different types of formulations. Pre-soak, shampoo and rinse aid are some of these different steps.



## Guideline formulations

### High pressure cleaning

One specific type of vehicle cleaning is high pressure or touch-less cleaning. In this type of cleaning the lack of mechanical treatment by brushes should be compensated by the power of the surfactant.

#### Water based high pressure shampoo

|  |         |
|--|---------|
| Berol ENV226   | 10%     |
| Berol R648 (summer time for better traffic film removal) | 2%      |
| TKPP   | 6%      |
| Metasilicate   | 2%      |
| Water  | Balance |
| <i>Dilution: 1:60, 1:80</i>                              |         |

#### Micro emulsion (mainly in winter for asphalt and tar removal)

|                     |         |
|---------------------|---------|
| Berol EVC           | 40%     |
| Na <sub>3</sub> NTA | 4%      |
| Water               | Balance |

For more formulations with Berol EVC, see separate brochure on our web site [www.akzonobel.com/sc](http://www.akzonobel.com/sc)

### Pre-soak

#### Water based 1

|  |         |
|--|---------|
| Berol ENV226, Berol EZ-1 or Berol DGR 81 | 10%     |
| TKPP                                     | 6%      |
| Metasilicate                             | 4%      |
| Water                                    | Balance |
| <i>Dilution: 1:20</i>                    |         |

#### Water based 2

|                     |         |
|---------------------|---------|
| Ethylan 1005        | 4%      |
| Berol R648          | 4%      |
| Na <sub>3</sub> NTA | 3%      |
| Metasilicate        | 1%      |
| NaOH                | 1%      |
| Water               | Balance |

#### Micro-emulsion

|                     |         |
|---------------------|---------|
| Berol EVC           | 40%     |
| Na <sub>3</sub> NTA | 4%      |
| Water               | Balance |

### Shampoo

#### Shampoo 1

|                               |         |
|-------------------------------|---------|
| Berol ENV226                  | 10%     |
| TKPP                          | 6%      |
| Metasilicate                  | 2%      |
| Water                         | Balance |
| <i>Dilution: 1:40 or 1:60</i> |         |

#### Shampoo 2

|                       |         |
|-----------------------|---------|
| Berol EZ-1 or DGR 81  | 10%     |
| TKPP                  | 6%      |
| Metasilicate          | 2%      |
| Water                 | Balance |
| <i>Dilution: 1:20</i> |         |



## Foam Shampoo

### Foam shampoo 1

|              |         |
|--------------|---------|
| Berol ENV226 | 10%     |
| Ampholak YCE | 1%      |
| TKPP         | 6%      |
| Metasilicate | 2%      |
| Water        | Balance |

*Dilution: 1:40 or 1:60*

### Foam shampoo 2

|                      |         |
|----------------------|---------|
| Berol EZ-1 or DGR 81 | 10%     |
| Ampholak YCE         | 1%      |
| TKPP                 | 6%      |
| Metasilicate         | 2%      |
| Water                | Balance |

*Dilution: 1:20*

## Brush Shampoo

### Brush shampoo 1

|              |         |
|--------------|---------|
| Ethylan 1005 | 5%      |
| Berol 260    | 1%      |
| LAS          | 18%     |
| IPA          | 18%     |
| NaOH         | 4%      |
| TEA          | 4%      |
| Water        | Balance |

*Dilution: 1:30 or 1:100*

### Brush shampoo 1

|                     |         |
|---------------------|---------|
| Berol 784           | 25%     |
| Na <sub>3</sub> NTA | 2%      |
| IPA                 | 7%      |
| Water               | Balance |

## Truck cleaner

### Truck cleaner 1 - high foam

|                            |         |
|----------------------------|---------|
| Berol OX 91-6              | 4%      |
| Berol R648                 | 2%      |
| Ampholak YCE               | 2%      |
| NaOH                       | 1-2%    |
| Na <sub>4</sub> EDTA (40%) | 20%     |
| Water                      | Balance |

*Dilution: 1:40, 1:60*

### Truck cleaner 2

|                            |         |
|----------------------------|---------|
| Berol ENV226               | 12%     |
| AG 6206                    | 3%      |
| NaOH                       | 1%      |
| Na <sub>4</sub> EDTA (40%) | 20%     |
| Water                      | Balance |

*Dilution: 1:40, 1:80*

Ampholak<sup>®</sup> Berol<sup>®</sup> and Ethylan<sup>®</sup> are registered trademarks in many countries.

All information concerning these products and/or all suggestions for handling and use contained herein are offered in good faith and believed to be reliable. Akzo Nobel Surface Chemistry AB and its affiliates, however, make no warranty as to the accuracy and/or sufficiency of such information and/or suggestions, as to the products' merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. Nothing contained herein shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of these products for his purposes. The information contained herein supersedes all previously issued bulletins on the subject matter covered. The user may forward, distribute and/or photocopy this document only if unaltered and complete, including all of its headers and footers, and should refrain from any unauthorized use. You may not copy this document to a website.