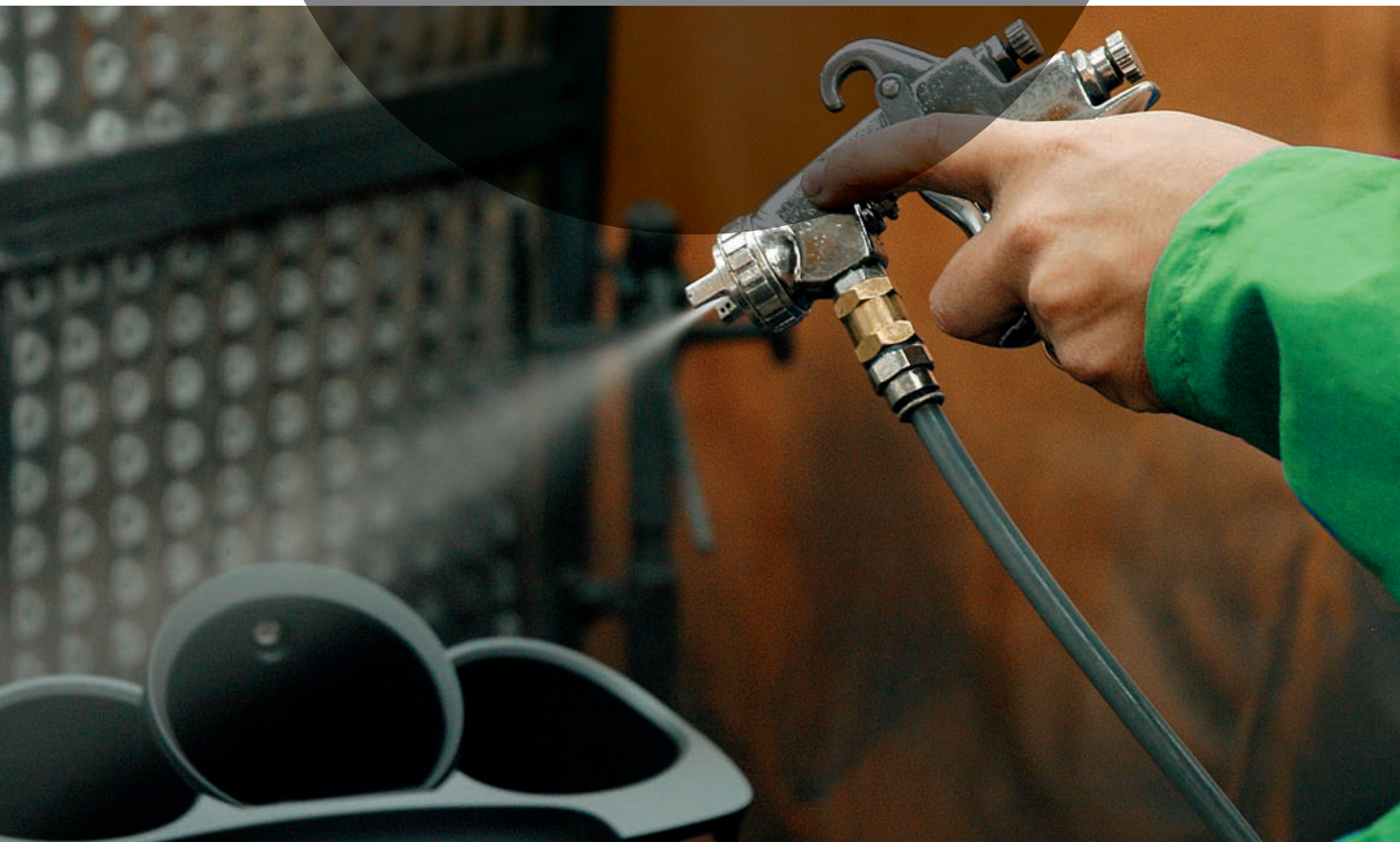




# Polymer emulsions

for industrial applications

Bright future.  
Water-based emulsions.



# Polymer dispersions for industrial applications

|                                | <b>Ecrylic RA 576 H</b>   | <b>Ecrylic RA 633 H</b>  |
|--------------------------------|---|--|
| <b>Type of emulsion</b>        | water-based emulsion of an acrylic-/methacrylic acid ester copolymer  | water-based emulsion of an acrylic-/methacrylic acid ester copolymer   |
| <b>Technical data</b>          |   |  |
| <b>Solid content:</b>          | 42,0 ± 1,0%   | 42,0 ± 1,0%  |
| <b>pH-Value:</b>               | 7,0 - 8,0   | 7,0 - 9,0  |
| <b>Average particle size:</b>  | app. 0,10 µm  | app. 0,10 µm   |
| <b>MFFT:</b>                   | app. 0 °C   | app. 42°C  |
| <b>Viscosity (Brookfield):</b> | 50 - 300 mPas   | 40 - 400 mPas  |
| <b>Spezifikation</b>           | The data for solid content, viscosity and pH-Value are determined by our quality control department. The product is specified by this data.   |  |
| <b>Characteristics</b>         | <ul style="list-style-type: none"> <li>- self-crosslinking</li> <li>- very flexible</li> <li>- outstanding block resistance</li> <li>- good alkali resistance</li> <li>- early water-resistant</li> <li>- low water absorption</li> <li>- wet adhesion</li> <li>- very good adhesion to many substrates</li> <li>- non yellowing</li> </ul> | <ul style="list-style-type: none"> <li>- clear and transparent film</li> <li>- fast drying</li> <li>- high hardness</li> <li>- block resistant</li> <li>- good chemical resistance</li> <li>- very good wood grain enhancement</li> <li>- very good sandability</li> </ul> |
| <b>Application</b>             | very suitable for primers, fillers, top coats   | very suitable for high gloss top coats and as substitute of solvent based alkyds   |

**Note** The information given in this brochure is reliable to the best of our knowledge. It is supposed to serve as a guideline for further processing our product. Due to the many influences in processing, however, no guarantee can be construed.



| <b>Ecrylic RA 635</b>  | <b>Ecrylic RA 646 H</b>  |
|--|--|
| water-based emulsion of an acrylic-/methacrylic acid ester copolymer   | water-based emulsion of an acrylic-/methacrylic acid ester copolymer   |
|  | OH-content: 1,8%   |
| 44%  | 41%  |
| 7,0-9,0  | 7,0 - 8,0  |
| app. 0,10 µm   | app. 0,10 µm   |
| app. 42°C  | app. 42°C  |
| 50-1000 mPas   | 20 - 300 mPas  |
|  |  |
| <ul style="list-style-type: none"> <li>- clear and transparent film</li> <li>- self-crosslinking</li> <li>- good chemical resistance</li> <li>- high hardness</li> <li>- good block resistance</li> <li>- scratch resistant</li> <li>- fast drying</li> <li>- non yellowing</li> </ul> | <ul style="list-style-type: none"> <li>- clear and transparent film</li> <li>- excellent results in 1 and 2 C system</li> <li>- high chemical resistance</li> <li>- block resistance</li> <li>- high hardness</li> <li>- fast drying</li> <li>- scratch resistant</li> <li>- good adhesion on several substrates</li> <li>- excellent sandability</li> <li>- self-crosslinking</li> <li>- non yellowing</li> </ul> |
| very suitable for furniture coatings, diving coatings and high gloss top coatings  | very suitable for high performance 1 and 2 component systems   |



For industrial applications for interior and exterior use, we developed polymer emulsions for protective and for decorative coatings as alternative to the often used solvent based systems. Most of these systems have been under close examination recently. This development is driven by the EU-Directive 2004/42/EG which dictates a drastic decrease of the use of solvent. This can be achieved in different ways. In some areas the solid content has been increased, in other areas new technologies like UV-curing systems are more popular.

Another possibility is the use of water-based systems. Ecronova Polymer GmbH offers such systems for some years now to the paint and coatings industry for various applications. This brochure outlines our products for the industrial coatings.

# Starting formulations

## Ecrylic RA 576 H

### Universal primer, white

|  |                         |                              |               |
|--|-------------------------|------------------------------|---------------|
| <b>1</b>   | <b>Ecrylic RA 576 H</b> | <b>Ecronova Polymer GmbH</b> | <b>23,00</b>  |
| 2  | Butylglycol             |                              | 2,00          |
| 3  | Deuteron ND 953         | Deuteron GmbH                | 0,50          |
| 4  | Edaplan 480             | Münzing Chemie GmbH          | 0,10          |
| 5  | Byk 019                 | Byk Chemie GmbH              | 0,20          |
| 6  | Byk 024                 | Byk Chemie GmbH              | 0,20          |
| 7  | Bentone EW              | Elementis Specialties, Inc.  | 0,50          |
| 8  | Tiona 595               | Cristal Global               | 13,00         |
| 9  | Plastorit 0000          | Luzenac Deutschland GmbH     | 4,50          |
| 10   | Water                   |                              | 3,00          |
| 11   | Talkum IT Extra         | Omya GmbH                    | 14,00         |
| 12   | Byk 420                 | Byk Chemie GmbH              | 0,50          |
| 13   | Water                   |                              | 3,00          |
| pos. 1 - 13 add after each other under stirring,<br>then grinding mill until grinding down to < 20µm |                         |                              |               |
| <b>14</b>  | <b>Ecrylic RA 576 H</b> | <b>Ecronova Polymer GmbH</b> | <b>32,00</b>  |
| 15   | Byk 346                 | Byk Chemie GmbH              | 0,50          |
| 16   | Ascotran H 10           | Ascotec France               | 0,50          |
| 17   | Acrysol RM 825          | Dow Advanced Marterials      | 0,50          |
| 18   | Tego Airex 901 W        | Evonik Industries            | 0,30          |
| 19   | Water                   |                              | 1,70          |
| pos. 19 to adjust the viscosity  |                         |                              |               |
| <b>Total</b>   |                         |                              | <b>100,00</b> |

|                    |              |      |
|--------------------|--------------|------|
| Solid content      |              | 58 % |
| Viscosity DIN 6 mm | after 1 d/rt | 60 s |

### Adhesion after 1 d/rt

|                         |      |
|-------------------------|------|
| ABS                     | GT 0 |
| PA                      | GT 0 |
| PVC                     | GT 0 |
| PS                      | GT 0 |
| Steel (cold rolled)     | GT 0 |
| Steel (stainless steel) | GT 0 |
| Aluminium               | GT 1 |
| Hot galvanized steel    | GT 1 |

GT 0 = best result

# Ecrylic RA 635

## Clear coat, semigloss

|  |                       |                              |               |
|--|-----------------------|------------------------------|---------------|
| <b>1</b>                                   | <b>Ecrylic RA 635</b> | <b>Ecronova Polymer GmbH</b> | <b>85,00</b>  |
| pos. 1 let down                            |                       |                              |               |
| 2  | Water                 |                              | 2,00          |
| 3  | Butylglycol           |                              | 6,00          |
| 4  | Byk 028               | Byk Chemie GmbH              | 0,70          |
| 5  | Acticide MBN          | Thor GmbH                    | 0,20          |
| 6  | Aquaflour 400         | Byk Cera bv.                 | 3,00          |
| pos. 2 - 6 add successively under stirring |                       |                              |               |
| 7  | Water                 |                              | 1,00          |
| 8  | Acrysol RM 825        | Dow Advanced Materials       | 0,20          |
| pos. 7 + 8 mix before addition             |                       |                              |               |
| 9  | Tego Twin 4100        | Evonik Industries            | 0,20          |
| 10   | Water                 |                              | 1,70          |
| pos. 10 to adjust the viscosity            |                       |                              |               |
| <b>Total</b>                               |                       |                              | <b>100,00</b> |
| Viscosity DIN 4mm                          | 1 d/rt                |                              | 35 s          |
| Gloss 60° on bleech                        | 7 d/rt                |                              | 35 E          |
| Pendulum hardness (König)                  | 1 d/rt                |                              | 50 s          |
|  | 7 d/rt                |                              | 90 s          |
|  | 28 d/rt               |                              | 116 s         |



# Starting formulations

## Ecrylic RA 646 H

### Two component white lacquer, high gloss

#### Component A

|   |                         |                              |               |
|---|-------------------------|------------------------------|---------------|
| <b>1</b>  | <b>Ecrylic RA 646 H</b> | <b>Ecronova Polymer GmbH</b> | <b>22,00</b>  |
| 2   | Water                   |                              | 3,80          |
| 3   | Proglyde DMM            | Dow Chemicals                | 3,80          |
| pos. 2 + 3 mix before addition  |                         |                              |               |
| 4   | Edaplan 480             | Münzing Chemie GmbH          | 1,00          |
| 5   | AMP 90                  | Angus Chemie GmbH            | 0,20          |
| 6   | Tego Foamex 810         | Evonik Industries            | 0,30          |
| 7   | Titandioxid R HD-2      | Huntsman International LLC.  | 19,00         |
| 8   | Acrysol RM 825          | Dow Advanced Marterials      | 0,20          |
| pos. 1 - 8 add after each other under stirring,<br>then grinding mill until grinding down to < 15µm |                         |                              |               |
| <b>9</b>  | <b>Ecrylic RA 646 H</b> | <b>Ecronova Polymer GmbH</b> | <b>34,50</b>  |
| 10  | Butylglycol             |                              | 1,00          |
| 11  | Water                   |                              | 1,00          |
| 12  | Acrysol RM 825          | Dow Advanced Marterials      | 0,35          |
| pos. 11 + 12 mix before addition  |                         |                              |               |
| 13  | Tego Foamex 810         | Evonik Industries            | 0,20          |
| 14  | Byk 346                 | Byk Chemie GmbH              | 0,30          |
| 15  | Byk 333                 | Byk Chemie GmbH              | 0,10          |
| 16  | Water                   |                              | 12,25         |
| pos. 16 to adjust the viscosity   |                         |                              |               |
| <b>Total</b>  |                         |                              | <b>100,00</b> |

#### Component B ( 75%ig )

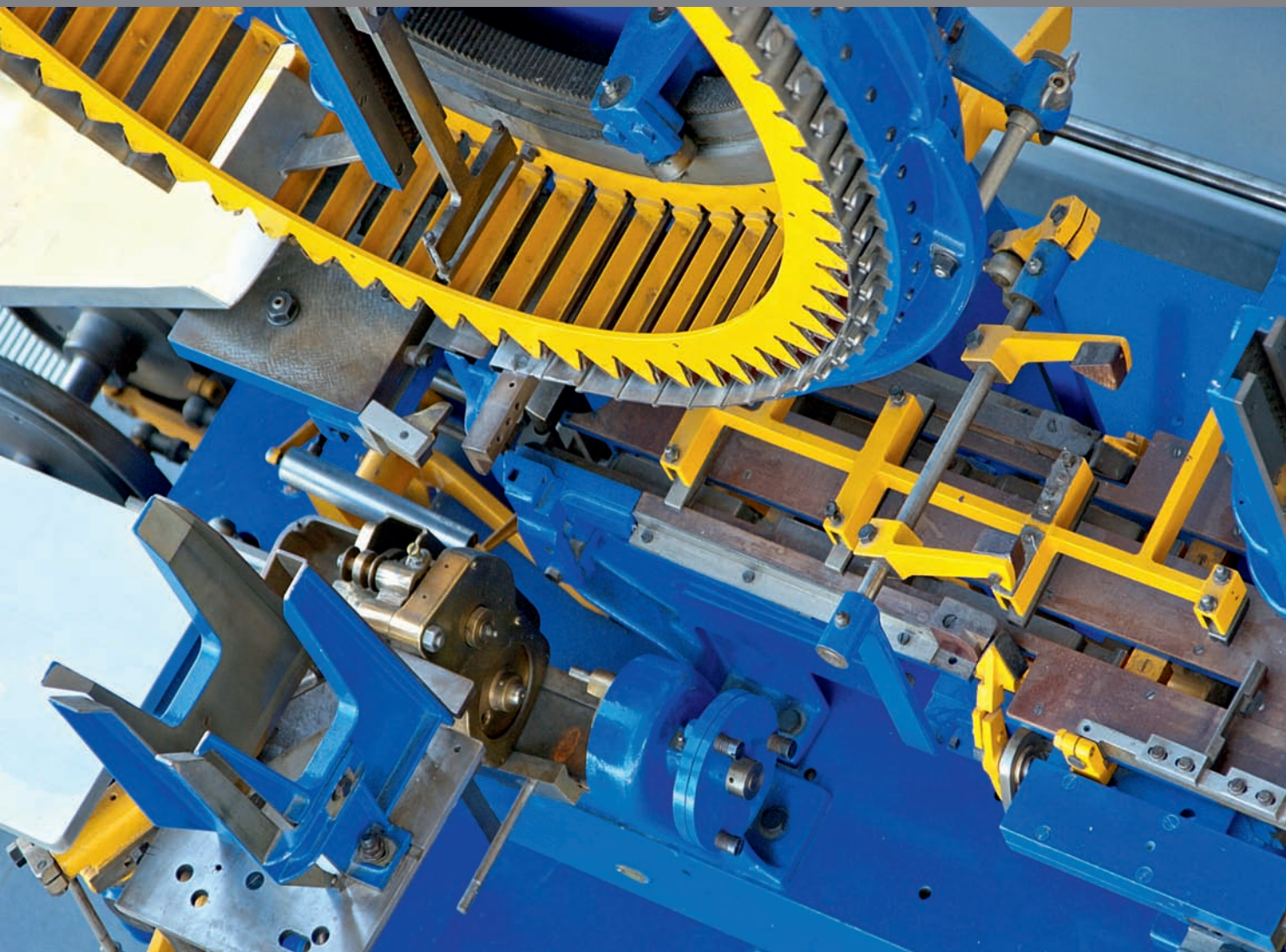
|   |              |                        |              |
|---|--------------|------------------------|--------------|
| 17  | Bayhydur 305 | Bayer Material Science | 9,80         |
| 18  | Butylacetate |                        | 3,20         |
| pos. 17 + 18 mix before addition                              |              |                        |              |
| <b>add component B slowly to component A under high shear</b> |              |                        | <b>13,00</b> |

#### Chemical resistance according to DIN 68861 part 1, group 1A

|               |        | 1 component | 2 component |
|---------------|--------|-------------|-------------|
| Coffee        | 16h/rt | 3           | 3           |
| Ethanol       | 16h/rt | 4           | 5           |
| Water         | 16h/rt | 4           | 5           |
| Ammonia       | 16h/rt | 1           | 5           |
| Cold cleanser | 16h/rt | 3           | 5           |
| Motoroil      | 16h/rt | 5           | 5           |
| White spirit  | 16h/rt | 3           | 4           |
| Diesel        | 16h/rt | 4           | 5           |

5 = excellent

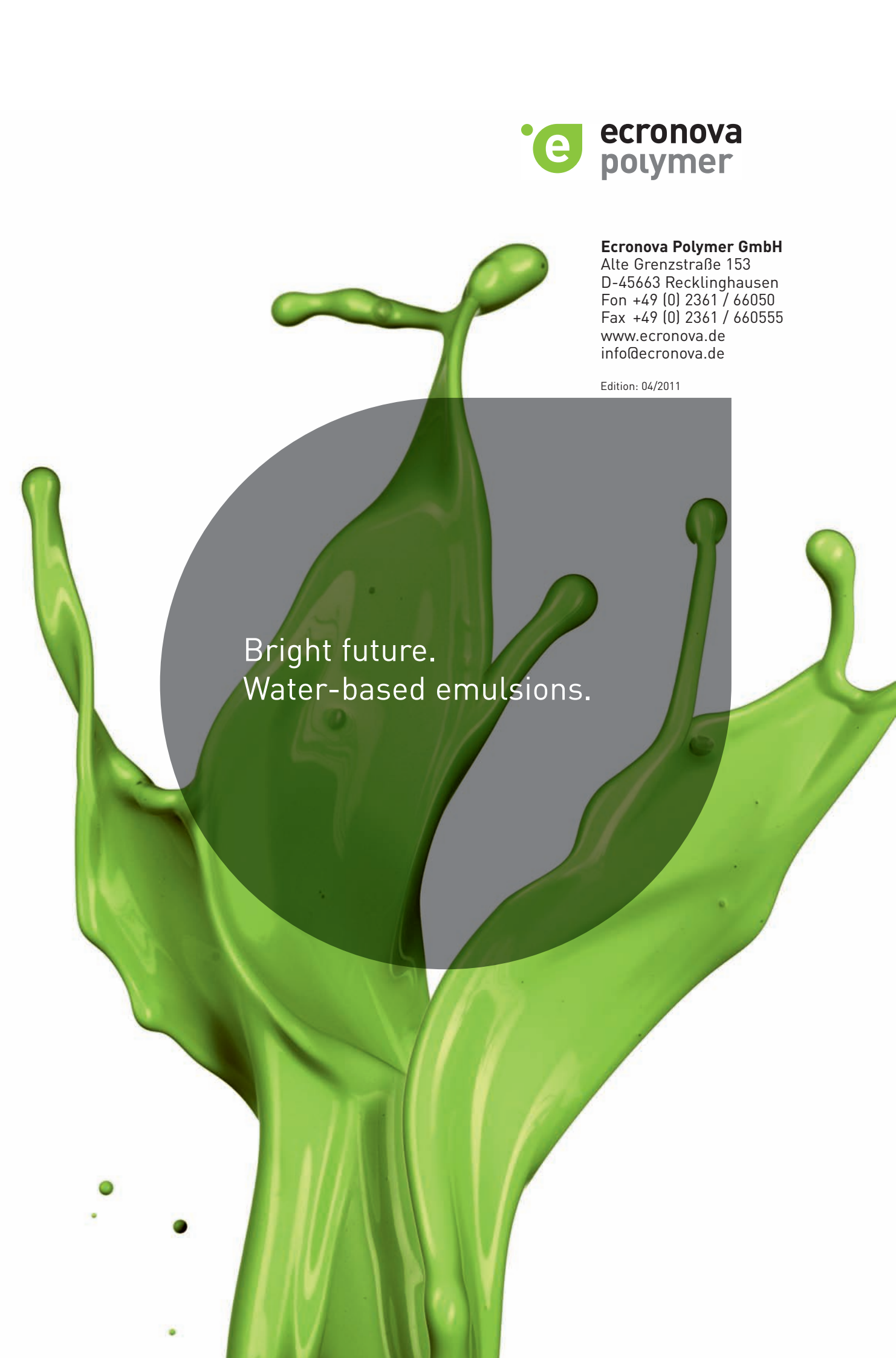
1 = insufficient





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