EUROSTAR 20 digital

Laboratory stirrer designed for simple stirring tasks for quantities up to 15 l (H2O). It automatically adjusts the speed through microprocessor controlled technology within the speed range of 0/30 - 2000 rpm. Safety circuits installed ensures automatic cut-off in an anti-stall or overload conditions. Continuous comparison of shaft speed to desired speed is maintained and variations are adjusted automatically. This guarantees a constant speed even with changes in viscosities of the sample.

- Digital speed display
- Infinitely adjustable speed
- Push-through agitator shafts
- Overload protection
- Short-term overload operation
- Slim casing
- Quiet operation
- Error code display

Accessories: R 1342 Propeller stirrer, 4-bladed, R 1345 Propeller stirrer, 4-bladed, R 1381 Propeller stirrer, 3-bladed, R 1382 Propeller stirrer, 3-bladed, R 1389 (PTFE-coated) Propeller stirrer, 3-bladed, R 1311 Turbine stirrer, R 1312 Turbine stirrer, R 1313 Turbine stirrer, R 1303 Dissolver stirrer, R 1352 Centrifugal stirrer, R 1355 Centrifugal stirrer, R 1330 Anchor stirrer, FK 1 Flexible coupling, R 60 Keyless chuck, R 301 Stirring shaft protection, R 182 Boss head clamp, RH 3 Strap clamp, R 1825 Plate stand, R 1826 Plate stand, R 1827 Plate stand

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**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stirring quantity max. (H2O) [l]</td>
<td>15</td>
</tr>
<tr>
<td>Motor rating input [W]</td>
<td>56</td>
</tr>
<tr>
<td>Motor rating output [W]</td>
<td>44</td>
</tr>
<tr>
<td>Motor principle</td>
<td>Brushless DC</td>
</tr>
<tr>
<td>Speed display</td>
<td>LED</td>
</tr>
<tr>
<td>Speed range [rpm]</td>
<td>0-30 - 2000</td>
</tr>
<tr>
<td>Reversible direction of rotation</td>
<td>no</td>
</tr>
<tr>
<td>Intermittent operation</td>
<td>no</td>
</tr>
<tr>
<td>Viscosity max. [mPas]</td>
<td>10000</td>
</tr>
<tr>
<td>Output max. at stirring shaft [W]</td>
<td>42</td>
</tr>
<tr>
<td>Permissible ON time [%]</td>
<td>100</td>
</tr>
<tr>
<td>Torque max. at stirring shaft [Ncm]</td>
<td>20</td>
</tr>
<tr>
<td>Speed control</td>
<td>stepless</td>
</tr>
<tr>
<td>Setting accuracy speed [±rpm]</td>
<td>1</td>
</tr>
<tr>
<td>deviation of speed measurement n &gt; 300rpm</td>
<td>3</td>
</tr>
<tr>
<td>deviation of speed measurement n &lt; 300rpm</td>
<td>±1</td>
</tr>
<tr>
<td>Stirring element fastening</td>
<td>chuck</td>
</tr>
<tr>
<td>Temperature display</td>
<td>no</td>
</tr>
<tr>
<td>Chuck range min. diameter [mm]</td>
<td>0.5</td>
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<tr>
<td>Chuck range max. diameter [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Hollow shaft, inner diameter [mm]</td>
<td>11</td>
</tr>
<tr>
<td>Hollow shaft (push-through, when stopped)</td>
<td>yes</td>
</tr>
<tr>
<td>Fastening on stand</td>
<td>extension arm</td>
</tr>
<tr>
<td>Extension arm diameter [mm]</td>
<td>16</td>
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<td>Extension arm length [mm]</td>
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<tr>
<td>Torque display</td>
<td>no</td>
</tr>
<tr>
<td>Nominal torque [Nm]</td>
<td>0.2</td>
</tr>
<tr>
<td>Timer</td>
<td>no</td>
</tr>
<tr>
<td>housing material</td>
<td>alu-cast coating / thermoplastic polymer</td>
</tr>
<tr>
<td>clean room qualified</td>
<td>no</td>
</tr>
<tr>
<td>explosion proofed</td>
<td>no</td>
</tr>
<tr>
<td>Dimensions (W x H x D) [mm]</td>
<td>86 x 248 x 208</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>4.4</td>
</tr>
<tr>
<td>Permissible ambient temperature °C</td>
<td>5 - 40</td>
</tr>
<tr>
<td>Permissible relative moisture [%]</td>
<td>80</td>
</tr>
<tr>
<td>Protection class according to DIN EN 60529</td>
<td>IP 40</td>
</tr>
<tr>
<td>RS 232 interface</td>
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</tr>
<tr>
<td>USB interface</td>
<td>no</td>
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<tr>
<td>Analog output</td>
<td>no</td>
</tr>
<tr>
<td>Voltage [V]</td>
<td>230 / 100 - 115 / 100</td>
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<tr>
<td>Frequency [Hz]</td>
<td>50/60</td>
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<tr>
<td>Power input [W]</td>
<td>70</td>
</tr>
<tr>
<td>Ident. No.</td>
<td>0004442001</td>
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</table>
Mechanical, Electronic, Software, Control and Design Engineering… Combining the best of all worlds

Designed to optimize complex stirring applications, IKA® offers the very best in overhead stirrer technology. Our overhead stirrers provide the perfect solution to all of your laboratory stirring and mixing needs, from lower to higher viscosities. IKA® overhead stirrers process stirring quantities up to 200 liters.

Our overhead stirrers stand out because of their indispensable features, which include: electronic safety circuit, push through agitator shaft, digital display, two speed ranges, and the ability to control the rheological changes and monitor all parameters using labworldsoft® software. Additionally, there are several other special features available, such as microprocessor controlled speed technology, removable wireless controller and a digital error display. A broad spectrum of stirring tools is the key to successful mixing! IKA® equipment meets CE standards and fulfils international safety regulations.

Protection class according to DIN EN 60529: IP 40

Protection class according to DIN EN 60529: IP 40
The EUROSTAR digital and control series are conceptually similar; both series feature a speed display and an overload protection. Furthermore, the control version is designed with a removable wireless controller and is equipped with a torque trend display, TFT display, RS 232 and USB interface. In addition, you will be able to update your firmware online by connecting your control device via USB to a computer.
IKA® further advances its mixing technology by offering the first overhead stirrers with wireless technology. Stress-free mixing at your convenience with increased productivity, flexibility and enhanced safety features. Additionally, comes equipped with the new online update function (only control version), your device is always up-to-date.

The wireless controller can be separated from the overhead stirrer. This allows for working in a fume hood or safety cabinet without lifting the protective screen, which in turn helps protect the user from toxic material exposure in addition to preserving sample integrity.
USB interface
to control and document
rheological changes and other parameters
using labworldsoft® software and for
updating your firmware

EUROSTAR 100 | Digital & Control

The only stirrer with clockwise
counter clockwise rotation
for intensive applications and
better mixing results

Laboratory stirrer designed for
highly viscous applications and intensive mixing

2+1 years after registering at
www.ika.com/register

EUROSTAR | 20 high speed digital & 200 control P4

Wireless Controller (WiCo)
Removable wireless controller for easy
and user-friendly operation

Digital display for precise monitoring
of set and actual speeds

TFT Display for better image quality
and easy navigation

Extremely powerful laboratory stirrer
designed with high torque

RS 232 interface for PC connection

USB interface to control and document
rheological changes and other parameters
using labworldsoft® software and for
updating your firmware
### Technical data

- **Electronic Overhead Stirrers**
  - **EUROSTAR 20 digital | 40 digital**
    - **Stirring quantity max. (H2O):**
      - 15 l | 25 l
    - **Max. viscosity:**
      - 10,000 mPas | 30,000 mPas
    - **Motor rating input/output:**
      - 70 / 42 W | 118 / 84 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/30 – 2000 rpm
    - **Max. torque at stirring shaft:**
      - 20 Ncm | 40 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 86 x 208 x 248 mm
    - **Weight:**
      - 4.4 kg
  - **EUROSTAR 60 digital | control**
    - **Stirring quantity max. (H2O):**
      - 100 l
    - **Max. viscosity:**
      - 50,000 mPas
    - **Motor rating input/output:**
      - 176 / 126 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/6 – 2000 rpm
    - **Max. torque at stirring shaft:**
      - 100 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 86 x 208 x 248 mm
    - **Weight:**
      - 4.7 kg
  - **EUROSTAR 200 digital | control**
    - **Stirring quantity max. (H2O):**
      - 100 l
    - **Max. viscosity:**
      - 70,000 mPas
    - **Motor rating input/output:**
      - 130 / 84 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/6 – 400 rpm
    - **Max. torque at stirring shaft:**
      - 300 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 91 x 230 x 379 mm
    - **Weight:**
      - 5.8 kg

- **Mechanical Overhead Stirrers**
  - **RW 20 digital**
    - **Stirring quantity max. (H2O):**
      - 20 l
    - **Max. viscosity:**
      - 10,000 mPas
    - **Motor rating input/output:**
      - 70 / 35 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/30 – 2000 rpm
    - **Max. torque at stirring shaft:**
      - 20 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 86 x 208 x 248 mm
    - **Weight:**
      - 4.4 kg
  - **RW 28 digital**
    - **Stirring quantity max. (H2O):**
      - 80 l
    - **Max. viscosity:**
      - 50,000 mPas
    - **Motor rating input/output:**
      - 220 / 90 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/30 – 2000 rpm
    - **Max. torque at stirring shaft:**
      - 80 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 86 x 208 x 248 mm
    - **Weight:**
      - 4.4 kg
  - **RW 40 digital**
    - **Stirring quantity max. (H2O):**
      - 200 l
    - **Max. viscosity:**
      - 100,000 mPas
    - **Motor rating input/output:**
      - 513 / 370 W
    - **Permissible ON time:**
      - 100%
    - **Speed range (at 50/60 Hz):**
      - 0/30 – 2000 rpm
    - **Max. torque at stirring shaft:**
      - 120 Ncm
    - **Display:**
      - LED
    - **Temperature measuring range:**
      - –10 to 350 °C
    - **Dimensions (W x D x H):**
      - 145 x 358 x 465 mm
    - **Weight:**
      - 16 kg

### Additional Information
- **EUROSTAR 20 digital | 40 digital**
  - **Stirring quantity max. (H2O):**
    - 15 l | 25 l
  - **Max. viscosity:**
    - 10,000 mPas | 30,000 mPas
  - **Motor rating input/output:**
    - 70 / 42 W | 118 / 84 W
  - **Permissible ON time:**
    - 100%
  - **Speed range (at 50/60 Hz):**
    - 0/30 – 2000 rpm
  - **Max. torque at stirring shaft:**
    - 20 Ncm | 40 Ncm
  - **Display:**
    - LED
  - **Temperature measuring range:**
    - –10 to 350 °C
  - **Dimensions (W x D x H):**
    - 86 x 208 x 248 mm
  - **Weight:**
    - 4.4 kg

- **EUROSTAR 60 digital | control**
  - **Stirring quantity max. (H2O):**
    - 40 l
  - **Max. viscosity:**
    - 50,000 mPas
  - **Motor rating input/output:**
    - 176 / 126 W
  - **Permissible ON time:**
    - 100%
  - **Speed range (at 50/60 Hz):**
    - 0/6 – 2000 rpm
  - **Max. torque at stirring shaft:**
    - 100 Ncm
  - **Display:**
    - LED
  - **Temperature measuring range:**
    - –10 to 350 °C
  - **Dimensions (W x D x H):**
    - 86 x 208 x 248 mm
  - **Weight:**
    - 4.7 kg

- **EUROSTAR 200 digital | control**
  - **Stirring quantity max. (H2O):**
    - 100 l
  - **Max. viscosity:**
    - 70,000 mPas
  - **Motor rating input/output:**
    - 130 / 84 W
  - **Permissible ON time:**
    - 100%
  - **Speed range (at 50/60 Hz):**
    - 0/6 – 400 rpm
  - **Max. torque at stirring shaft:**
    - 300 Ncm
  - **Display:**
    - LED
  - **Temperature measuring range:**
    - –10 to 350 °C
  - **Dimensions (W x D x H):**
    - 91 x 230 x 379 mm
  - **Weight:**
    - 5.8 kg
Stirring elements | Accessories

**Propeller stirrer**: This stirrer provides axial flow for drawing the material to be mixed from the top and the effect is similar to that of a 4-bladed propeller stirrer.

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1342</th>
<th>R 1345</th>
<th>R 2302</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propeller stirrer, 4-bladed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft length (Ø) mm</td>
<td>881 3</td>
<td>881 0</td>
<td>—</td>
</tr>
<tr>
<td>Max. speed (rpm)</td>
<td>1500 2000</td>
<td>1500 2500</td>
<td>—</td>
</tr>
<tr>
<td><strong>Flow-efficient design</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

**Turbine stirrer**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1311</th>
<th>R 1312</th>
<th>R 1313</th>
</tr>
</thead>
</table>
| Standard stirring element for drawing the material to be mixed from above while generating axial flow within the vessel. It carries a minimum shearing rate at the edges, minimum deposits on the vessel wall making them great for mixing of low viscous samples.
| Shaft length (Ø) mm | 881 0 | — | — |
| Max. speed (rpm) | 1000 1500 | — | — |
| **Magnetic stirring elements** | | | |

**Dissolver stirrer**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1300</th>
<th>R 1302</th>
<th>R 1303</th>
<th>R 1402</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propeller stirrer, 3-bladed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft length (Ø) mm</td>
<td>881 0</td>
<td>8–</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Max. speed (rpm)</td>
<td>2000 2500</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Magnetic stirring elements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Paddle stirrer**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1381</th>
<th>R 1382</th>
<th>R 1401</th>
<th>R 1405</th>
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</thead>
<tbody>
<tr>
<td>Dissolver stirrer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft length (Ø) mm</td>
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<td>81 0</td>
<td>13 0</td>
<td>3</td>
</tr>
<tr>
<td>Max. speed (rpm)</td>
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<td>500 600</td>
<td>500 600</td>
<td>500 600</td>
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<tr>
<td><strong>Magnetic stirring elements</strong></td>
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**Anchoring stirrer**

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<tr>
<th>Name</th>
<th>R 1352</th>
<th>R 1355</th>
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</thead>
<tbody>
<tr>
<td>Dissolver stirrer</td>
<td></td>
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</tr>
<tr>
<td>Shaft length (Ø) mm</td>
<td>881 0</td>
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</tr>
<tr>
<td>Max. speed (rpm)</td>
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</table>

**Centrifugal stirrer**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1375</th>
<th>R 1376</th>
<th>R 2311</th>
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</thead>
<tbody>
<tr>
<td>Standard stirring element for drawing the material to be mixed from the top and the effect is similar to that of a 4-bladed propeller stirrer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft length (Ø) mm</td>
<td>881 0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Max. speed (rpm)</td>
<td>1500 2000</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Laminar flow**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1300</th>
<th>R 1301</th>
<th>R 1302</th>
<th>R 1402</th>
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<tbody>
<tr>
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<td></td>
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</tr>
<tr>
<td>Shaft length (Ø) mm</td>
<td>881 0</td>
<td>—</td>
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<td>Max. speed (rpm)</td>
<td>1500 2000</td>
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**High flow**

<table>
<thead>
<tr>
<th>Name</th>
<th>R 1300</th>
<th>R 1301</th>
<th>R 1302</th>
<th>R 1402</th>
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<tr>
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<td>1500 2000</td>
<td>—</td>
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<td>—</td>
</tr>
</tbody>
</table>
**Mechanical | Accessories**

**RH 5 Strap clamp**  
For securing vessels against walls or for synchronized rotation during stirring, incl. boss head clamp R 276.

**RH 3 Strap clamp**  
For securing vessels during stirring.

**R 271 Boss head clamp**  
Specialized clamp with openings for the stands R 2722 and R 2723 as well as extensions with Ø 16 mm.

**FK 1 Flexible coupling**  
Required for stirring tasks using glass stirring rods. The flexible coupling compensates for any structural vari-  

**R 270 Boss head clamp**  
Ident. No. 0003160000

**R 182 Boss head clamp**  
Ident. No. 0002657800

**Plate stands**  
R 1825  
R 1826  
R 1827  
With slip resistant foil.

**R 2722 H-Stand**  
Stable stand with H-shaped base which prevents the stand from tipping backwards.

**R 2723 Telescopic stand**  
Similar for R 2722, additionally equipped with a pneumatic spring, which enables effortless raising of the dispensing unit.

**R 4765 Floor stand**  
Electrically adjustable telescopic floor stand, specially designed for RW 47 digital and T 65 basic/digital

**R 474 Telescopic stand**  
Specially designed for RW 47 Dr/digital.

**R 472 Floor stand**  
Mobile floor stand, specially designed for RW 47 Dr/digital.

**H 62.51 Stainless steel sensor**  
Temperature sensor for working with non-aggressive media.  
Ident. No. 00027551  
* Option available only for control units

**H 66.51 Stainless steel sensor**  
Glass-coated  
Temperature sensor for working with media such as acid and alkaline solutions.  
Ident. No. 00027551  
* Option available only for control units

**H 70 Extension cable**  
To connect EUROSTAR control with the temperature sensor.

**H 66.53 Temperature sensor**  
Chemical resistant coated sensor.  
Ident. No. 000499980  
* Option available only for control units

**R 60 keyless chuck**  
Available for EUROSTAR 20 / 40 / 60 / 100 series. It allows you to quickly and easily remove the stirring elements without any tools.  
Ident. No. 0003889500

**R 60 keyless chuck**  
Available for EUROSTAR 20 / 40 / 60 / 100 series. It allows you to quickly and easily remove the stirring elements without any tools.  
Ident. No. 0003889500

**Stirring shaft protection**  
Available for all overhead stirrers for pre- 

**COMING SOON:**  
More stand options for optimal stability!
Torque

Torque is mathematically defined as the vector product of force and lever arm. It is therefore calculated as \( M = F \times r \), where \( M \) is the torque, \( r \) is the lever arm and \( F \) is the force. The magnitude of the force is based on the perpendicular distance from the axis of rotation to the line of action of the force.

The unit of measurement of torque is Nm. For example, in mixing systems, the drive power of an electric motor is delivered to the rotating drive shaft or the drill chuck fixed to the mixing tool. What matters is the transfer of power in the drive to the rotating mixing tool. Torque is the key to the relationship between power and speed of rotation. The power is transferred from the motor to the shaft and then to the mixing tool. The torque acts on the mixing tool at the drill chuck as shown in the brochure.

Viscosity

The “viscosity” shown in our brochure always refers to the dynamic viscosity \( \eta \). Viscosity is a measure of the fluid’s resistance to flow or change in shape due to internal friction between the molecules. If a fluid has high viscosity, then it strongly resists flow. This is an important parameter to be considered when it is required to create product emulsions and suspensions by mixing and homogenizing or merely in the transfer of fluids from one location to another.

Applications and Industries

**Food**: Butter, mayonnaise, ketchup...

**Cosmetics**: Creams, shampoo, soap...

**Pharmaceutical industry**: Pills, tablets, suppositories...

**Chemical industry**: Aluminum oxide, calcium hydroxide, glycerin...

**Abrasives**: Silicon carbide, crystals, sand...

**Inks and Coatings**: Printing ink, coating paint...

**Glues and Adhesives**: Adhesive mixture, Vaseline, two-component glue...

**Plastics and Polymers**: PVC powder, pre-polymer, polyester resin...

**Paints and Pigments**: Metallic paints, color pigment suspension, dyes for adhesive plasters...

**Cement and Construction**: Concrete, mineral clay, loam...

<table>
<thead>
<tr>
<th>Substance</th>
<th>Viscosity ( \eta ) in mPa*s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>1</td>
</tr>
<tr>
<td>Milk</td>
<td>2</td>
</tr>
<tr>
<td>Coffee whipped cream</td>
<td>10</td>
</tr>
<tr>
<td>Olive oil</td>
<td>100</td>
</tr>
<tr>
<td>Lubricant oil</td>
<td>200</td>
</tr>
<tr>
<td>Motor oil</td>
<td>650 – 900</td>
</tr>
<tr>
<td>Shampoo</td>
<td>3000</td>
</tr>
<tr>
<td>Hand cream</td>
<td>8000</td>
</tr>
<tr>
<td>Honey</td>
<td>10,000</td>
</tr>
<tr>
<td>Ketchup</td>
<td>50,000</td>
</tr>
<tr>
<td>Toothpaste (40°C)</td>
<td>70,000</td>
</tr>
<tr>
<td>Asphalt</td>
<td>100,000</td>
</tr>
</tbody>
</table>

Unless otherwise stated, the values refer to the viscosity at 20 °C and atmospheric pressure.