

Data Sheet

Mixing / Overhead Stirrers



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

Technical Data	
Stirring quantity max. (H2O) [l]	15
Motor rating input [W]	56
Motor rating output [W]	44
Motor principle	Brushless DC
Speed display	LED
Speed range [rpm]	0/30 - 2000
Reversible direction of rotation	no
Intermittent operation	no
Viscosity max. [mPas]	10000
Output max. at stirring shaft [W]	42
Permissible ON time [%]	100
Torque max. at stirring shaft [Ncm]	20
Speed control	stepless
Setting accuracy speed [±rpm]	1
deviation of speed measurement n > 300rpm [±rpm]	3
deviation of speed measurement n < 300rpm [±%]	1
Stirring element fastening	chuck
Temperature display	no
Chuck range min. diameter [mm]	0.5
Chuck range max. diameter [mm]	10
Hollow shaft, inner diameter [mm]	11
Hollow shaft (push-through \varnothing when stopped)	yes
Fastening on stand	extension arm
Extension arm diameter [mm]	16
Extension arm length [mm]	220
Torque display	no
Nominal torque [Nm]	0.2
Timer	no
housing material	alu-cast coating / thermoplastic polymer
clean room qualified	no
explosion proofed	no
Dimensions (W x H x D) [mm]	86 x 248 x 208
Weight [kg]	4.4
Permissible ambient temperature [°C]	5 - 40
Permissible relative moisture [%]	80
Protection class according to DIN EN 60529	IP 40
RS 232 interface	no
USB interface	no
Analog output	no
Voltage [V]	230 / 100 - 115 / 100
Frequency [Hz]	50/60
Power input [W]	70
Ident. No.	0004442001

EUROSTAR series | Future Perfect MECHATRONICS!

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.



3 Year warranty*

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

Protection class according to DIN EN 60529: IP 40



Twin technology | Digital & Control



- Digital Display**
Digital display for precise monitoring of set and actual speeds
- 660 Ncm**
Torque trend display to get real-time information on viscosity changes
- Rotating knob**
Rotating knob for adjusting the speed and pressing knob for navigating through the menu on the wireless controller
- TFT Display**
TFT Display for better image quality and easy navigation
- External probe**
External probe for connection to a temperature sensor for accurate temperature control
- USB interface**
USB interface to control and document rheological changes and other parameters using labworldsoft® software and for updating your firmware
- Brushless EC motor**
Brushless EC motor for longer life span, low maintenance and higher efficiency
- Wireless Controller (WiCo)**
Removable wireless controller for easy and user-friendly operation

2+1
Year warranty

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

IKA+



R 60 keyless chuck is available for EUROSTAR 20 / 40 / 60 / 100 series

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.

Special features | Accessories



1 R 2723 Telescopic stand
 Particularly stable stand with an H-shaped base that prevents the stand from tipping backwards. Additionally, this stand is equipped with a spring stand rod, which enables heavy instruments / attachments to be raised and lowered smoothly without difficulty.



Ident. No.
0001412100

2 R 270 Boss head clamp
 Specialized clamp with openings for stands R 2722 and R 2723



Ident. No.
0002657800

RH 3 Strap clamp
 For securing vessels incl. boss head clamp R 270



Ident. No.
0003008600

3 R 301 Stirring shaft protection
 Prevents potential injuries around rotating shafts and stirring elements



Ident. No.
0002603000

IKA+

To get customized and additional accessories, please visit www.ika.com/service

EUROSTAR control | Advanced precision

LED bar indicates the connectivity of the wireless controller (WiCo)



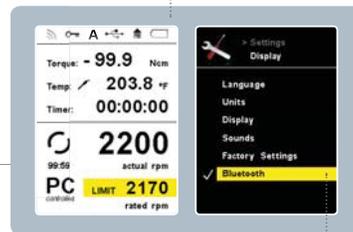
IKA® further advances its' mixing technology by offering the first overhead stirrers with wireless technology. Stress-free mixing at your convenience with increased productivity, flexibility and enhanced safety features. Additionally, comes equipped with the new online update function (only control version), your device is always up-to-date.

Safe stop function for the quick stop of overhead stirrer



Connector for fixing the wireless controller

The display shows torque, temperature, timer, speed and PC connectivity. Additionally, several other parameters can be set such as language, background, brightness, sound, etc.



The EUROSTAR control series can be operated via Bluetooth as well

EUROSTAR control | Wireless technology



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.

EUROSTAR 100 | Digital & Control

EUROSTAR | 20 high speed digital & 200 control P4

IKA+

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



Laboratory stirrer designed for highly viscous applications and intensive mixing



Clockwise and counter clockwise rotation



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



Digital display for precise monitoring of set and actual speeds



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



TFT Display for better image quality and easy navigation



Extremely powerful laboratory stirrer designed with high torque



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



RS 232 interface for PC connection

Electronic Overhead Stirrers



The Beginner



EUROSTAR 20 digital | 40 digital

The Compact Power



EUROSTAR 60 digital | control

The Unique Clockwise and Counter Clockwise Rotation



EUROSTAR 100 digital | control

Technical data	EUROSTAR 20 digital 40 digital	EUROSTAR 60 digital control	EUROSTAR 100 digital control
Stirring quantity max. (P _{CO})	15 l 25 l	40 l	100 l
Max. viscosity	10,000 mPas 30,000 mPas	50,000 mPas	70,000 mPas
Motor rating input/output	70 / 42 W 118 / 84 W	176 / 126 W	186 / 136 W
Permissible ON time	100 %	100 %	100 %
Speed range	0/30 – 2000 rpm	0/30 – 2000 rpm	0/30 – 1300 rpm
Speed range I (at 50/60 Hz)	—	—	—
Speed range II (at 50/60 Hz)	—	—	—
Max. torque at stirring shaft	20 Ncm 40 Ncm	60 Ncm	100 Ncm
LED	LED TFT	LED TFT	LED TFT
Reverse operation	no	no	no yes
Intermittent operation	no	no yes	no yes
Temp. sensor connection	no	no PT 1000	no PT 1000
Chuck range	0.5 – 10 mm	0.5 – 10 mm	0.5 – 10 mm
Hollow shaft	yes	yes	yes
Torque trend measurement	no	no yes	no yes
Timer	no	no yes	no yes
Temperature measurement	no	no yes	no yes
Temperature measuring range	—	— -10 to 350 °C	— -10 to 350 °C
Dimensions (W x D x H)	86 x 208 x 248 mm	86 x 208 x 248 mm 86 x 230 x 267 mm	86 x 208 x 248 mm 86 x 230 x 267 mm
Weight	4.4 kg	4.4 kg 4.7 kg	4.4 kg 4.9 kg
Permissible ambient temp.	5 – 40 °C	5 – 40 °C	5 – 40 °C
Permissible relative moisture	80 %	80 %	80 %
Protection class DIN EN 60529	IP 40	IP 40	IP 40
USB / RS 232 interface	no	no yes	no yes
Voltage	230 V	230 V	230 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz

Ident. No. 0004442000 | 0004444000

Ident. No. 0004446000 | 0004440000

Ident. No. 0004238100 | 0004028500



The All-Rounder



EUROSTAR 200 digital | control

The High-Performer



EUROSTAR 200 control P4

The Speedster



EUROSTAR 20 high speed digital

Technical data	EUROSTAR 200 digital control	EUROSTAR 200 control P4	EUROSTAR 20 high speed digital
Stirring quantity max. (P _{CO})	100 l	100 l	20 l
Max. viscosity	50,000 mPas	150,000 mPas	10,000 mPas
Motor rating input/output	130 / 84 W	134 / 76 W	176 / 125 W
Permissible ON time	100 %	100 %	100 %
Speed range	0/6 – 2000 rpm	0/4 – 110 rpm	0/150 – 6000 rpm
Speed range I (at 50/60 Hz)	0/6 – 400 rpm	0/4 – 110 rpm	—
Speed range II (at 50/60 Hz)	0/30 – 2000 rpm	0/16 – 530 rpm	—
Max. torque at stirring shaft	200 Ncm	200 Ncm	20 Ncm
LED	LED TFT	TFT	LED
Reverse operation	no	no	no
Intermittent operation	no yes	yes	no
Temp. sensor connection	no PT 1000	PT 1000	no
Chuck range	0.5 – 10 mm	0.5 – 10 mm	fixed
Hollow shaft	yes	no	no
Torque trend measurement	no yes	yes	no
Timer	no yes	no	no
Temperature measurement	no yes	yes	no
Temperature measuring range	— -10 to 350 °C	— -10 to 350 °C	—
Dimensions (W x D x H)	91 x 209 x 274 mm 91 x 231 x 274 mm	86 x 230 x 379 mm	86 x 208 x 325 mm
Weight	4.6 kg 4.9 kg	5.8 kg	5.3 kg
Permissible ambient temp.	5 – 40 °C	5 – 40 °C	5 – 40 °C
Permissible relative moisture	80 %	80 %	80 %
Protection class DIN EN 60529	IP 40	IP 40	IP 40
USB / RS 232 interface	no yes	yes	no
Voltage	230 V	230 V	230 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz

Ident. No. 0003990000 | 0003992000

Ident. No. 0004090000

Ident. No. 0004028600

Mechanical Overhead Stirrers

Please also see IKA® Pilots



RW 20 digital



RW 28 digital



Available Q2/2013

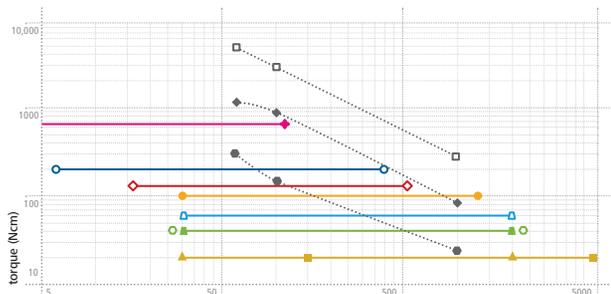
RW 47 digital

Technical data	RW 20 digital	RW 28 digital	RW 47 digital
Stirring quantity max. (P _{CO})	20 l	80 l	300 l
Max. viscosity	10,000 mPas	50,000 mPas	100,000 mPas
Motor rating input/output	70 / 35 W	220 / 90 W	513 / 370 W
Permissible ON time	100 %	100 %	100 %
Speed range	60 – 2000 rpm / 72 – 2400 rpm	60 – 1400 rpm / 72 – 1680 rpm	60 – 1300 rpm / 69 – 1560 rpm
Speed range I (at 50/60 Hz)	60 – 500 rpm / 72 – 600 rpm	60 – 400 rpm / 72 – 480 rpm	57 – 275 rpm / 69 – 330 rpm
Speed range II (at 50/60 Hz)	240 – 2000 rpm / 288 – 2400 rpm	240 – 1400 rpm / 288 – 1680 rpm	275 – 1300 rpm / 330 – 1560 rpm
Max. torque at stirring shaft	150 Ncm	900 Ncm	3000 Ncm
LED	LED	LED	LED
Reverse operation	no	no	no
Intermittent operation	no	no	no
Temp. sensor connection	no	no	no
Chuck range	0.5 – 10 mm	1 – 10 mm	3 – 16 mm
Hollow shaft	yes	yes	no
Torque trend measurement	no	no	no
Timer	no	no	no
Temperature measurement	no	no	no
Temperature measuring range	—	—	—
Dimensions (W x D x H)	88 x 212 x 294 mm	123 x 252 x 364 mm	145 x 358 x 465 mm
Weight	3.1 kg	7.5 kg	16 kg
Permissible ambient temp.	5 – 40 °C	5 – 40 °C	5 – 40 °C
Permissible relative moisture	80 %	80 %	80 %
Protection class DIN EN 60529	IP 20	IP 40	IP 54
USB / RS 232 interface	no	no	no
Voltage	220 – 240 V	220 – 240 V	3 x 400 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz

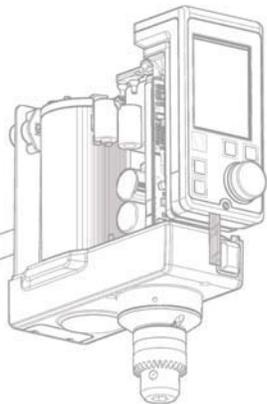
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Ident. No. 0004050000



- ES 200 control P 4 I
- ES 40 digital
- ES 100 digital / control
- ES 60 digital / control
- ES 200 digital / control I
- ES 200 control P 4 II
- ES 200 digital / control II
- ES 20 digital
- ES 20 high speed
- RW 47 digital
- RW 28 digital
- RW 20 digital



The electronic overhead stirrers have a constant torque over the entire speed range. They can also be used for short-term overload operations. The electronic stirrers are ideal for reproducible procedures as well.

The mechanical overhead stirrers have a high torque at low speed and the torque decreases when the speed increases. The speed range is for highly viscous samples and the speed range II is for intensive mixing of low viscous samples.

Stirring elements | Accessories



Propeller stirrer, 4-bladed
 Standard stirring element for drawing the material to be mixed from the top to the bottom. It creates local shearing forces and axial flow in the vessel. This propeller stirrer is used at medium to high speeds.



Propeller stirrer, 3-bladed
 Flow-efficient design for drawing the material to be mixed from the top and the bottom while creating minimum shearing forces. This propeller stirrer is used at medium to high speeds.



Propeller stirrer, 3-bladed
 Flow-efficient design for drawing the material to be mixed from the top and the bottom while creating minimum shearing forces. This propeller stirrer is used at medium to high speeds.



Dissolver stirrer
 This stirrer provides radial flow for drawing the material to be mixed from the top and the bottom while creating high turbulence and high shearing forces for particle reduction. Medium to high speeds required.

* IKA® recommendations only



EUROSTAR 20 digital, EUROSTAR 40 digital, EUROSTAR 60 digital, EUROSTAR 60 control

axial flow



Name	R 1342	R 1345	R 2302
Ident. No.	0000741000	0000741300	0000739000
Stirrer (Ø) mm	50	100	150
Shaft (Ø) mm	8	8	13
Shaft length mm	350	540	800
Max. speed rpm	2000	800	600

axial flow



Name	R 1381	R 1382	R 1401	R 1405
Ident. No.	0001296000	0001295900	0001242000	0001289800
Stirrer (Ø) mm	45	55	55	45
Shaft (Ø) mm	8	8	-	-
Shaft length mm	350	350	-	-
Max. speed rpm	2000	2000	-	-

axial flow



Name	R 1385	R 1388	R 1389 (PTFE-coated)
Ident. No.	0000477700	0000477800	0002343600
Stirrer (Ø) mm	140	140	75
Shaft (Ø) mm	10	10	8
Shaft length mm	550	800	350
Max. speed rpm	800	400	800

radial flow



Name	R 1300	R 1302	R 1303	R 1402
Ident. No.	0000513500	0002387900	0002746700	0001243300
Stirrer (Ø) mm	80	100	42	42
Shaft (Ø) mm	8	10	8	-
Shaft length mm	350	350	350	-
Max. speed rpm	2000	1000	2000	-



Turbine stirrer
 This stirrer is used for drawing the material to be mixed from above while generating axial flow within the vessel. It carries a minimum level of danger of injury when contact is made with vessel. It also creates minimum shearing forces and is used at medium to high speeds.



Centrifugal stirrer
 Two-bladed stirrer whose blades open with increasing speed. Perfect for stirring in round vessels with narrow necks and the effect is similar to that of a 4-bladed propeller stirrer. Medium to high speeds required.



Paddle stirrer
 This stirrer creates tangential flow, minimum turbulence, good heat exchange and gentle treatment of the product. Low to medium speeds required.



Anchor stirrer
 This stirrer creates tangential flow, high shearing rate at the edges, minimum deposits on the vessel wall making them great for polymer reactions and even distribution of high mineral contents in liquids. Ideal for medium to highly viscous fluids. Low speeds required.

axial flow



Name	R 1311	R 1312	R 1313
Ident. No.	0000232900	0000233000	0000233100
Stirrer (Ø) mm	30	50	70
Shaft (Ø) mm	8	8	10
Shaft length mm	350	350	400
Max. speed rpm	2000	2000	800

axial flow



Name	R 1352	R 1355
Ident. No.	0000569000	0001132700
Stirrer (Ø) mm	60 / 115	100 / 24
Shaft (Ø) mm	8	8
Shaft length mm	350	550
Max. speed rpm	2000	800

tangential flow



Name	R 1375	R 1376	R 2311
Ident. No.	0000757700	0000757800	0000739500
Stirrer (Ø) mm	70	150	150
Shaft (Ø) mm	8	10	13
Shaft length mm	550	550	800
Max. speed rpm	800	800	600

tangential flow



Name	R 1330	R 1331	R 1333
Ident. No.	0000202200	0000202400	0002747400
Stirrer (Ø) mm	45	90	150
Shaft (Ø) mm	8	8	10
Shaft length mm	350	350	550
Max. speed rpm	1000	1000	800



EUROSTAR 200 control P4, EUROSTAR 20 high speed digital, RW 20 digital, RW 28 digital, RW 47 digital

Mechanical | Accessories

RH 5 Strap clamp

For securing vessels against walls or for synchronized rotation during stirring, incl. boss head clamp R 270.



Ident. No.
0003159000

② ③

RH 3 Strap clamp

For securing vessels during stirring.



Ident. No.
0003008600

①

R 270 Boss head clamp



Ident. No.
0002657800

② ③

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.



Ident. No.
0002664000

② ③

FK 1 Flexible coupling

Required for stirring tasks using glass stirring rods. The flexible coupling compensates for any structural variances.



Ident. No.
0002336000

A

R 182 Boss head clamp



Ident. No.
0002657700

①



NEW

R 4765 Floor stand

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

Ident. No.
0004035000

Height: 1014 – 1588 mm



Height R 1825: 560 mm
R 1826: 800 mm
R 1827: 1000 mm

①

Plate stands

- R 1825
- R 1826
- R 1827

With slip resistant foil.



①

R 2722 H-Stand

Stable stand with H-shaped base which prevents the stand from tipping backwards.

Ident. No.
0001412000



Height: 1010 mm

②

R 2723 Telescopic stand

Similar to R 2722, additionally equipped with a pneumatic spring, which enables effortless raising of the dispersing unit.

Ident. No.
0001412100



Height: 620 – 1010 mm
Stroke: 390 mm

③

R 474 Telescopic stand

Specially designed for RW 47 D/digital.

Ident. No.
0001643000



Height: 1200 mm
Stroke: 500 – 1000 mm

⑤

R 472 Floor stand

Mobile floor stand, specially designed for RW 47 D/digital.

Ident. No.
0000738700



Height: 2020 mm
Stroke: 980 – 1860 mm

⑥

H 62.51 Stainless steel sensor

Temperature sensor for working with non-aggressive media.

Ident. No.
0002735451

* 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.
0002735551

* Option available only for control units



H 70 Extension cable

To connect EUROSTAR control with the temperature sensor.

Ident. No.
0002735600

* Option available only for control units



Several safety accessories are available for RW 47 digital

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



H 66.53 Temperature sensor

Chemical resistant coated sensor.

Ident. No.
0004499900

* Option available only for control units

Stirring shaft protection

Available for all overhead stirrers for preventing potential injuries at rotating shafts and stirring elements

IKA+

COMING SOON:
More stand options for optimal stability!

Knowledge | Torque & Viscosity

Quality standards | Integrated Safety

Torque

Torque is mathematically defined as the vector product of force and lever arm. It is therefore calculated as $M = F * r$, 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 the mixing tool geometry, viscosity of the medium to be mixed and the 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.

Typical Dynamic viscosity values (Range 1 – 100,000 mPa*s)

Substance	Viscosity η in mPa*s
Water	1
Milk	2
Coffee whipped cream	10
Olive oil	100
Lubricant oil	200
Motor oil	650 – 900
Shampoo	3000
Hand cream	8000
Honey	10,000
Ketchup	50,000
Toothpaste (40°C)	70,000
Asphalt	100,000

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

$$1N = [\eta] \cdot (m^2 \cdot m / m \cdot s) \Rightarrow [\eta] = Ns / m^2 = Pa \cdot s$$

Fluids are either Newtonian or Non-Newtonian. Fluids whose viscosity is constant at all shear rates are called Newtonian fluids (e.g., pure fluids, ideal fluids / water, oil and most gases which have a constant viscosity). Fluids whose viscosity is not constant at all shear rates are called Non-Newtonian fluids (e.g., blood, sand-water mixtures, dough, puddings, asphalt cement, etc.).

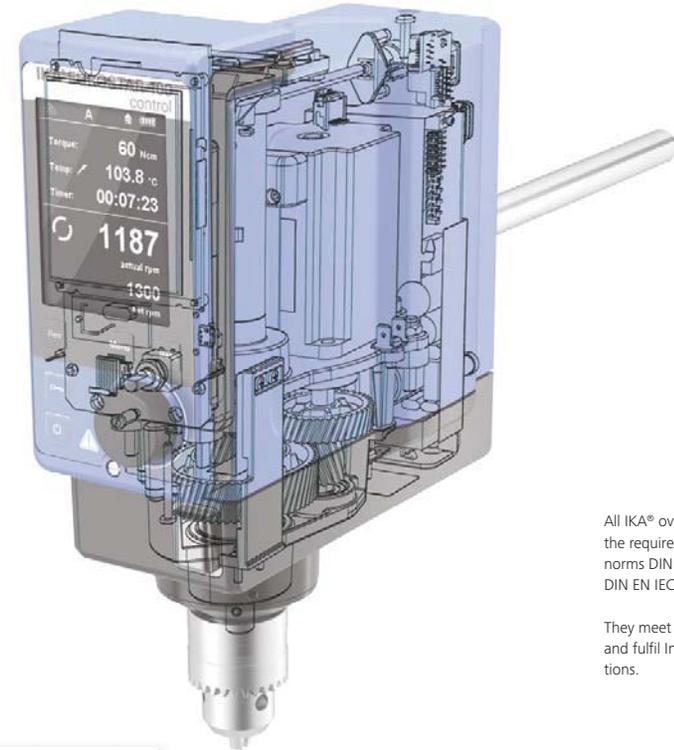
Oil is a good example of a highly viscous liquid. It does not flow easily and affects parameters such as the thickness of the lubricating film in bearings, motors, gear units, leakage losses in the hydraulics, pump efficiency and friction losses in pipes.

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...



DIN EN IEC 61010-1
 DIN EN IEC 61010-2-051



All IKA® overhead stirrers adhere to the requirements set forth by the norms DIN EN IEC 61010-1 and DIN EN IEC 61010-2-051.

They meet and exceed CE standards and fulfill International safety regulations.



UL ONLINE CERTIFICATIONS DIRECTORY

OGTK.E163395
Laboratory Use Electrical Equipment

See General Information for Laboratory-Use Electrical Equipment

IKA-WERKE GMBH & CO KG E163395
 DANKE & HUNDE, STR. 12
 79219 STAUFEN, GERMANY

