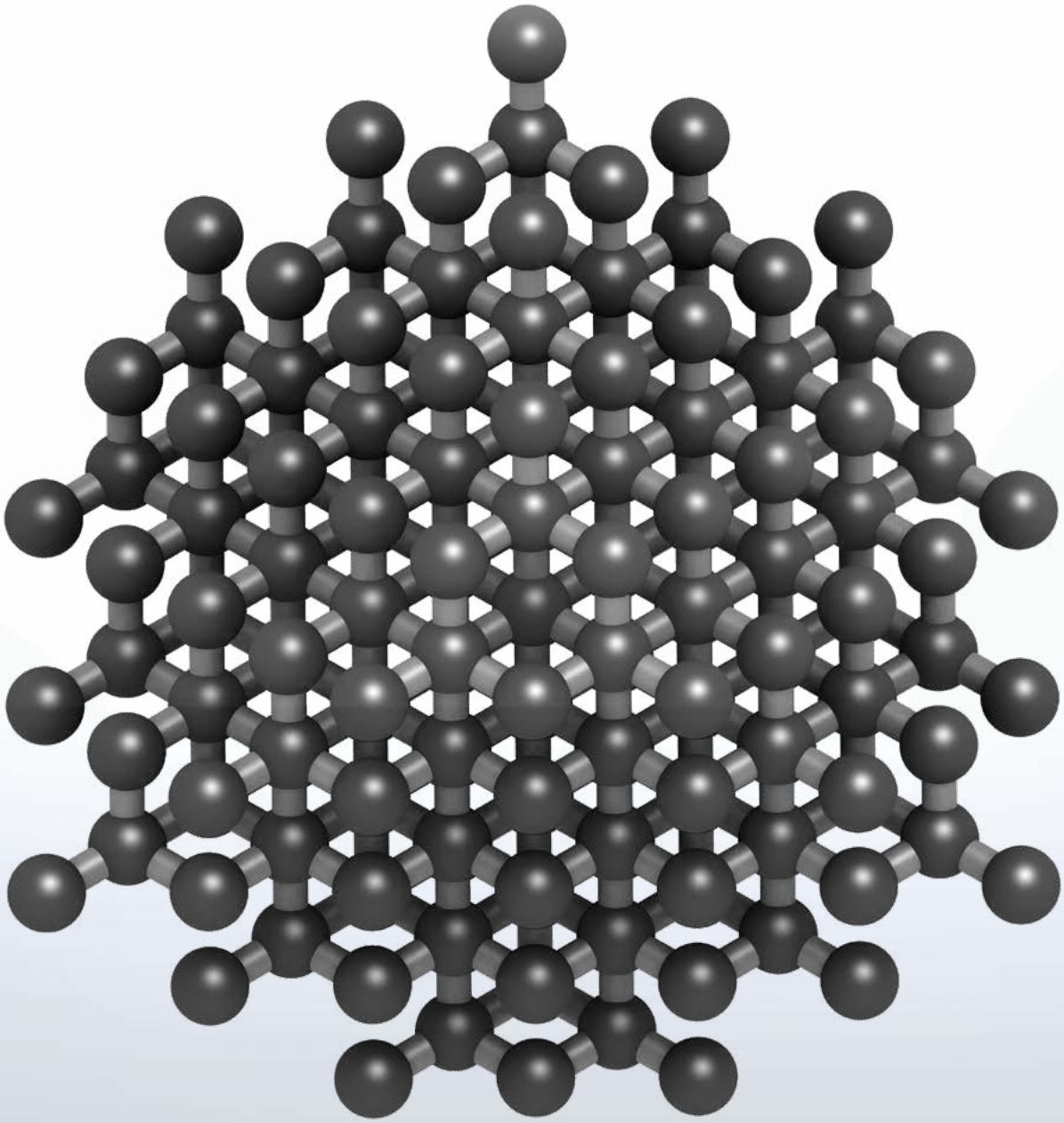
oerlikon
balzers

BALINIT MILUBIA

Hydrogen free amorphous carbon coatings



General Engineering

BALINIT MILUBIA – ta-C structured hard carbon coatings for components

Components of devices such as ceramic seals of valves or ceramic shafts and mechanical seals of pumps, are exposed to extreme operating forces in the long term. Also, critical tribological working conditions tend to overheat these components and soon lead to device failure. To keep these devices running reliably over a long period of time, it is imperative to protect their components from high operating forces and high temperatures. The ta-C structured hard carbon coating BALINIT® MILUBIA meets these requirements even in dry running when other coatings have reached their limits.

Advantages of BALINIT MILUBIA

BALINIT® MILUBIA is extremely hard and has a very low coefficient of friction. Due to the low coating temperature (< 100 °C) the coating can be applied for components made of heat sensitive materials like steels tempered at low temperatures and aluminum alloys. BALINIT® MILUBIA is suitable for metals and electrically insulating materials such as ceramics or plastics.

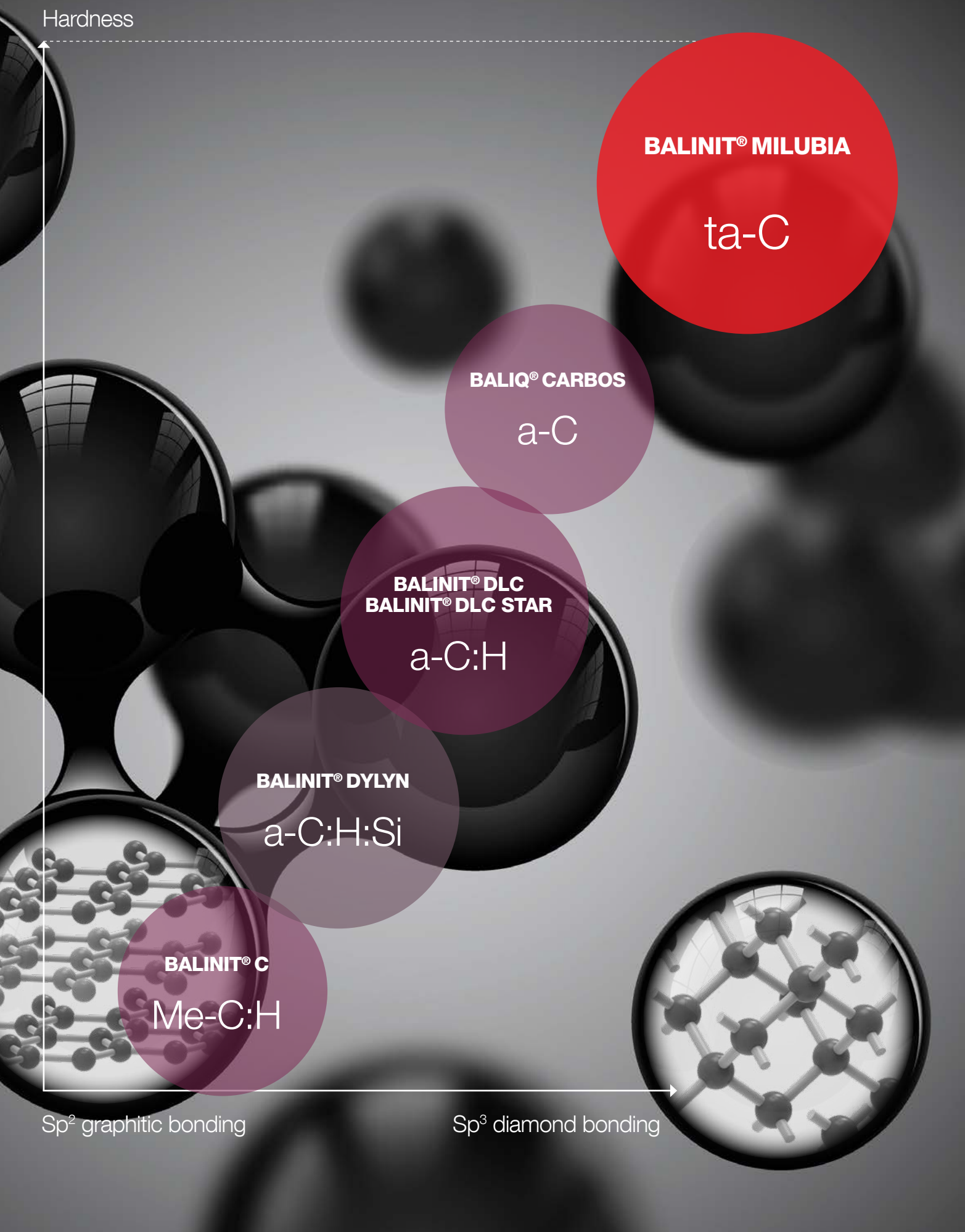
- Constantly low operating force significantly extends a component's lifetime
- Due to the low friction in dry running, the operating temperature of seal rings and discs remains low
- Keeps components working even in poor lubricated conditions
- Low coating temperature (< 100 °C) enables coating of heat-sensitive materials
- Ideal for water environments

BALINIT MILUBIA in comparison to other carbon coatings

	Coating material	Process technology	Coating hardness H_{IT} (GPa)	Friction against steel, dry running	Coating temperature (°C)	Maximum service temperature (°C)
BALINIT C	WC/C	Sputter	10 – 15	0.1 – 0.2	< 250	300
BALINIT DLC	a-C:H	PACVD	~ 15 – 25	0.1 – 0.2	< 250	300
BALINIT DLC STAR	CrN/a-C:H	PACVD	~ 15 – 25	0.1 – 0.2	< 250	300
BALINIT CAVIDUR	a-C:H	PACVD	~ 25 – 35	0.1 – 0.2	250 – 350	350
BALINIT HARD CARBON	ta-C	Arc	50 – 60	0.1 – 0.2	< 150	500
BALIQ CARBOS	a-C	S3p	30 – 40	0.1 – 0.2	< 200	400
BALINIT MILUBIA	ta-C	Filtered Arc	35 – 50	0.1 – 0.2	< 100	450

All given data are approximate values and dependent on application, environment and test conditions.

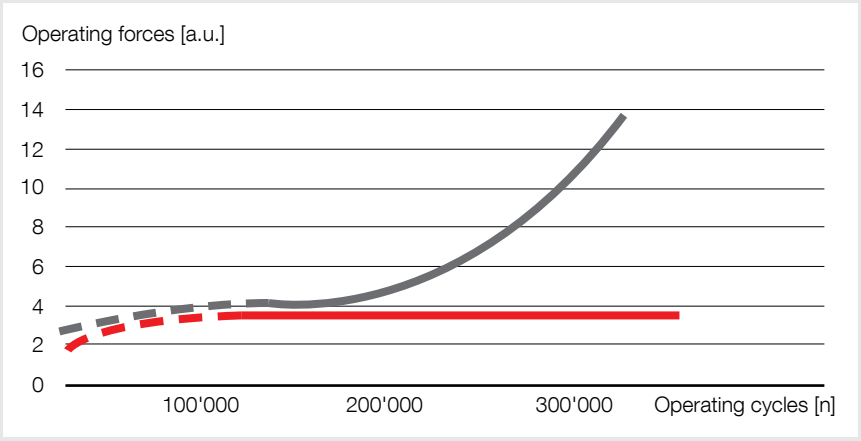
Oerlikon Balzers' carbon based coatings for components



Applications of BALINIT MILUBIA

BALINIT MILUBIA for ceramic seal discs for faucets

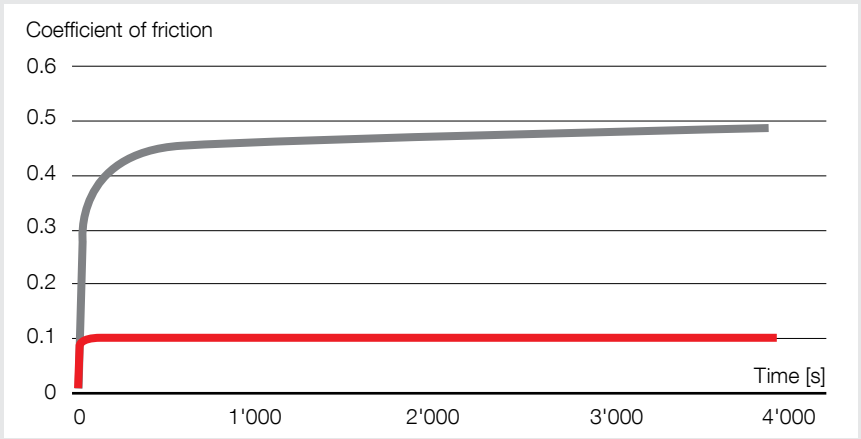
BALINIT® MILUBIA on ceramic seal discs shows constantly low operation force when assembly grease is washed away after long time use.



BALINIT MILUBIA
Uncoated

BALINIT MILUBIA for ceramic shafts and bearings for pumps

Centrifugal pumps can operate in critical tribological conditions. BALINIT® MILUBIA prevents damages at dry running due to its low coefficient of friction.



Parameters:
Pin-on-disc test
Load: 10 N
Speed: 0.2 m/s
Ball: Al2O3, D10

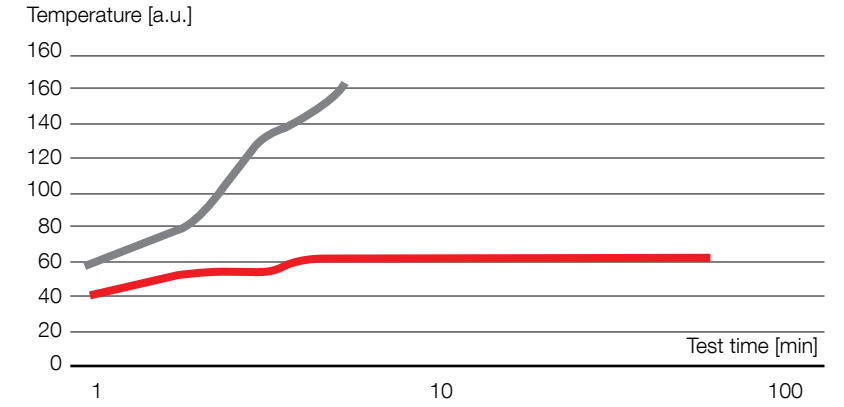
Al203 +
BALINIT MILUBIA
Al203

BALINIT MILUBIA for mechanical seals for pumps

Pumps and compressors use silicon carbide ceramics as seal ring material. Critical working conditions can rise the temperature and lead to failures due to system overheating. BALINIT® MILUBIA ensures low operating temperatures due to its excellent dry running coefficient.

Parameters:
Dry running test with SiC seals
Speed: 0.3 m/s

BALINIT MILUBIA
SiC-SiC

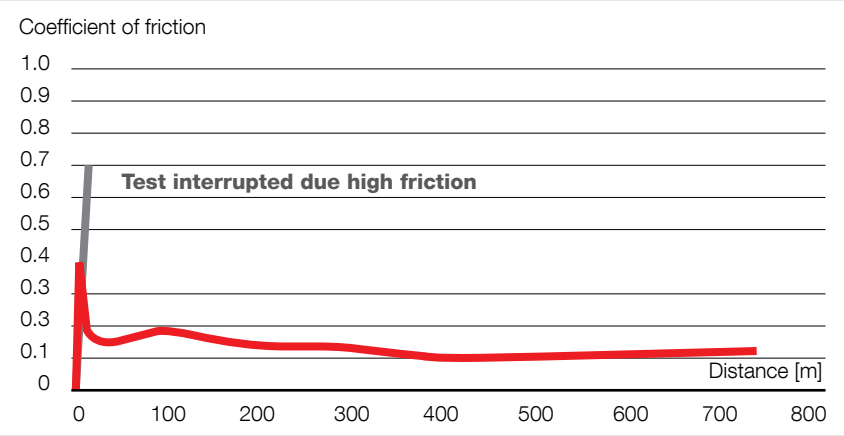


BALINIT MILUBIA for pneumatic valves

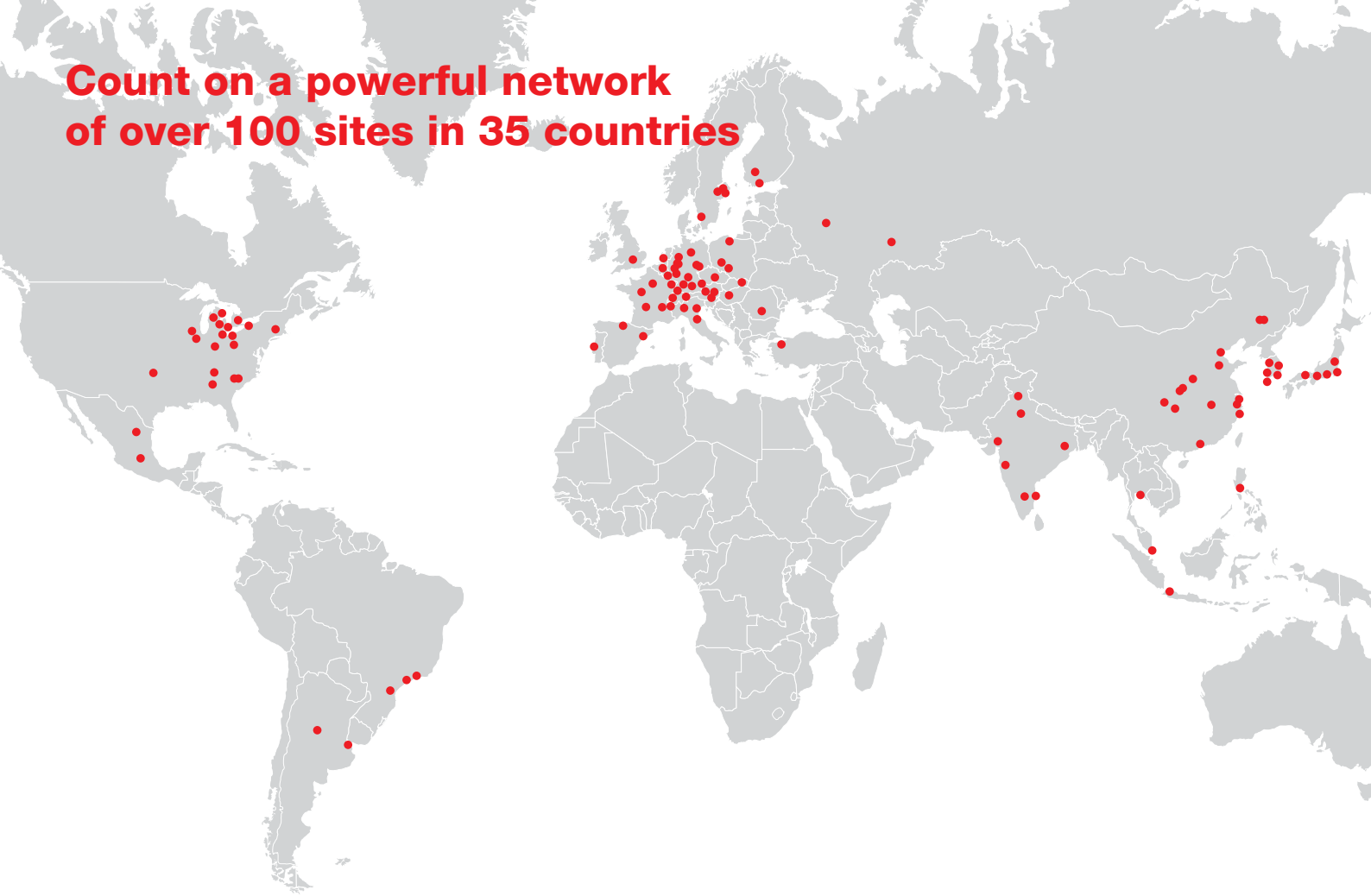
Pneumatic spools frequently operate without lubrication. BALINIT® MILUBIA coated high precision metal seal valves work reliably at poor lubricating conditions due to very low dry running friction.

Parameters:
Pins on disc test
T = 21 °C, RH 22%
No lubrication
Speed: 0.2 m/s
Load: 10 N
Disk: 100Cr6
Ball: AISI420B, Ø10 mm
Hertzian contact pressure (max.): 1.0 GPa

BALINIT MILUBIA
Uncoated disc



Count on a powerful network of over 100 sites in 35 countries



There's so much more to talk about – please get in touch to discuss what we can do to improve your business

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