

## RENOLIN UNISYN XT

### Fully synthetic industrial gear and wind turbine gear oil based on mPAO

#### Description

The products of the RENOLIN UNISYN XT series are demulsifying, fully synthetic industrial gear oils with elevated aging resistance, excellent load-carrying capacity, and wear protection, based on polyalphaolefins of the latest generation (mPAO). RENOLIN UNISYN XT oils show good resistance to micropitting. Reliable lubrication of roller bearings is confirmed by the good results of the FE8 testing. Moreover, the RENOLIN UNISYN XT oils show a good filterability. The products are preferably used when increased requirements are set for high and low operating temperatures. Especially in low temperature areas RENOLIN UNISYN XT shows significant advantages in comparison to conventional PAO based industrial gear oils. In gearboxes and circulating systems with sump temperatures up to 90 °C, longer oil-change intervals in comparison with previous mineral oils are achieved.

#### Advantages:

- **Excellent low temperature behaviour**
- **Very high natural viscosity index (VI)**
- **Excellent viscosity-temperature behaviour**
- **Multigrade character**
- **For high and low operating temperatures**
- **Excellent wear protection, high EP performance**
- **Very good aging resistance**
- **Prolongation of the service intervals possible**
- **Excellent corrosion protection**
- **low foaming**
- **Good air release capacity**
- **Miscible with gear oils based on mineral oil and ester**

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#### Application

The oils of the RENOLIN UNISYN XT series are used for all applications in industry where a synthetic oil of the CLP type according to DIN 51517-3 is recommended by the manufacturer. Highly stressed bearings, joints, pressure screws, spur gears, worm gears and planetary gears can be reliably, safely, and economically supplied even at short-term peak temperatures up to 150 °C. RENOLIN UNISYN XT can particularly be used if high low temperature demands for the gear oil are required.

#### Compatibility

Miscibility with gearbox oils based on mineral oil and PAO is generally given, which means that simplified conversion to RENOLIN UNISYN XT is possible. Nevertheless, a complete change-over is recommended (perhaps with flushing procedure) to receive the full performance of RENOLIN UNISYN XT and especially to exploit the advantages in comparison to conventional oils.

#### Specifications

The products meet and, in many cases, exceed the requirements according to:

- DIN 51517-3: CLP
- ISO 6743-6 and ISO 12925-1: CKC / CKD / CKE / CKSMP
- AGMA 9005/E02: EP
- AIST 224

#### Approvals:

- **Flender**
- **Gearbox by Gamesa (former GET)**
- **Moventas**
- **Senvion**
- **Siemens Gamesa Renewable Energies (SGRE)**
- **Winergy**
- **ZF**

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#### Typical technical data:

| Product name                              |                    | RENOLIN UNISYN XT |       |               |        | Test method     |
|-------------------------------------------|--------------------|-------------------|-------|---------------|--------|-----------------|
|                                           |                    | 68                | 100   | 150           | 220    |                 |
| Properties                                | Unit               |                   |       |               |        |                 |
| ISO VG                                    |                    | 68                | 100   | 150           | 220    | DIN 51519       |
| Kinematic viscosity                       |                    |                   |       |               |        |                 |
| at – 20 °C                                | mm <sup>2</sup> /s | 3,600             | 5,850 | 9,250         | 13,670 | DIN EN ISO 3104 |
| at – 10 °C                                | mm <sup>2</sup> /s | 1,360             | 2,080 | 3,100         | 4,400  |                 |
| at 0 °C                                   | mm <sup>2</sup> /s | 630               | 950   | 1,500         | 2,300  |                 |
| at 40 °C                                  | mm <sup>2</sup> /s | 68                | 100   | 150           | 220    |                 |
| at 100 °C                                 | mm <sup>2</sup> /s | 11.0              | 15.3  | 21.4          | 29.4   |                 |
| Viscosity index                           | -                  | 154               | 162   | 168           | 174    | DIN ISO 2909    |
| Density at 15 °C                          | kg/m <sup>3</sup>  | 850               | 850   | 850           | 860    | DIN 51757       |
| Colour                                    | -                  | 0.5               | 0.5   | 0.5           | 0.5    | DIN ISO 2049    |
| Flashpoint in open cup acc. to Cleveland  | °C                 | 238               | 238   | 238           | 242    | DIN ISO 2592    |
| Pourpoint                                 | °C                 | -54               | -48   | -45           | -42    | DIN ISO 3016    |
| Acid number (neutralization number)       | mgKOH/g            | 0.86              | 0.86  | 0.86          | 0.86   | DIN ISO 6618    |
| Demulsibility at 82 °C                    | min                | <10               | 10    | 15            | 20     | DIN ISO 6614    |
| Scuffing and scoring test, FZG A/8.3/90   | failure load stage |                   | >14   |               |        | DIN ISO 14635-1 |
| Micropitting load capacity C/8.3/90       | GF Class           | -                 | -     | GFT high, >10 |        | FVA 54/I-IV     |
| C/8.3/60                                  | GF Class           | -                 | -     | GFT high, >10 |        | FVA 54/I-IV     |
| FE8 roller bearing wear test, D-7.5/80-80 |                    |                   |       |               |        | DIN 51819-3     |
| - roller element wear                     | mg                 |                   | 1.0   |               |        |                 |
| - cage wear                               | mg                 |                   | <100  |               |        |                 |

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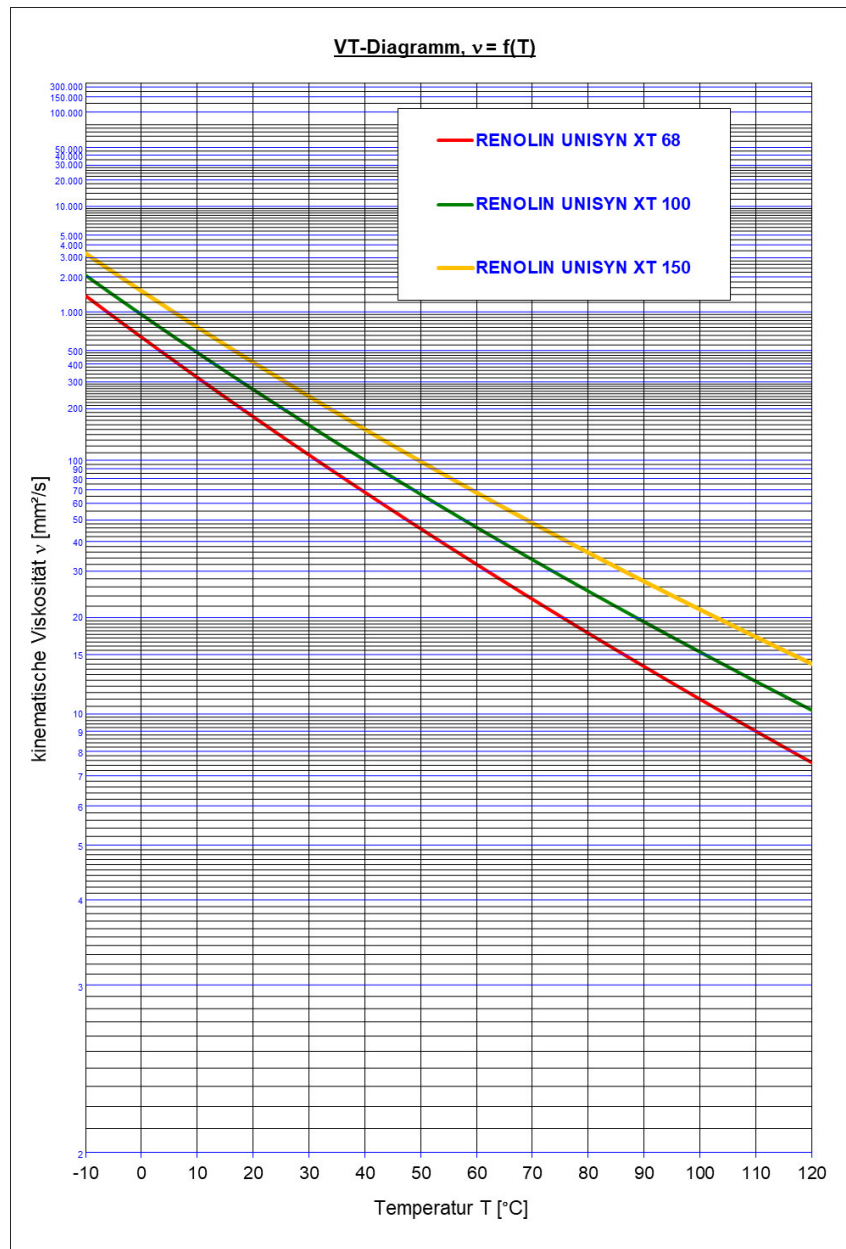
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Typical technical data:

| Product name                              |                    | RENOLIN UNISYN XT |               |         |         | Test method     |
|-------------------------------------------|--------------------|-------------------|---------------|---------|---------|-----------------|
|                                           |                    | 320               | 460           | 680     | 1000    |                 |
| Properties                                | Unit               |                   |               |         |         |                 |
| ISO VG                                    |                    | 320               | 460           | 680     | 1000    | DIN 51519       |
| Kinematic viscosity                       |                    |                   |               |         |         |                 |
| at – 20 °C                                | mm <sup>2</sup> /s | 19,400            | 41,000        | 130,000 | 187,000 | DIN EN ISO 3104 |
| at – 10 °C                                | mm <sup>2</sup> /s | 6,000             | 11,500        | 35,300  | 48,000  |                 |
| at 0 °C                                   | mm <sup>2</sup> /s | 3,500             | 5,600         | 8,500   | 15,000  |                 |
| at 40 °C                                  | mm <sup>2</sup> /s | 320               | 460           | 680     | 1,000   |                 |
| at 100 °C                                 | mm <sup>2</sup> /s | 40.2              | 54.5          | 75.5    | 101.0   |                 |
| Viscosity index                           | -                  | 179               | 188           | 192     | 195     | DIN ISO 2909    |
| Density at 15 °C                          | kg/m <sup>3</sup>  | 860               | 860           | 860     | 860     | DIN 51757       |
| Colour                                    | -                  | 0.5               | 0.5           | 1.0     | 1.0     | DIN ISO 2049    |
| Flashpoint in open cup acc. to Cleveland  | °C                 | 242               | 242           | 244     | 244     | DIN ISO 2592    |
| Pourpoint                                 | °C                 | -42               | -42           | -39     | -33     | DIN ISO 3016    |
| Acid number (neutralization number)       | mgKOH/g            | 0.86              | 0.86          | 0.86    | 0.86    | DIN ISO 6618    |
| Demulsibility at 82 °C                    | min                | 20                | 25            | 25      | 40      | DIN ISO 6614    |
| Scuffing and scoring test FZG A/8.3/90    | failure load stage |                   | >14           |         |         | DIN ISO 14635-1 |
| FZG A/16.6/90                             | failure load stage |                   | >14           |         |         | DIN ISO 14635-1 |
| Micropitting load capacity C/8.3/90       | GF Class           |                   | GFT high, >10 |         |         | FVA 54/I-IV     |
| C/8.3/60                                  | GF Class           |                   | GFT high, >10 |         |         | FVA 54/I-IV     |
| FE8 roller bearing wear test, D-7.5/80-80 |                    |                   |               |         |         | DIN 51819-3     |
| - roller element wear                     | mg                 |                   | 1.0           |         |         |                 |
| - cage wear                               | mg                 |                   | <200          |         |         |                 |

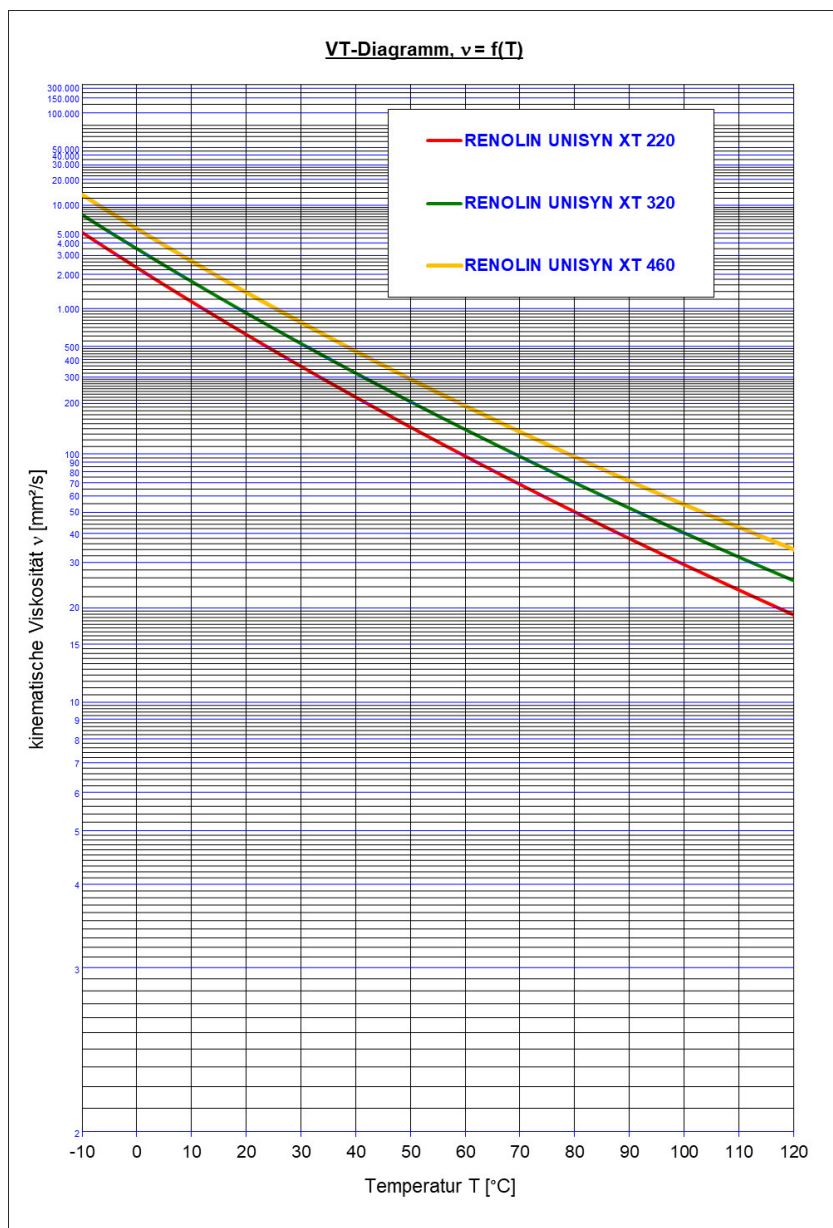
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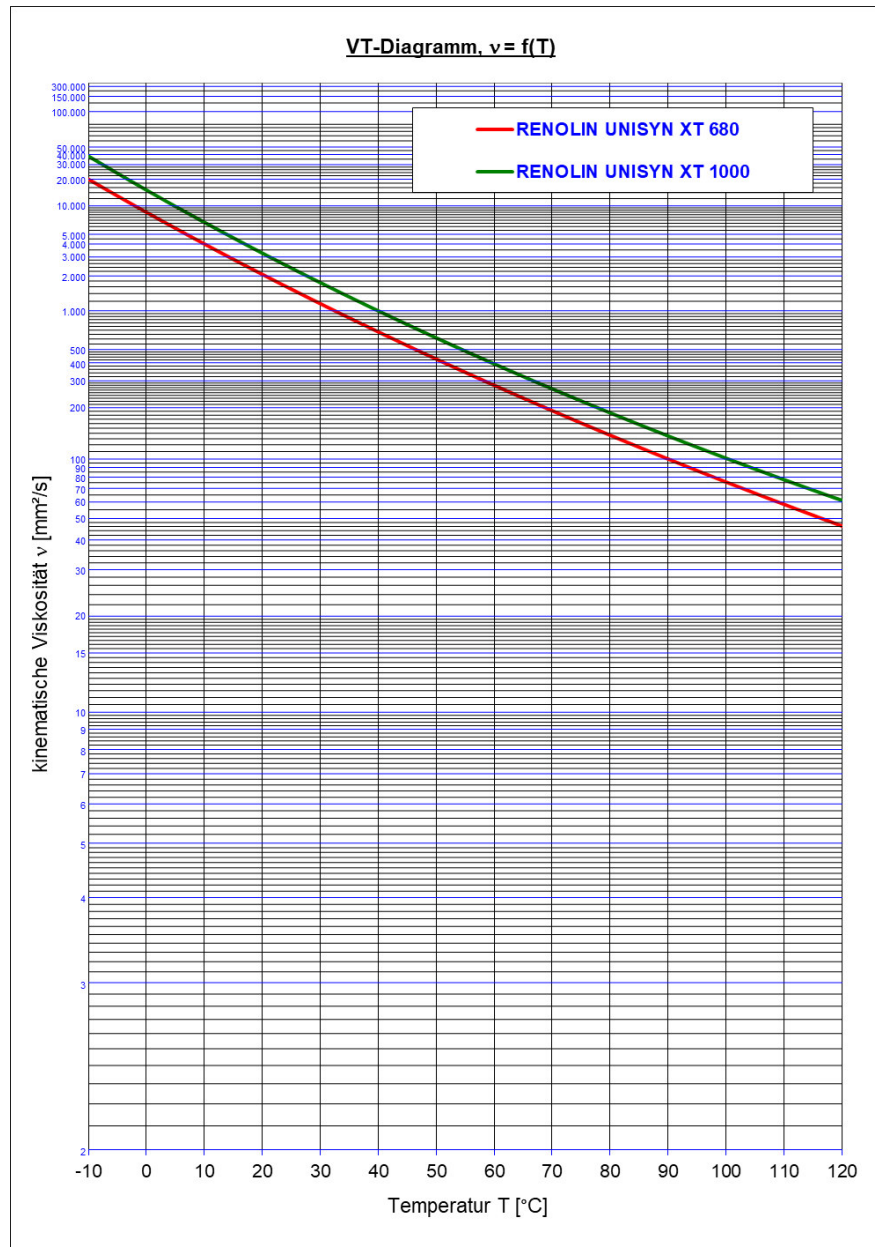
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