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This document was prepared by Technical Committee ISO/TC 35, Paints and varnishes, Subcommittee SC 9, General test methods for paints and varnishes.

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#### **DRAFT TECHNICAL REPORT**

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#### ISO/DTR 20659-1:2023(E). Formatted: Left, Space After: 36 pt, Line spacing: Exactly 12 pt Formatted: Font: 12 pt \_\_\_IEC Electropedia: available at <u>https://www.electropedia.org/</u>https://www.electropedia.org/ Formatted: English (United States) Formatted: No underline Goal of the interlaboratory test 4 Formatted: Indent: Left: 0 cm, First line: 0 cm, Space After: 0 pt, Don't adjust space between Latin and Asian In the interlaboratory test, different possibilities for the determination of determining the yield point. text, Don't adjust space between Asian text and using the **favouritepreferred** methods were considered. numbers Formatted: Body Text, Don't adjust space between Latin The samples used in the comparative testing programme <u>{consisted of</u> different waterborne basecoats and Asian text, Don't adjust space between Asian text with lower vield points and dispersions with distinctly higher yield points. The samples also included and numbers the following limited cases: -very low yield points (<-1 Pa), at which the range of elastic deformation is so low that the Formatted: List Continue 1, Space After: 0 pt, Line material can also be approximately considered as a liquid at the state of rest; spacing: single, No bullets or numbering, Don't adjust space between Latin and Asian text, Don't adjust space \_\_\_\_materials of which the internal structure is disintegrated only stepwise so that a transition range between Asian text and numbers, Tab stops: 0.7 cm, Left + 1.4 cm, Left + 2.1 cm, Left + 2.8 cm, Left + 3.5 is occurring and a yield zone rather than a punctual yield point will beis determined. cm, Left + 4.2 cm, Left + 4.9 cm, Left + 5.6 cm, Left + 6.3 cm, Left + 7 cm, Left Furthermore, a non-Newtonian reference sample from the the National Metrology Institute of Germany\* [PTB-Braunschweig] was also included in the comparative testing programme. Formatted: Font: Cambria Some background information on the original interlaboratory test is given in Annex A. Formatted: Body Text, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers Metrological determination of the yield point 5 Formatted: Indent: Left: 0 cm, First line: 0 cm, Space After: 0 pt, Don't adjust space between Latin and Asian 5.1 General text, Don't adjust space between Asian text and numbers In \_Clause 5, briefly describes all the methods that are currently in use are briefly described at the time of Formatted: Body Text, Don't adjust space between Latin publication. In principle, the yield point depends on the temperature, the pressure and the thermal and and Asian text, Don't adjust space between Asian text mechanical history of the material. A detailed specification of the measuring profile is therefore a and numbers precondition for reproducible measurements. Formatted: cite sec 5.2 Shear rate-controlled rotational test Formatted: Indent: Left: 0 cm, First line: 0 cm, Space After: 0 pt, Don't adjust space between Latin and Asian The shear rate $\dot{\mathbf{y}}\dot{\mathbf{y}}$ is specified in the form of a ramp, as shown in Figure 1. text, Don't adjust space between Asian text and

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Key Tech Standards $\tau_{g}$ - Bingham yield point $K_{g}$ - consistency index according to Bingham $\dot{\gamma}$ - shear rate     https://standards.iteh.ai $\dot{\gamma}$ - shear rate     Document Preview	<b>Formatted:</b> Key Title, Don't keep with next, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Tab stops: 0.7 cm, Left + 1.4 cm, Left + 2.1 cm, Left + 2.8 cm, Left + 3.5 cm, Left + 4.2 cm, Left + 4.9 cm, Left + 5.6 cm, Left + 6.3 cm, Left + 7 cm, Left
<u><i>z</i></u> shear stress	
Σ <u>B</u> Bingham yield point	Formatted: Figure title, Level 1, Don't adjust space
K <sub>B</sub> consistency index according to Bingham $\dot{\gamma}$ shear rate	between Latin and Asian text, Don't adjust space between Asian text and numbers
<sup>7</sup> <u>shear rate</u> <u>shear rate range</u> <u>Figure 2</u> Flow curve regression according to Bingham	Formatted: Body Text, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers
rigure 2 i low curve regression accoruing to bingnam	Formatted: cite_eq
As well asThis yield point value depends not only on the specified ramp period, this yield point value depends but also on the chosen shear rate range and on the chosen regression model. In industrial laboratories, the models according to Bingham, Casson or Herschel/Bulkley are widely used. The model function according to Bingham is given in Formula (1):	Formatted: Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers, Tab stops: 0.7 cm, Left + 1.4 cm, Left + 2.1 cm, Left + 2.8 cm, Left + 3.5 cm, Left + 4.2 cm, Left + 4.9 cm, Left + 5.6 cm, Left + 6.3 cm, Left + 7 cm, Left
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