Compendium to "Adjusted Rating Life (ISO Standard) or New Adjusted Load Rating?"

The New STEYR Rolling Bearing Solution

Where a certain operating condition (formation of lubricating film) is to be taken into consideration, this may be done by introducing the adequate (equivalent) \( a_{23} \) factor into the formula for the adjusted rating life which is

\[
L_{\text{mod}} = a_1 \cdot a_{23} \left( \frac{C_{\text{mod}}}{F_e} \right)^p
\]

- Increased rating life \( L_{10 \text{ (new)}} \)
  
  \( F_e \equiv P \ldots \) dynamic equivalent load

- life adjustment factor for material and lubrication
  - see fig.4, can be determined with the aid of fig.2 and fig.3

- life adjustment factor for reliability
  - see fig. 1

![Graph](image)

\( S \) [%] vs life adjustment factor for reliability (according to WEIBULL)
Required minimum viscosity of lubricant (reference viscosity) $\nu$, as function of mean bearing diameter $d_m = \frac{1}{2}(D + d)$ and speed $n$. 

Fig. 2
Operating viscosity $\nu$ as function of temperature $t$ and nominal viscosity at $40^\circ C \nu_{40}$; viscosity - temperature - (V-T) diagram.
Operating condition | Range
--- | ---
Unfavourable operating conditions; bad or moderate sealing; contaminated or unsuitable lubricants | R
Normal operating conditions; good or very good sealing; clean and suitable additive lubricants | Y
Ideal operating conditions; optimum sealing; extremely clean lubricants, surfaces are completely separated by lubricating film ➔ transition to fatigue strength | G

*Fig. 4*

**Factor** $a_{23}$ **as function of viscosity ratio** $\zeta = \frac{\nu_2}{\nu_1}$