



The above diagram shows the relation between the pH-value, temperature and rate of glass wear for boiler-water.

### Mica protection

The mica shield must be supported by a glass with a perfectly flat surface. For this reason, only transparent (plate) glasses can be mica-protected; this is not possible for glasses provided with reflex grooves.

As already mentioned, sight glasses must be mica protected on the side facing the medium when used with steam at pressures over 35 bar or with media which cause rapid wear of the glass.

Mica is a naturally-occurring substance. Only high-quality mica offers the desired sight glass protection. Purity-wise our micas meet the requirements of ISO 2185: "stained first quality" up to 70 bar and "stained A quality" above 70 bar. Minimum light transmittancy is 1200 lux and guarantees optimum readability of the liquid level.

Our quality control is very strict: the structure and processing of the mica are tested, impure or imperfectly processed micas (scratches) are thereby rejected.

### Problems of glass wear

Sight glasses in liquid level gauges on steam boilers are exposed to very high mechanical and chemical stresses. The interface between steam and water is continuously in motion: water evaporates, condensate forms.

Above all, the condensate running down the sight glasses leaves traces of abrasion. Boiler water is always chemically treated water from which mineral substances have been extracted. The demineralized water tends, however, to increase its mineral content and extracts this from the glass. This chemical attack on the glass is largely determined by the pressure, temperature and pH-value of the boiler water (see diagram).

With unprotected sight glasses, steam pressures should not exceed 35 bar nor the pH-value 10, if an economic service life is required. This limiting pH-value applies for feed-water at about 20° C. It should be noted that the pH-value decreases with increasing temperature — by 1.5 pH degrees on heating to 300° C — and that the pH-value of the boiler water must never fall below 7.

Though the abrasive action of the condensate and leaching out of minerals the glass loses transparency and becomes dull. Glasses used on steam services must be more frequently replaced than sight glasses used with other media.

KLINGER mica shields are individually packed to protect them against scratching. An exact, multi-language installation and maintenance leaflet is contained in each package. Each KLINGER mica shield consists of several very thin laminae. If the upper and lower laminae show varying quality it should be ensured that the mica is installed with the "better" side facing the medium chamber.

### Glass sealing gasket and cushion gasket

The sight glass is invariably installed between the sealing gasket and cushion gasket in the gauge body. The sealing gasket is made from high-quality KLINGER CAF material of our own manufacture. Through its compressibility and resilience this ensures uniform pressure on the glass.