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SKOGSINDUSTRIERNAS
TEKNIK AB
Pulp and Paper Industries' Engineering Co
Sweden

Stuffing box packings. Recommendations for the selection of materials and fitting

Introduction

This standard supersedes stuffing box standards SSG 1300 - 1310, 1316, 1320 and 1321. The recommendations cover the selection of packing material for various applications, and also fitting instructions.

1 Stuffing box packing material

1.1 Yarn material, applications

PTFE fibre, unfilled

Packing braid of spun PTFE fibre yarn or expanded PTFE. The material can withstand most chemicals with a pH of 0 - 14, with the exception of molten alkali metals and fluorine. Certain stuffing box packings of expanded PTFE can also be used for sealing liquid and gaseous oxygen. PTFE fibres are also used for ozone applications. PTFE fibres are normally resistant to temperatures up to +200°C and can withstand a maximum sliding velocity of 10 m/s. Suitable applications may include stuffing boxes for pumps and valves carrying aggressive or poorly lubricating media that do not demand good thermal conductivity.

PTFE fibre, filled

PTFE fibre impregnated with various fillers. The most common filler for packings is graphite. The filler proportion is approximately 50%. Graphite filling provides the fibre with good thermal conductivity. The low friction of the PTFE fibre is retained, and so is its ability to withstand most chemicals. The temperature and pH ranges are the same as for the unfilled PTFE fibre. The maximum sliding velocity is 20 m/s.
The standard grades are not intended for gaseous oxygen. However, there are special grades for gaseous oxygen and these have the same material combinations but have no mineral lubricant in the graphite and in the packing braid. The maximum sliding velocity for the gaseous oxygen version is 5 m/s.

Carbon fibre

Packing braid spun from carbon fibre yarn with a minimum carbon content of 96%. Due to its low friction, the material will not cause damage to shafts and shaft liners. Carbon fibre can be used for pumps and valves carrying most media with a pH of 0 - 14, with the exception of strong acids and alkalis, and strong oxidizing substances. Due to their good thermal conductivity, certain variants are suitable for high temperatures, e.g. superheated steam. The maximum sliding velocity is 20 m/s.

Graphite

Packing braid of spun graphite yarn. Expanded graphite is available as flat or corrugated strips, as compression moulded rings or as braid sold by the metre, either of expanded pure natural graphite (98%) or as graphite fibre. The elasticity and spring-back are permanent, regardless of the time and temperature. Graphite can withstand temperatures in the range between -240°C and +2500°C in a non-oxidizing atmosphere and is used for valve stems and in pumps, stirrers and mixers. Owing to their good thermal conductivity, certain types are suitable for high temperatures, e.g. superheated steam. Certain types are also suitable for gaseous oxygen environments, e.g. the graphite type which is free from mineral oil. In equipment in which ozone occurs, the following should be taken into account:

- Graphite packing should be used with caution
- Graphite packings must be free from lubricant
- Avoid subjecting graphite products to high pressures and temperatures

Other synthetic fibre

Packing braid of yarn spun from synthetic fibre. Examples: polyamide fibre yarn, aramid fibre yarn, etc. Applications include pumps, valves and mixers that handle acids, alkalis, water and steam with a pH in the range of 3 - 12, although not gaseous oxygen. Depending on the

Postal address	Phone	Telefax	Number of app.
Box 140, S-851 03 Sundsvall	060-12 38 50	060-15 07 10	

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