

# NSK

## LONG-LIFE WATER-RESISTANT BEARING GREASE

EXTENDING EFFECTIVE BEARING PERFORMANCE IN ROLLING MILLS



STAY IN MOTION. STAY IN CONTROL.

# NSK GREASE FOR SEALED-TYPE ROLLER BEARINGS



## FLAKING - CAUSE AND PREVENTION

Flaking occurs when small pieces of bearing material are split off from the smooth surface of the raceway or rolling elements due to rolling fatigue, causing areas with rough and coarse texture. Causes may include poor lubrication, improper lubricant, entry of foreign debris and entry of water.

Particularly for the sealed type 4-row tapered roller bearings, NSK developed long-life water-resistant grease (AQGRD R1) which is enhanced in base oil viscosity and special water-resistant additives.



**Above:** AQGRD R1 grease  
**Left:** Operating condition of bearings for work rolls

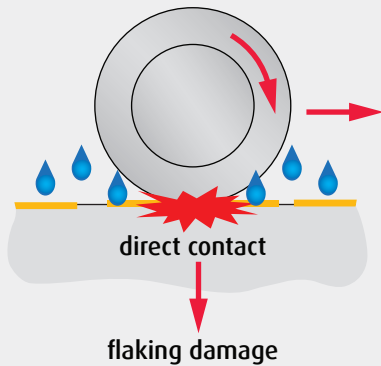
## Benefits of Water-resistant AQGRD R1 Grease Technology

- › Inhibits water entry to rolling surface
- › Minimizes premature flaking and rust
- › More than doubles bearing flaking life versus conventional grease
- › Reduces grease consumption and grease waste

## CONVENTIONAL GREASE VERSUS AQGRD R1

### Failure Mode: Conventional Grease

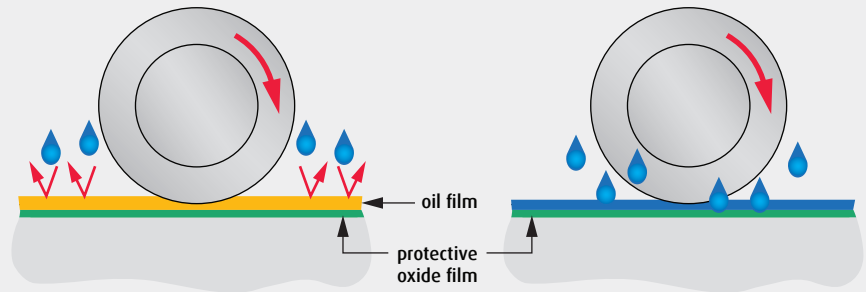
Grease deterioration due to water entry leads to metal on metal contact and flaking damage



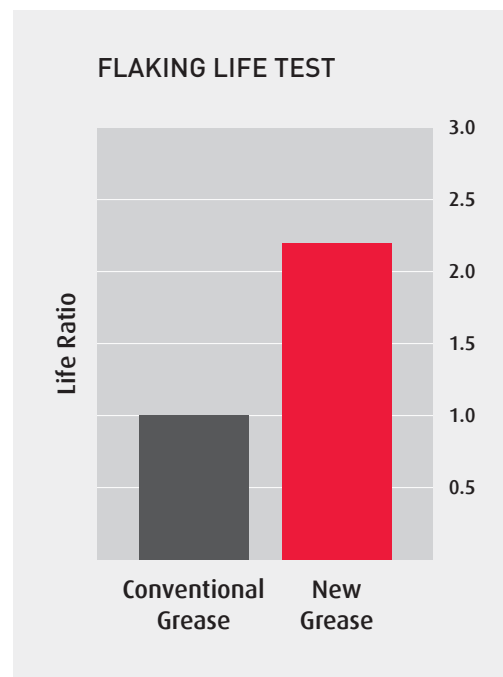
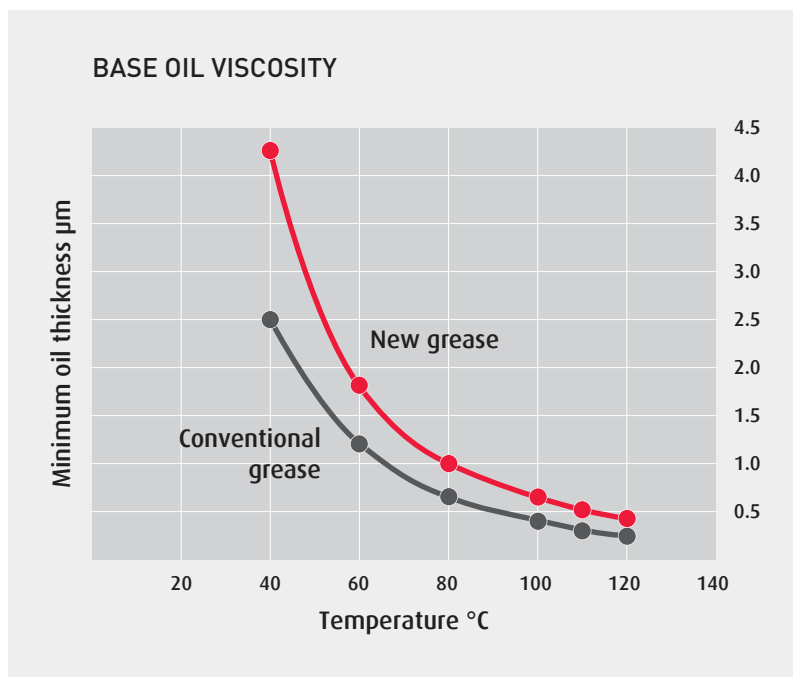
### Advantages: New Water-resistant AQGRD R1 Grease Technology

The ability to repel water with a thicker layer of oil film and the protective oxide film

In the case where there is insufficient lubrication, the protective oxide film is still able to prevent water contact between the roller and the surface



indirect contact prevents flaking and rust resulting extension of bearing life



**Conditions:**

Bearing: 32968, P/C: 0.15, Speed: 567 r/min

**Cold rolling work roll at following conditions:**

Bearing: HR32017XJ (open single-row tapered roller bearing)  
 Room temperature while bearing temperature at 60-70 °C  
 Radius force: 35.8kN, Axle force: 15.7kN, P/C: 0.25  
 Speed: 1500 r/min

## TYPICAL ANALYSIS

CONTENTS	AQGRD R1 GREASE
Color	Yellow
NLGI grade	2
Consistency (worked penetration)	322
Base oil	Mineral oil
Thickener	Lithium complex soap
Base oil viscosity, mm <sup>2</sup> /s at 40°C / at 100°C	352 / 28.7
Viscosity index	108
Dropping point (°C)	216
Oil separation (mass %)	1.4
Oxidation stability (kPa)	30
Water washout (mass %)	59
Corrosion preventive properties (based on ASTM D1743)	#1 (no corrosion)





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