FENNER DUNLOP
CONVEYOR BELTING

Oil-resistant belting

The effects of oil on rubber

Conveying materials and products that contain oil, fat or grease can have a highly detrimental effect on the performance and life expectancy of a conveyor belt. When oil penetrates the rubber, it causes the material to swell and distort, resulting in serious tracking and steering problems as well as premature wear.

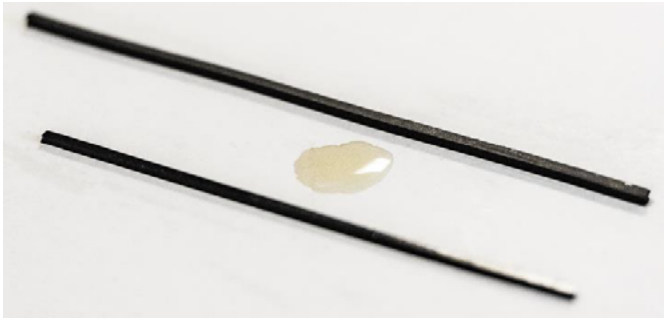
The oils and fats that cause these damaging effects can be divided into two distinct categories: mineral oils and vegetable or animal oils.

Mineral oil is usually a liquid by-product of refining crude oil to produce gasoline and other petroleum products. It is composed mainly of alkanes and cycloalkanes related to petroleum. High concentrations of mineral oil can be found in household and industrial waste. Different mineral oils can cause significantly different levels of swelling in synthetic rubber compounds.

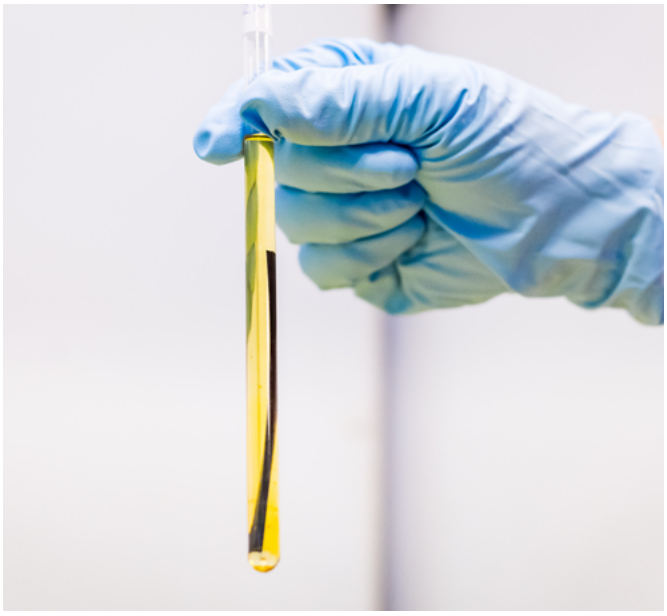
The level of oil and resin present in wood depends largely on the type and origin of the wood. Good oil resistance is necessary for most wood sourced from Scandinavia, as it mainly consists of pine with a high turpentine content.

In Southern European countries and Latin America, eucalyptus trees are commonly used. Eucalyptus wood contains little or no turpentine, so oil resistance is not as essential. This generally also applies to other non-pine woods, such as poplar and birch.

However, if the wood being conveyed originates from various or unknown sources, we always recommend using conveyor belts that are resistant to vegetable oil.



The swelling effect of oil on rubber.



Testing for oil resistance in the Dunlop laboratory

Oil resistance testing

ISO and DIN international standards containing specifications for oil and grease resistance do not yet exist.

To minimise the swelling and distortion caused by oil, even in the most demanding applications, Fenner Dunlop applies stringent testing methods based on the American ASTM D1460 standard.

Fenner Dunlop solutions

Despite their different characteristics, most conveyor belt manufacturers produce only one oil-resistant rubber cover compound. At Fenner Dunlop, we have designed and engineered two compounds to provide the best possible protection against different types of oil.

Fenner Dunlop ROM is specifically designed to resist the penetration and damaging effects of vegetable and animal oils, fats and resins.

For highly aggressive mineral oils, our engineers have developed the highly successful Fenner Dunlop ROS cover quality. Some vegetable products can have a similarly detrimental effect to mineral oil. In these situations, and in applications involving products with high concentrations of vegetable oil, we recommend the superior resistance provided by the ROS cover grade.

Oil- and wear-resistant

The chemical components used to create an oil-resistant rubber compound usually have an adverse effect on its resistance to wear. At Fenner Dunlop, our technicians have developed oil-resistant rubber compounds that are also extremely resistant to abrasion.

Buyers should always demand an average abrasion resistance of less than 150 mm^3, supported by a technical datasheet confirming the level of abrasion resistance.

Covers that are resistant to both oil and fire are also available to order from the Fenner Dunlop range.

BVM K/S Oil resistant (ROM) and fire retardant according to EN 12882 Class 2A (K) and Class 2B (S)

BV VT Oil resistant (ROM) and fire retardant up to EN 12882 Class 5A)

BV GT Oil (ROS), fire and heat resistant

Oil and extreme cold

Oil-resistant belts are usually only able to withstand temperatures down to -20°C.

For operating temperatures below -20°C, conveyors should be fitted with Coldstar ROM, suitable for temperatures down to -40°C, or Coldstar ROS, suitable for temperatures down to -30°C.

These belts have been specifically engineered to operate in extreme cold conditions while also providing outstanding resistance to oil and abrasion.

Aggressive chemicals

Fenner Dunlop ROM and ROS oil-resistant rubber compounds provide good resistance to the damaging effects of many chemicals, including acids.

Because of the vast number of different chemicals, it is advisable to seek guidance from the manufacturer regarding any specific substances that may be present in the materials being conveyed.

All Fenner Dunlop conveyor belts are ozone-resistant in accordance with EN ISO 1431, REACH-compliant under EC 1907/2006 and suitable for use in ATEX-regulated zones.

Oil resistant belts in the recycling industry

Seek advice

More often than not, the quality of a belt, including its ability to resist oil, is reflected in its price.

It is always worth carefully checking the original manufacturer's specifications and requesting documented evidence of tested performance against the relevant international standards before placing an order.