

Approval of lubricants for FLENDER Gear Units – Basic workflow description

Aim of this procedure

This procedure describes the workflow for an approval of lubricants for the usage in FLENDER Gear Units. It provides the general processes and the organization of the procedure, but not the technical requirements which the lubricants have to fulfil. Those requirements can be found in the specification AS 7300 “Specification of the gear oil approval for FLENDER gear units” (<https://www.flender.com/lubricants>).

Variants of oil approvals

In general, different variants of approvals can be requested and granted:

- 1) Original Oil Approval
The oil manufacturer requests an approval for an **Original Oil**. This means the oil manufacturer is responsible for the formulation and sells the ready-to-use oil under its own brand name.
- 2) Formulation Approval
A formulation developer requests an approval for a **Formulation**. The oil is not directly sold using this formulation, but it is the basis for reblend approvals.
- 3) Reblend-Approval
The oil manufacturer requests an approval for a **Reblend**. This means the oil manufacturer commits to blend the oil in accordance with the formulation details of the owner of the formulation / original oil approval. The oil is then sold under the manufacturer’s own brand name.
- 4) Rebrand-Approval
The oil supplier requests an approval for a **Rebrand**. This means the oil supplier buys a ready-to-use approved oil from a manufacturer and sells it under the supplier’s own brand name.

Reblend and Rebrand approvals have to be requested by the oil manufacturer / oil supplier in cooperation with the owner of the original oil / formulation approval. The owner of the existing approval is responsible for the official request and makes contact with Flender. A rebrand or reblend approval is only possible for original oils / formulations with a remaining validity of at least two years.

If one applies for an approval of multiple viscosity grades under one brand name (viscosity series), then all required tests have to be performed according to the current approval specification, using all nominal viscosities which are listed in the specification.

The approvals are always granted for the tested formulations, consisting of base oil and additives. If several formulations use different base oils but the same additive system under the same product name, test results must be provided for all formulations. Furthermore, the miscibility of the products has to be proven.

At the very most, a manufacturer/supplier may have two different product names for one oil approval.

Required Documents

To apply for an approval, the following documents (see Table 1) have to be submitted to Flender. For the file exchange a secured server connection can be used. A link to the upload website can be requested from Flender by email. Please provide the name of the oil in the email.

In general, all of the following documents have to be submitted with each approval request:

Table 1: Documents for an approval request

| Document | Remark |
|---|---|
| Approval request to Flender | Excel-file, template available on request |
| Scanned request | Request sheet of the completed Excel file printed, signatures and company stamp added, hardcopy scanned |
| Preferably a quality certificate | Such as according ISO 9001 |
| Blend table for original oil or formulation approval requests | Example see corresponding sheet in the approval request file |
| Safety data sheet | For all requested viscosities, only one data set |
| Technical data sheet inclusive of the v-T-curves | For all requested viscosities, only one data set |
| Company logo | jpg-format, if possible coloured |
| IR reference spectrum (except rebrand) | For all requested viscosities, only one data set measured by the oil manufacturer |
| IR measurements in the ASCII code (except rebrand) | "asc" or "txt" – data files measured by the oil manufacturer |
| ICP reference values (except rebrand) | For all requested viscosities, only one data set example see corresponding sheet in the approval request file - measured by the oil manufacturer |

For a formulation or an original oil approval, additional test results must also be presented. In this case, these documents can be:

Results of the

- FZG scuffing test acc. to DIN ISO 14635-1 (A/8,3/90)
- FE8 Roller bearing test acc. to DIN 51819
- Compatibility tests with the inner coating
- Compatibility tests with the outer finish paints
- Compatibility tests with the liquid sealant
- Static Elastomer compatibility tests for O-Ring and RSS materials
- Dynamic Elastomer compatibility tests
- FLENDER-foam tests, acc. to ISO 12152 and document GG-V 425
- Micropitting test acc. to FVA 54-VII
- Filterability test, acc. to document FFT 7300

In addition, an overview sheet of the test results (template see corresponding sheet of the file „approval_request“) must be provided.

The necessary documents are included in the accompanying document "approval_request".

For an approval request or an approval prolongation request of original oils or formulations, both the applied test methods and the limit values to be complied with must correspond to the stipulated Flender approval specification. Test results must NOT be older than 10 years.

The accompanying sheet „approval_request“ describes the approval procedure and serves as the official request-document. All required documents are listed there.

Once the documents have been checked and a positive result has been achieved, an approval may be granted by Flender. In this case, the product (with exception of formulations) will, on request, be added to the approved gear oil list T 7300 of Flender.

Test laboratories

Tests which are required for an approval have to be performed by an approved laboratory. A list of approved laboratories can be found here: <https://www.flender.com/lubricants>

Oil suppliers who wish to request an approval must contact the test laboratories on their own to agree on price and procedure.

Validity and prolongation of an approval

In general a granted approval is valid for five years as long as it is not withdrawn by the manufacturer or by Flender (see section "Reservation"). A prolongation by additional five years is possible, if the owner of the approval provides a written statement that product composition, product properties and all quality statements of the initial approval have not changed. Documents that are required due to changes in the approval process (see "Updates on requirement specification") have to be submitted together with that statement. The validity of rebrand / rebrand approvals is based on the corresponding original oil / formulation approvals.

Updates on requirement specifications

After a new revision of the requirement specifications are published, the following rules apply:

- 1) Existing approvals keep their validity
- 2) New approvals may be granted based on the old specification for six months after the release of the new specification.
- 3) Reblend and Rebrand approvals of an original oil / a formulation – if it is based on an old specification – can only be requested if the remaining validity is longer than two years.

Costs

To cover the costs for reviewing the submitted documents and for issuing the approval certificates, the following fees apply (plus VAT):

| | |
|--------------------------------------|---------|
| Original oil / formulation approval: | 4.000 € |
| Reblend / rebrand approval: | 2.000 € |

Reservation

Flender reserves the right to decline an approval despite successful conformance with the requirements. In this case no fees are due.

Furthermore, Flender reserves the right to withdraw a granted approval at any time in case there are hints on negative behaviour in the field or that the requirements for an approval are no longer fulfilled. The costs of issuing the release documents will not be reimbursed.

Flender also reserves the right to change or withdraw any of the rules presented in this document at any time.

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