Pascalor
ENGINEERED FOR EXTREMES

Qualifying elastomers for oil and gas service

Technical briefing, with a buyer's evidence checklist

DOCUMENT	VERSION	DATE
PP-TB-002	0.1	2026-10-23

TYPE
Technical briefing

Status. Technical briefing prepared from public sources. Contains no Pascalor test data. No Pascalor compound has been qualified to any standard named here. Sources were read on 23 October 2026. Check every figure against the current edition of the standard before you rely on it.

1. Purpose and status of this document

Oil and gas buyers often ask for "NORSOK approved" or "API 6A" rubber without saying what they need proven. This briefing explains how the pieces fit together so that a seal maker, a buyer and a compounder can agree on the evidence before money is spent on testing. It is based on public sources named in section 9. It does not reproduce any standard. **It contains no test results, and at the date of this document no Pascalor compound has been qualified to any standard named here.** It does not give API 6A numbers, because the public sources we read were incomplete or inconsistent on them. Read the standard for those.

2. Summary

- Qualification is not a single stamp. It can apply to a polymer family, a specific compound, the company that makes it, the component it goes into, or a particular service condition. Each of these is a different claim.
- ISO 23936-2 and NORSOK M-710 are the usual references for elastomers in oil and gas production. They cover ageing in service fluids and rapid gas decompression, among other topics.
- API 6A, API 16A and API 17D govern equipment. They reach the rubber through material and temperature classes and through the tests those documents call up.
- Approval does not travel with a name. A test report belongs to a compound made to a recipe, mixed and cured by a process. A change to the recipe, the polymer grade or the process puts the claim in doubt.
- The most useful single question to a supplier is: "Please send the report."

3. The layers of a qualification claim

LAYER	WHAT IS BEING PROVEN	TYPICAL EVIDENCE	WHO OWNS THE CLAIM
Polymer class	That a family (for example HNBR, FKM, FEPM) is suitable for a fluid and temperature range	Published guidance, standards annexes	Anyone
Compound	That a specific formulation passes defined tests	Test reports with compound identity, conditions and acceptance level	The compounder or seal maker who holds the recipe
Manufacturer	That the company can make the compound consistently	Quality system documents, audit reports, batch records	The manufacturer
Component	That a given seal, in its groove and under its load, works	Component tests, application-specific qualification	The equipment maker
Service	That the whole assembly suits a well or field	Operator review and project documents	The operator

A claim at one layer does not prove the next layer up. A compound that passed an RGD test on a standard O-ring has not shown that a large custom seal in a different groove will pass.

4. The documents that matter, and what they are for

DOCUMENT	WHAT IT IS FOR, IN PLAIN TERMS	WHAT THE PUBLIC SOURCES SAY
ISO 23936-2	International standard for elastomers in contact with oil and gas production media.	Annexes: A (ageing in test fluids, normative), B (rapid gas decompression, normative), C (common elastomers, informative), D (service-life estimate using the Arrhenius relationship, normative), E (physical and chemical ageing, informative), F (RGD, informative). Clauses also cover bonded flexible hose and other large components such as flexible joints, blow-out preventers and packers.
NORSOK M-710	Norwegian industry standard for qualification of non-metallic sealing materials and manufacturers.	One supplier source says that ISO 23936-2 reproduces Edition 3 Annex B. Edition differences exist.
API 6A / ISO 10423	Specification for wellhead and Christmas tree equipment.	One supplier source says the current API 6A is a modified adoption of ISO 10423:2003, with an immersion test appendix whose test medium is set by material class and whose test temperature follows the temperature class.

DOCUMENT	WHAT IT IS FOR, IN PLAIN TERMS	WHAT THE PUBLIC SOURCES SAY
API 16A	Drill-through equipment, such as blow-out preventers.	Named here for orientation. Read the current edition for the elastomer clauses.
API 17D	Subsea wellhead and tree equipment.	Named here for orientation. Read the current edition for the elastomer clauses.
NACE (now AMPP) TM0187	Method for evaluating elastomeric materials in sour gas environments.	Listed in the AMPP store. Read the current edition.
NACE MR0175 / ISO 15156	Materials for sour service.	These govern metals. They are not the route to qualify an elastomer.

Sources disagree on API 6A details. For example, one comparison note assigns the sour gas mixture of 10 % H2S, 5 % CO2 and 85 % CH4 to API 6A material classes FF and HH. A supplier page assigns the same mixture to DD and EE. We have not resolved this and have not used either assignment. This is why we ask you to read the standard itself.

5. A short guide to choosing the test route

This is a general guide to starting the conversation. It is not a specification.

IF THE SERVICE INVOLVES	THE QUESTIONS TO SETTLE	TYPICAL TEST FAMILY
High-pressure gas with sudden pressure drops (valves, packers, compressors)	Gas composition, pressure, temperature, decompression rate, seal size	Rapid gas decompression. See PP-TB-001
Hydrogen sulfide or sour hydrocarbon fluids	Fluid mix, temperature, duration, acceptance limits	Ageing in sour fluids. See PP-TB-004
Hot hydrocarbon liquids, with or without water	Fluid, swell tolerance, temperature	Fluid immersion and property change
Long service life estimates	Three or more temperatures above service temperature, property change over time	Arrhenius extrapolation as in ISO 23936-2 Annex D
Mixed requirements (sour, RGD and high temperature)	Which requirement dominates the recipe	A planned programme, not a single test

6. What a buyer should ask for

1. **The report, not a summary.** Report number, date, laboratory and signatory.

2. **The laboratory's accreditation.** ISO/IEC 17025 scope should cover the tests reported.
3. **Compound identity.** Name, polymer family, hardness, cure and post-cure, and a statement of how the compound is controlled (recipe revision, lot).
4. **Standard and edition.** With every deviation listed.
5. **Test conditions.** Fluids, gases, temperature, pressure, time, decompression rate, specimen type and size.
6. **Acceptance level.** The numeric level used, and who set it.
7. **Raw results.** Every digit of the rating, every property change, not only "pass".
8. **Change control.** What happens to the claim if the polymer grade, filler, cure system or mixing site changes.
9. **Traceability.** How a seal in your hand links to a lot, a batch record and a report.

7. Common problems

- **Approval by association.** A supplier cites the approval of a similar compound. A similar compound is not the same compound.
- **Missing edition.** A claim to "NORSOK" without edition or conditions cannot be compared with another claim.
- **Different specimen.** An O-ring result offered for a large custom seal.
- **A report older than the recipe.** The recipe has changed since the test and nobody has recorded it.
- **A report that cannot be tied to a lot.** The test sample was made in a laboratory mill and production is made in an internal mixer. Equivalence should be shown, not assumed.
- **Confusing the metal and the seal.** Sour service metal standards do not qualify rubber.

8. Qualification file template

Keep one file per compound. Result fields are blank on purpose.

ITEM	ENTRY
Compound name and revision	
Recipe revision (kept private; reference only)	
Polymer family and hardness	
Production site and mixing method	
Standard / edition	
Laboratory, report number, date	
Conditions tested	
Result (as reported, with every digit)	

ITEM	ENTRY
Acceptance level and who set it	
Valid for (compound revision, lot range)	
Change triggers that require retest	
Expiry or review date	

9. Sources and verification

SOURCE	USED FOR	STATUS
ANSI webstore preview of ISO 23936-2:2011	Clause and annex structure	Table of contents only
CDI Energy Products technical report	Relationship between ISO 23936-2 and NORSOK M-710 Edition 3; Annex A and B outline	Supplier summary. Verify
Prepol, API 6A and ISO 10423 elastomers	API 6A as a modified adoption of ISO 10423:2003; immersion appendix	Supplier summary. Gave no numeric requirements
ETS technical note ORD5774	Comparison of routes; the material class conflict in section 4	Supplier summary. Table extraction imperfect
AMPP store, NACE TM0187	Existence and title of TM0187	Catalogue entry
ISO 23936-2, NORSOK M-710, API 6A, API 16A, API 17D	Primary requirements	**Buy and read the current editions**

Sources were read on 23 October 2026. Web pages change.