Hydraulic & Offshore Supplies
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Limits for hose and hose assemblies

"SHELF-LIFE" has been a much-misunderstood term and this has led to a breakdown in the procurement process and premature scrapping of "good" hose and hose assemblies.

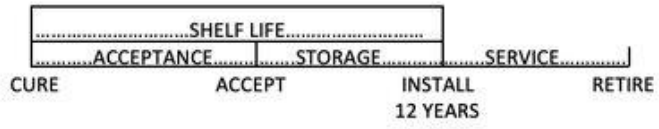
As the only date that is generally printed / embossed on the hose itself, cure date is the most logical date for all elements (manufacturer, distributor, warehouseman, user, etc.) from which to start their "time limit" This created conflict when the manufacturer has 8 years to deliver but the warehouseman only has 4 years to store it.

SHELF-LIFE is defined as: 12 YEARS (48 QUARTERS) FROM CURE TO END OF STORAGE OR ENTRY INTO SERVICE.

The manufacturer / distributor continue to have 8 years (32 quarters) from cure date for delivery to the user; however, if the user receives the hose / hose assembly at 4 years from cure then the available "storage period" is 8 years, to a total of 12 years from cure.

Definition

SAE AS1933 Revision *** is the standard cited for the "acceptance age" in rubber hose specifications, with SAE J517 and J1273 addressing industrial (CID) hose and hose assemblies.



SHELF-LIFE:
Shelf-Life is that period from the cure date to the limit that a rubber hose or hose assembly may be stored, under proper conditions and still retain a reasonable expected service life. **Shelf-life is the combination of acceptance and storage life.**

STORAGE LIFE:
Storage life is that period from the customers' acceptance/receipt to the installation into service. Control and limits are established by the user. However, the period from acceptance to the 12 years from the cure date is recommended.

ACCEPTANCE LIFE:
Acceptance life is that period from cure/manufacture of bulk hose to its acceptance/receipt by the customer/user. Control and limits are exercised by the manufacturer (Parker Stratoflex) including its authorized agents/distributors. See age at acceptance.

SERVICE LIFE:
Is that period from installation to retirement. Control and limits are established and exercised by the user.

HOSE AGE:
Is the main controlling factor, regardless if it is in bulk hose or in hose assemblies.

CURE DATE/MANUFACTURE DATE:
The terms, Cure (or Vulcanization) date and Manufacture date are used interchangeably. It refers to the date the compounded, uncured rubber is vulcanized to produce the hose. The cure date shall be indicated, on the hose, by the quarter of the year plus the year it was cured with each having the appropriate prefix as shown in the following example: For a cure date of third quarter, 1997, it would be depicted as 3Q97. The year shall be divided into quarters as follows:
1Q – January, February and March.
2Q – April, May and June.
3Q – July, August and September.
4Q – October, November and December.

NOTE
Rubber hose manufactured during any given quarter will not be considered one quarter old until the end of the succeeding quarter.

NOTE
Any rubber hose, or rubber hose assembly, for which the cure or manufacturing date cannot be determined, SHALL BE SCRAPPED.

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Which hose materials are age sensitive?

ELASTOMERS (RUBBER):
Hose and hose assemblies of synthetic rubber, such as BUTADIEN-ACRYLONITRIL (NBR, BUNA-N), POLYCHLOROPRENE/NEOPRENE (CR) and EPDM are subject to ageing and do have established limits and guidelines, as described in this Information Bulletin and referenced standards.

SILICONE:
This material has an excellent life span thru acceptance, shelf and service phases (MIL-HDBK-695 allows a minimum of 20 years customer shelf life) and outstanding service life. This material should also be protected in storage particularly from fuels, oils or solvents.

POLYTETRAFLUOROETHYLENE (PTFE/TFE) (TEFLON®), and THERMOPLASTIC (NYLON):
Hose/hose assemblies of these materials are considered to be **NON-AGING** . (Reference AFTO 42E1-1-1, para. 4.2, NAVAIR 01-1A-20, para. 5-4.a (2) Note and AIR 1569, para. 3.1.1.2). Acceptance, shelf and service life are unlimited; however, see SERVICE LIFE below.

CHLORINATED POLYETHYLENE (CPE):
The shelf life of Hose/hose assembly of this material (HSP or PKR) is limited to 48 quarters per MIL-DTL-83797B, para. 3.7.

AGE AT ACCEPTANCE: Elastomeric hose/hose assemblies are generally controlled by AS1933* * and shall not be greater than 32 quarters (8 years) old at acceptance by the Government or ultimate user/customer. With AS1933 Revision A now the controlling document, age to engine/vehicle OEM“s is generally 24/28 quarters and to the Government/user 32 quarters (bulk) and 32 quarters (assemblies).

Hose during this phase must be protected from the deleterious effects of exposure to high oxygen concentrations, ozone, particularly in the presence of ultra-violet light, moisture, swelling agents such as fuels, oils or solvents, corrosive vapors, mechanical stress and high temperature.

Example – Acceptance age – Elastomeric hose / hose assembly (Cure Date 1Q97)

Last date to component producer	1Q03	(24 QTRS)
Last date to vehicle producer	1Q04	(28 QTRS)
Last date to user	1Q05	(32 QTRS)

STORAGE LIFE :
This period is measured FROM ACCEPTANCE . Elastomeric hose/hose assemblies in storage are presently controlled by the customer.
At the prescribed storage (shelf) limit the hose/hose assemblies should be inspected for condition and storage life may be, and often should be, extended. Protection from undo aging during shelf storage is the same as noted above during the acceptance phase.

SERVICE LIFE:
This period is measured FROM INSTALLATION. Only the user can establish this period. Two identical hose assemblies, one operating between 70° F and 100° F ambient and fluid temperature, with relatively steady pressure will greatly outlast one at 225° F and impulsing service.

How long can a hose assembly serve? The user is in control.

Proper selection of a hose type and proper installation/routing will result in excellent long service in all but the most abusive applications.

Most hose assembly failures are due to using the wrong hose for the job or external abuse caused by kinking, chafing, impact, use as a handle, step or simply bending it out of the way (exceeding bend radius or “breaking” a “set” hose) to gain access to another part.

All hoses, including PTFE, Nylon, CPE, Silicone and Rubber, “take a set”. That is, after a period of use in a particular configuration the hose has permanently assumed a fixed shape. A hose that has taken a set has lost its elasticity. Stratoflex recommends that a hose that is no longer elastic or flexible should be replaced.