SPLICE KIT STORAGE AND HANDLING GUIDELINES

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FENNER CONVEYORS
A MICHELIN GROUP COMPANY

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1.0 SPLICE KITS AND REPAIR MATERIALS (UNCURED RUBBER)

This Guide provides essential information regarding the proper storage and handling of splice kits and other repair materials that use uncured rubber, covering requirements from the point of delivery until to time of use.

The requirements detailed below are critical to ensure materials are in usable condition over the nominated shelf life. Also note that the standard provided warranty will be void if materials are not stored in accordance with this guide.

1.1 Composition of Splice and Repair Kits

Repair materials and splice kits contain uncured rubber and solutions that degrade over time. This is the reason these materials have a use-by date. The components that drive the shelf life are listed below:

Table 1 - Kit Contents Breakdown

SPLICE KIT / REPAIR MATERIAL	Textile Stepped Kit	Textile HIS Kit	Steel Cord Splice Kit	Repair Materials
Skim (Adhesion) Rubber			Optional	
Saddle / Sealing Strip Rubber				
Cover Panel Rubber				
Edge Fill Strip Rubber				
Wire, Finger & End Fill (Noodle) Rubber				
Rubberised Fabric including Breaker / Reinforcing materials	Optional		Optional	
Solution - type to suit Rubber supplied				

Splice kits will contain additional consumables commonly used during splicing activities, however these materials are not sensitive to storage conditions.

1.2 Use By Date / Shelf Life

For splice kits, repair kits and Individual repair components the shelf life is determined by the lessor of:

1. The allowable shelf life from the mixing date of the individual compounds and solutions, and
2. The shelf life from date of kit production.

SM603 – Splicing Materials and plastic colours, which can be found on your splice instruction portal or from your Fenner customer support, details the individual shelf life for our range of compounds and solutions, and the subsequent colour identification scheme. For most observers this will appear to be 12 Months from the date of kit supply, but there are subtleties to remain aware of:

- Some materials have a shelf life less than 12 Months, thus where multiple components are supplied in a kit, the earliest use by date will also be the use by date for the entire kit.
- Individual components may be marked with the use by date applicable to that specific item. This will often be different to the use by date for the kit of materials.
- If the below storage and transportation conditions are not met use by dates will be voided.

Materials MUST be used before the use by date marked on the individual component or kit.

Materials MUST have been stored and handled in accordance with the requirement of this guide for the stated use by date to be valid.

2.0 PACKAGING AND STORAGE REQUIREMENTS

2.1 Packaging

Repair materials, excluding any hazardous goods, are shipped in heavy duty carboard boxes.

All splice kits and other packages that include solutions or solvents (dangerous goods) will be shipped in a timber box.

Solutions and solvents are supplied in metal containers to be compliant with regulations relating to the storage and handling of hazardous materials.

Insulation and eco-friendly gel packs may be added to packaging to provide additional protection to sensitive materials such as wire fill (Noodles). These measures are provided to ensure that materials are delivered in good condition.

2.2 Storage Requirements

These storage conditions MUST be met for splice kits and repair materials to be usable over the nominated shelf life, and for any warranties to apply.

Incorrect storage can result in rapid and severe degradation of the materials leading to the failure of repairs and splices.

Storage Requirements:

- Store in an enclosed area, away from direct sunlight, intense artificial light, moisture or high humidity, and ozone-emitting devices.
- Storage in a Cool Room or similar temperature-controlled environment at or below 10°C.
- Freezing, storage at or below 0°C, is ***not*** recommended.
- Ensure packaging remains intact to avoid exposure to contaminants.

It is expected that materials are stored in accordance with these requirements within 12 hours of delivery and are used within 12 hours of removal from storage conditions.

Escalate to the Splice Kit Team if conditions outside of these requirements are expected. This may result in measures including shelf life reduction, fully refrigerated transport, packaging with additional cooling & insulation, additional controls such as pre-use sample testing.

2.3 Transportation Requirements

In setting material shelf life, some allowances have been made for exposure to conditions outside of the storage requirements (see above). This is to facilitate manufacture and transportation to the point of delivery to the customer, where splice kits are not refrigerated.

Temperature-controlled transport and express shipping are recommended and must be used where exposure limits may be severely exceeded.

From the point of delivery, storage requirements MUST be met for shelf-life to remain valid.

3.0 IMPACTS AND DETERIORATION

3.1 Impact of Storage Temperature

Elevated storage temperature has a significant effect on the shelf life of materials, and this effect is often under-estimated.

The rule of thumb to understanding this effect is:

For every 10˚C increase in temperature the shelf-life is halved.

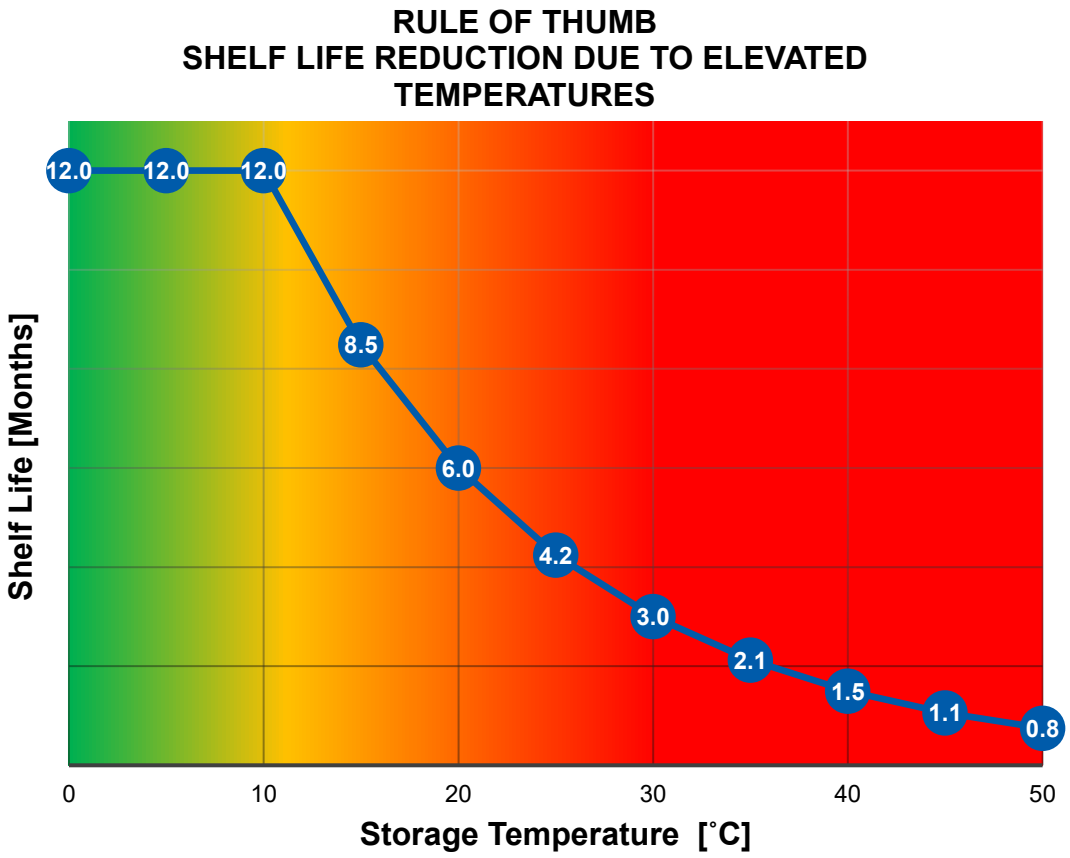

Figure 1 - Shelf Life Reduction Due To Elevated Temperatures

This chart shows the nominal effect on shelf life of a material with a typical 12-month life when stored at 10˚C.

Even a modest deviation to store at 15˚C results in the shelf life being reduced by 3 - 4 Months.

At the more severe end, storage outside or refrigeration during an Australian summer might see the material become unusable after just a few weeks.

3.2 Aging Effects and Further Assessment

It is known that the ethos ***FRESH IS BEST*** applies to the raw materials that will deliver the best possible splice or repair.

Storing **uncured rubber** at the recommended conditions minimises premature vulcanization (scorch) and breakdown of other properties. Higher temperatures accelerate chemical reactions in the uncured rubber, leading to increased hardness and changes in tensile strength, and elongation.

The following conditions afflicting uncured rubber can be indicators of poor storage and handling:

Surface Migration

Migration of components of the compound to the surface may cause a coating (efflorescence) to form. Shown as the greyed surface of the rubber in the image below.

Figure 2 - Surface Migration

This can be cleaned with solvents like Toluene, ensuring complete evaporation before use.

Vulcanisation

Exposure to excessive heat / energy can prematurely age the rubber, making it unusable. This can be a combination of vulcanisation, oxidisation and ozone attack, as well as other processes.

This can be seen as hardening of the rubber, making it more difficult to deform. Can also be seen as surface cracking when subject to bending or stretching.

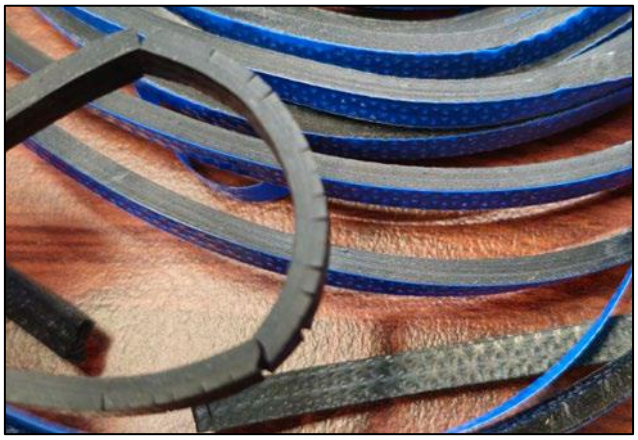

Figure 3 – Surface Cracking

Can be assessed by a rheometer, but caution that this can partially mask the effects of Surface hardening / cracking.

Solutions degrade differently, seen as thickening progressing to precipitation of solids out of the liquid. If solution shows any signs of lumps, that cannot be improved by mixing, the material should not be used.

There are additional options to assist assessment of splice and repair materials:

1. Batch traceability and reference samples – control samples of uncured rubber are retained under required storage conditions at the splice kit plant. These can be used to assess if material samples stored to required standards have degraded.

2. Splice kit temperature loggers – trialled in 2023-2024, and fully implemented in 2025, temperature loggers are used to capture the temperature inside the splice kit packaging. This can be used to assess if materials have been exposed to excessive temperatures. See below in section 4.1.

3. Splice kit sample packs – Introduced in 2024, these packs of key rubber components are supplied to simplify the process of collecting and returning materials for assessment. See below in section 4.2.

4.0 CONDITION MONITORING

4.1 Splice Kit Temperature Loggers

Figure 4 - Temperature Loggers Included in Kits

Temperature data loggers are included in each splice kit, attached to the underside of the box lid. They track temperature and humidity in the splice kit. Current versions log data every 30 minutes for 365 days, or until deactivated.

Usage

These data loggers can be connected to a PC via a USB A/B port or downloaded to a mobile phone using a USB A/B to USB C cable.

Once connected, the device will automatically generate the temperature and humidity report. The intention of this data is to be included in the quality documentation package completed with each splice.

After downloading data, they can be re-used by holding down the START button for 5 seconds. A 15 second count-down will commence until the new logging period begins.

If downloading data ahead of using the splice kit we recommend returning the unit back to the box in the original location.

Any data loggers supplied in splice kits remain the property of Fenner Conveyors, these are reusable devices, and we request they be kept for return for this purpose.

Location

All Splice Kits are supplied with a Temperature Datalogger User Manual located in a plastic pocket on top of the box. The Manual is positioned to cover the hole where the Datalogger is located. The Datalogger can be retrieved without removing the lid of the splice kit itself.

Figure 5 - Splice Kit Temperature Logger Location

Should you have any concerns about the logged internal temperature of a splice kit, please send this device and sample materials to Fenner. See Section 5.0 for further, or if immediate assistance is required.

4.2 Splice Kit Sample Packs

Each splice kit contains a sample pack consisting of the same materials supplied in the splice kit.

Figure 6 - Splice Kit Sample Packs

This enables samples of materials to be returned to for assessment, without needing to break into the primary splice kit materials.

5.0 QUALITY SUPPORT

In the event of any questions or concerns regarding the condition of splice kit or repair materials, please:

- Collect the sample pack or take samples of the materials if there is no sample pack
- Collect the temperature datalogger and download or prepare to send the unit with the samples
- Collect all documentation provided with the splice kit, and
- Take any photographs or video that may be of use in describing the issue

Customer to contact their Fenner representative to raise concerns and make arrangements to forward data and samples.

Fenner customer facing personnel to link in Fenner Dandenong Manufacturing and nearest Fenner Technical Laboratory. The Fenner Team will direct which Fenner lab location these samples are to be sent to for testing and review, and what information will be required.

Fenner held retention samples held under controlled storage conditions may be compared against splice kit samples to gauge relative degradation.

Fenner splice kit and belt manufacturing plants have extensive capabilities for the testing and analysis of rubber.

Contact Information:

Email: splicekits.feedback@fenner.com.au
Phone: 03 9768 4333

5.1 Safety Considerations

Solutions and solvents must be stored in accordance with the Safety Data Sheet (SDS) and local regulations.

Ensure safe handling practices for hazardous materials, including proper ventilation and appropriate protective equipment.

5.2 Disclaimer and Support

This guide provides general advice in Fenner products made and supplied in Australia.

Please contact the Fenner Splice Kit Manufacturing team to discuss any specific compliance requirements.