

T N E M E T E C H



SUBJECT

Elasto-Shield Part A And Part B Shelf Life, Storage Conditions And Inspection Criteria

PURPOSE

To discuss the shelf life & inspection techniques of Elasto-Shield

GENERAL

Elasto-Shield membranes consist of two components – Part A (premix) and Part B (activator). Tnemec publishes expected shelf lives of two years for the Part A and six months for the Part B. These shelf lives are predicated on reasonable storage conditions and freedom from contamination. Improperly stored material may have a shorter shelf life. Properly stored material may have a slightly longer shelf life.

ELASTO-SHIELD PART A (PREMIX)

Elasto-Shield Part A is a stable chemical mixture packaged in steel cans. The primary shelf life consideration is contamination by moisture. Atmospheric moisture may cause the steel pails to eventually rust and fail. Moisture contamination of the Part A will cause it to foam when the Part B is mixed into it. As long as the pails are protected from moisture of any kind, the practical shelf life of the material is indefinite. After several years, some settling of the constituents may occur, but mixing prior to adding the Part B will bring the components back into suspension.

ELASTO-SHIELD PART B (ACTIVATOR)

Elasto-Shield Part B is an aromatic MDI isocyanate. To be effective, it must be in a liquid state. MDI isocyanates convert to the solid state by “freezing”, moisture contamination, or aging.

Elasto-Shield Part B is shipped as a liquid. Although Part B is normally stored at well above the freezing point of pure MDI (70°F), it can handle a temperature drop near its freezing point temporarily.

When stored at about 80° F, it will remain liquid for well over the normal 6-month shelf life Tnemec suggests. Unfortunately, if it is allowed to freeze, it must be heated substantially over the MDI freezing point in order to melt the crystals. Shelf stability of remelted Part B is variable and not usually as long as the original, but the reactivity of the Part B, as long as it is in liquid form, is not impaired.

FREEZING

The MDI in Elasto-Shield Part B may freeze if stored at a temperature below 70° F. Freezing is evidenced by a fine white powder that accumulates at the bottom of the jug. In severe cases of freezing, the fine white powder may be suspended throughout the jug. Or the entire jug may turn a solid white. The period it may be stored below 80° to 90° F. before freezing occurs is inversely proportional to the temperature difference. The colder the storage, the shorter the time to freezing. It may be reliquified by heating for a short time only to 160° F. The temperature should not exceed 180° F. to avoid any chemical reaction, and should not be heated any longer than necessary. Reliquified Elasto-Shield Part B is as effective as unfrozen Part B, but it is not as shelf stable and should be used immediately.

When a freezing problem is encountered, MDI suppliers advise the heating of activator in a water bath to approximately 160° F. We have found that microwaving is much more efficient and does not expose the Part B to long periods at high temperatures. We suggest the following procedure:

| | |
|---------------------------|------------------|
| 11.5 Ounce Part B Bottles | 1 to 1.5 minutes |
| 0.5 Gallon Part B Jugs | 6 to 8 minutes |
| 0.6 Gallon Part B Jugs | 7 to 9 minutes |

Not all microwaves are alike. To avoid localized hot spots, mix or shake the container every 3-5 minutes. The intent is to heat the Part B to a temperature sufficient to reliquify the entire frozen product, i.e. 160° to 180° F. Times may be varied in order to achieve this result. A microwave with temperature probe inserted in the Part B is the most effective way to determine the proper heating time for any microwave/Part B volume combination. As long as the activator is a clear liquid – not opaque – it is acceptable to use.

Part B which is cloudy or has more than about ¼ inch of solid precipitate should not be used without reliquifying first. If after reliquifying there is still a suspended white powder, store the material in an 80° to 90° degree F. environment until the suspended white powder settles and the final depth of powder can be determined. The visible effects of freezing are similar to the effects of Chemical Aging except the effects of Chemical Aging can not be reversed with temperature.

MOISTURE CONTAMINATION

MDI reacts with water to form an inert polyurea and carbon dioxide gas. A contaminated Elasto-Shield Part B Jug will contain solid or jelled polyurea (typically the same color as the activator) and appear inflated because of the carbon dioxide. The solid or jelled polyurea typically adheres to the sides of the jug and is visible when the jug is turned on its side. If much polyurea is formed, there will not be enough MDI to completely activate the Elasto-Shield Part A. Therefore, moisture contaminated Elasto-Shield Part B should not be used.

CHEMICAL AGING

MDI will slowly react with itself to form an insoluble and inert polyurea that appears as a white powder (similar to freezing). The remaining liquid is still active. As the white powder builds up, the jug of Part B loses potency. A build-up of white powder less than ¼ inch (7mm) is allowable. More than ½ inch (1.3mm) of white powder results in an under activated product that will be softer and stretchier than our published specifications. More than ¾" (2cm) of white powder is unacceptable. The good Part B may be recovered by separating the powder from the liquid and the proper quantity of good Part B reestablished.

Storage in warm, dehumidified conditions can significantly extend the shelf life of Part B beyond six months. Poor storage conditions can shorten shelf life. The rule of thumb is that the Part B may be stored anywhere you would feel comfortable while lightly clothed.

Please note that properly stored Part B may not exhibit any signs of potency loss for up to one year. A simple visual inspection is all that is required to establish that the Part B is liquid and, therefore, usable.

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