

This technical data refers to the following Lighthouse products:

CPMSP23, Cryogenic Polyester

DESCRIPTION

Satin white print receptive polyester offering excellent low temperature cryogenic performance and dimensional stability combined with very good solvent, humidity, elevated temperature and UV resistance. Coated with PFC high performance acrylic adhesive which exhibits high initial tack and good adhesion to a wide range of substrates; including many plastics and to both high and low surface energy substrates, as well as low temperature shear performance when applied to both glass and treated PP vials. PFC adhesive is suitable for exposure to liquid nitrogen.

CONSTRUCTION

Face film: 50 µm thick Polyester
 Adhesive: 21gsm High Performance Acrylic based adhesive.
 Liner: Highly stable 135 gsm white Kraft paper.

TECHNICAL DATA

| | | |
|-----------------------------------|----------|----------------------|
| Thickness (Typical values) | Film | 50 micron |
| | Adhesive | 21 gsm |
| | Liner | 17 microns / 135 gsm |

ADHESION DATA

| | | |
|--|---|-----------------|
| Adhesion (Typical values) FTM 1 N/25mm @ 23°C, 50% RH | Initial Tack | 24 Hours |
| Stainless Steel | 12.2 n/25mm | 15.6 n/25mm |
| Glass | 12.8 n/25mm | 16.1 n/25mm |
| Polypropylene | 4.2 n/25mm | 6.5 n/25mm |
| Shear Resistance FTM8 | >600 Minutes | |
| Dimensional Stability FTM14 | Excellent | |
| Chemical Resistance AATCC8 Grey scale, 1 = poor, 5 = superior | 3 - Good | |
| Minimum Application Temperature | +4°C | |
| Service Temperature | -196°C* to +120°C | |
| | * Service temperature range can be affected by application surface and curvature. | |
| Outdoor durability | 2 years vertical exposure | |
| Shelf Life (20-25°C; 40°C – 50% relative humidity) | 24 months from date of dispatch, when stored in the original packaging at 21°C & 50% relative humidity. | |
| Compatible Ribbons for Printing Speciality Resin Ribbons. | CPMSR40, CPMSR41, CPMSR42, CPMSR43, CPMSR44, CPMSR60 | |
| Notes: | Cryogenic polyester will not adhere to wet surfaces Cryogenic polyester will not adhere to some slip coatings applied to glass vials | |

ENVIRONMENTAL PERFORMANCE

Cryogenic polyester was thermal transfer printed with Lighthouse speciality black resin ribbon. The printed labels 35mm x 22mm were applied to 12.1mm diameter centrifuge tubes, glass and treated polypropylene. The labels were applied for one hour prior to environmental testing.

| Test Environment | Test Specification | Test Result |
|--------------------------------------|---|------------------------|
| Environmental cycling | 3 hours at 80°C ± 4°C 1 hour at 23° ± 2°C and 50% relative humidity ± 5% RH 3 hours at -40°C ± 2°C 1 hour at 23°C ± 2°C and 50% relative humidity ± 5% RH 16 hours at 38°C ± 2°C and 95 to 98% relative humidity – 5 cycles completed | Pass – no delamination |
| Elevated temperature exposure | 168 hours 90°C | Pass – no delamination |

| | | |
|---------------------------------|---|------------------------|
| Thermal shock | 6 hours at -80°C followed by immediate submersion in 100°C de-ionised water – 10 cycles completed | Pass – no delamination |
| Liquid nitrogen cycling | -196°C storage for 6 hours, removed and left at room temperature for 4 hours – 5 cycles completed | Pass – no delamination |
| Liquid nitrogen exposure | 240 hours exposure at -196°C, removed and left at room temperature for 1 hour prior to evaluation | Pass – no delamination |

CHEMICAL RESISTANCE

Cryogenic polyester was thermal transfer printed with Lighthouse speciality black resin ribbon. The printed labels were immersed in the test solutions for 5 minutes prior to conducting crockmeter testing with 3N of force. The crocking cloth was immersed in test solution and rubbed back and forth over test print; one back and forth motion counts as one cycle.

| Test Solution | Test Specification | Test Result |
|-------------------------------|---|-------------------|
| Isopropanol | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |
| Synthetic perspiration | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |
| 50% acetic acid | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |
| De-ionised water | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |
| 10% hydrochloric acid | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |
| 10% sodium hydroxide | 20 cycles with 3N weight and saturated crocking cloth | No visible effect |

IMPORTANT NOTICE

All Lighthouse products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects.

Published information concerning Lighthouse products is based on research, which the Company believes to be reliable, although such information does not constitute a warranty.

Because of the variety of uses of Lighthouse products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use. We recommend the purchaser conducts their own testing to determine the suitability for their required application. The purchaser shall assume all risks regarding such use. The seller shall not be liable for damages in excess of the purchase price of the product nor for incidental or consequential damages.

All specifications are subject to change without prior notice.