

Product Release – July 1, 2019

EFP Temperature Solutions is pleased to announce the launch of the PharmaTuff brand of refrigerant gels manufactured at the Nashville, TN facility. Nashville is the headquarters for the cold chain technical center of excellence which includes the product design and development team. The new product enhances EFP's value as a one-stop shop for complete cold chain packaging systems.

In an effort to provide you with a robust thermal solution, EFP has conducted extensive testing to ensure that PharmaTuff brand gels meet your demanding applications. Test reports are available on request.

Film Testing for Tensile Strength and Burst

An independent ISTA/ASTM certified testing lab conducted the ASTM D642-15 Compression to Failure and ASTM D882-18 Tensile testing. Samples from three competing gel manufacturers and EFP were tested. EFP's film choice proved superior in tensile strength and the PharmaTuff brand proved equal to or better than the competitive products in all attributes.



ISTA 3A Drop Testing

Drop testing, consisting of a series of consecutive drops on all six flat surfaces, opposite corners and a flat drop on an obstacle was conducted following the ISTA 3A procedure in the EFP ISTA certified lab.



ASTM Transit Testing-Vibration and Incline of Pallet Loads

An independent third party was contracted to perform ASTM D4169 Performance Testing of Shipping Containers and Systems. This testing included ASTM 2016 Random Truck Vibration – 60 minutes of simulated truck transit vibration. Additional testing included D880 Incline Impacts performed at an initial velocity of 4.0 feet per second. All PharmaTuff brand products successfully passed the ASTM testing.

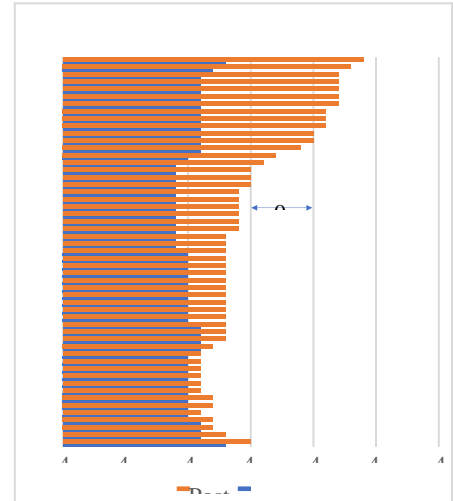
EFP is prepared and capable to meet your difficult cold chain applications and looks forward to

Factory Stretch Wrap Testing by Sigma Packworx – Containment, Impact and Tilt

Test One – Containment: This test determines the force required to deflect the film from the load. A Lantech Containment Force 6 tool was used to establish initial containment and to help form better and reproducible containment readings. After deflecting the film 90 degrees, this tool provides a reading of the force required to deflect that film, which is called 'containment force'.

Test Two – Impact: The Sigma impact test is designed to replicate small impacts that the load will encounter over and over throughout the course of transit. A pneumatically powered sled slides back and forth hitting one side of the load at set G force intervals to simulate bumps, jerks, potholes, sudden braking and other impacts encountered in transit.

An initial scan is taken to determine the position of each layer of the product on a pallet. The load is then impacted ten times in the same direction. Upon completion, a post impact scan is taken to identify how much each layer shifted. This process is also recorded using high speed cameras and videos.



Test Three – Tilt: During transit, loads may be subjected to extended tilting or long turns in a truck. Sigma simulates these situations with the Packworx tilt table. The load is placed on the table and tilted up and held at an angle. After tilting, the tilt angle is noted, and the integrity and condition of the wrap pattern is observed.

Freeze Test – Stability of Pallet Loads in Cartons and Returnable Trays

EFP performed an independent pallet stability study utilizing a contracted cold storage facility. All sizes of PharmaTuff gels were tested, including variations of gels stacked in returnable trays. All pallets remained stable. There was no evidence of traumatic expansion caused by the rapid freezing.