

## **Advantages of Dispersions**

**Types**

**Economic**

**Environmental**

**Quality**

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- **Most of our management are investors in the company.**
- **Incorporated in April 2001.**
- **Occupied plant in June 1, 2001**
- **Started supply trial samples in September 2001**
- **Started shipping production quantities in December 2001**
- **30,000 square feet of production**
- **5,000 square feet of offices & laboratories**



- **Two mixing lines with high speed automatic weighing & packaging equipment.**
- **27 full time employees**
- **20 employees with previous experience in multi-ingredient blends with over 100 years of combined experience.**
- **Registered ISO 9001 : 2000 since September 2002.**
- **Technical support & design in rubber compounding – particularly in antidegradant and cure systems.**

# Types of Dispersions/Blends



- *Powder*
  - **Multi- or single-ingredient**
  - **Dust suppressed**
  - **Activity 90% plus**
  - **Internal mixers**
- *Pastes*
  - **Usually single ingredient**
  - **Activity 60-70%**
  - **Internal mixers & open mills**
- *ALC (absorbed liquid concentrates)*
  - **Single ingredient**
  - **Activity 50-72%**
  - **Internal mixers**
- *Beads*
  - **Multi- or single ingredient**
  - **Dust suppressed**
  - **Activity 75-85%**
  - **Internal mixers & open mills**
- *Polymer Bound*
  - **Usually single ingredient but some multi-ingredient blends**
  - **Activity 50-80%**
  - **Pellets (internal mixers)**
  - **Slabs (open mills)**

# Products



## *Dust Suppressed Powders*



## *Absorbed Liquid Concentrates*



## *Beads*



# **Why Use Dispersions?**

**Improved Economics**

**Improved Quality**

**Reduced Regulatory Issues**

# **Advantages of Dispersion:**

**Economics**

**Quality**

**Environment**

**Health & Safety**

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**...from raw materials to**

**... finished goods**

# Purchasing



## **Reduced number of materials to be purchased:**

- **Time savings for purchasing agents**
- **More efficient sourcing**
- **Reduced incoming freight costs**
- **Reduced number of invoices & other paperwork**
- **A custom blender such as Chem Technologies buys truckload/skid quantities of chemical with economical pricing**
- **Reduced number of suppliers & items purchased allowing for closer control over quality issues such as CpKs, etc.**

**Economics**

**Quality**



# Inventory



## Reduced inventory resulting in:

- **Reduced complexity – greatly reduced number of individual raw material codes allowing for:**
  - ❖ **Simpler more efficient warehouse**
  - ❖ **Easier tracking of first in – first out inventory of materials**
- **Reduced labor**
- **Increased warehouse space, our returnable containers can be stacked 5 containers high.**
- **Less traffic and congestion on receiving docks**
- **Reduced tow motor traffic**
- **Reduced waste from disposing of:**
  - ❖ **Out-of-date infrequently used chemicals**
  - ❖ **Partially opened bags that have been exposed to moisture & air**

# Raw Material Maintenance



## **Reduced number of coded materials resulting in:**

- **Reduced laboratory testing**
- **Reduced number of MSDS to file**
- **Reduced incoming certificates of analysis to review & file**
- **Reduced number of raw material specifications to maintain for quality reporting**

## **Fresher materials**

- **Many rubber chemicals such as accelerators & antidegradants degrade when exposed to moisture, air and high summer temperatures.**
- **Preweighed dispersion blends greatly reduce this aging process because they are sealed in polybags until they are in the mixer.**
- **Some rubber chemicals are used in small amounts and they may exceed their shelf-life before they are consumed. Custom dispersion blenders use large amounts of rubber chemicals and have a greater turn-over of chemicals resulting in fresher chemicals to the customer.**

# Packaging



- **Most rubber chemicals come in some type of disposable packaging such as paper bags, polybags, cardboard boxes, etc. loaded onto wooden or cardboard skids. When the chemicals are consumed the packaging has to be disposed of.**
- **Dispersions come in preweighed batch inclusive low melt polybags which can be thrown directly into the mixer.**
- **The individual preweighed dispersion bags can be packaged in returnable containers that require no pallets.**
- **Rubber chemicals that come in powders can leave up to 1/4 of a pound of residue in the empty bag which results in both economical and environmental concerns.**

# Compound Staging Area



- **The common rubber formulation has around 15 individual materials. Materials such as carbon black, oil, etc. are typically fed to the internal mixer automatically. However, the remaining ingredients must be weighed up by a compounder.**
- **Our average preblend dispersions have an average of 7 ingredients but some have up to 15 ingredients. Use of preblend dispersions has the potential to simplify or even eliminate the compounding area resulting in:**
  - **Reduced labor costs**
  - **Reduced weighing errors**
  - **Reduced floor space**
  - **Less congestion in the mixing/compounding area**
  - **Reduced tow motors**
  - **Reduced number of scales to calibrate and maintain**
  - **Reduced physical labor – handling preweighed packages that weigh from 5 to 20 lb. instead of 50-55 lb. bags.**
  - **Reduced contact of workers to rubber chemicals that are commonly skin sensitizers, inhalation hazards, potential cancer hazards, etc.**
  - **Cleaner, safer work environment**

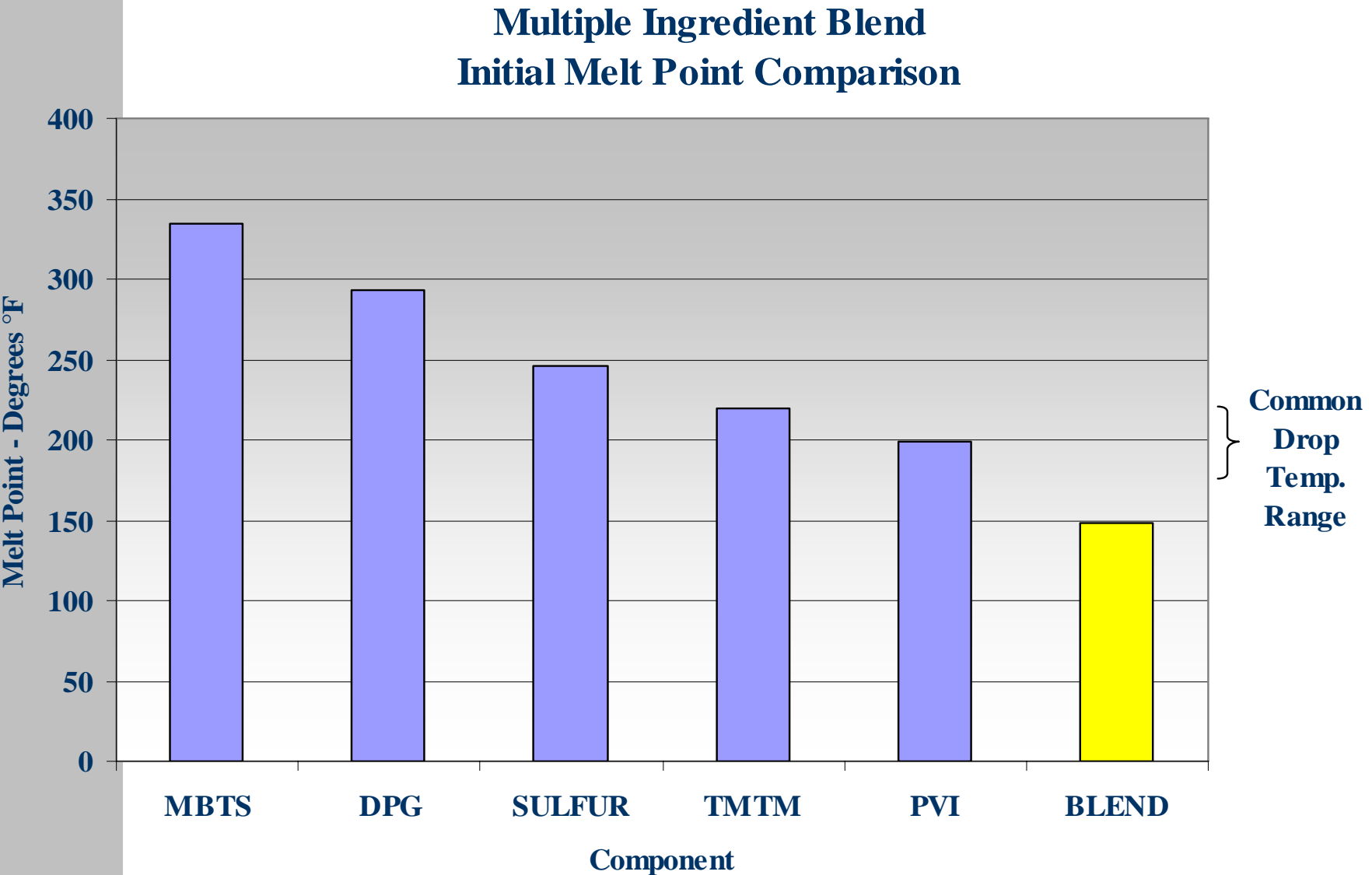
# Mixing



- **Blended dispersions in pre-weighed bags are added directly to the internal mixer. There is virtually no loss of chemicals from spillage on the feed belt or up the dust collection system. The blended chemicals have a lower melt point than the individual ingredients allowing for faster & more homogeneous mixes. This results in:**

- **Faster & lower temperature mixing**
- **Possibility of reduction of a 2 or 3 pass mix to a single pass mix**
- **Lower energy consumption**
- **Less wear & tear on the internal mixers**
- **More floor space around the mixer**
- **Reduced physical labor by the operator**
- **Better batch to batch consistency with tighter rheometer specs.**
- **No loss of chemicals from dust & better dispersion results in the potential to reduce the amount of chemicals used.**
- **Reduced contact of workers to rubber chemicals that are commonly skin sensitizers, inhalation hazards, potential cancer hazards, etc.**
- **Cleaner, safer work environment**

**Lower melt point with multi-ingredient blends  
which results in faster incorporation & better dispersion.**



# Powder versus Dispersions



FROM DUSTY POWDER TO ...



DUST SUPPRESSED POWDER or DUST FREE BEAD

# Incorporation Times

(into an SBR compound on open mill)



- **100% active powder blend**  
**4:10**
- **90% active dust suppressed powder blend dispersion**  
**0:45**
- **80% active dust suppressed bead blend dispersion**  
**0:35**
- **80% active polymer bound single ingredient dispersion**  
**0:40**



# Processing Lines – Extrusion, Molding, Calendering, Etc.



- **The use of preblended dispersions results in a more consistent, more homogenous compound from the mixer which in turn results in more consistent product from the processing lines:**
  - **May allow for faster processing**
  - **Less scrap**
  - **More consistent die swell**

**Economics**

**Quality**

# Regulatory & Environmental



- **Preblended dispersions allow for:**
  - **Reduced number of raw materials in the plant**
  - **Reduced air-borne dust**
  - **Reduced worker contact with chemicals**
  - **Less loss of chemicals allowing for reduced chemical usage**
- **Most preblended dispersions are treated which typically reduces the chemicals health hazards.**
  - **For example ZDMC (zinc dimethyldithiocarbamate) is a severe inhalation hazard. After treatment in our blends, the inhalation potential of ZDMC is in a form that is no longer regulated.**
  - **Another example is sulfur, a flammable solid. Once sulfur has been mixed into our treated blends it is no longer a flammable solid.**
- **The net results of the above allows for less regulatory reporting & potentially healthier work force.**

# Finished Goods



- **Because of their advantages, preblended dispersions are often used in products that require fine tolerances, high physical properties & excellent appearances such as:**
  - **Extruded profile weather stripping**
  - **Wire & cable jackets**
  - **Vibration control parts**
  - **O-rings**
  - **Pharmaceutical goods**
  - **V-belts**
  - **Hoses**
  - **Tires**
  - **Other high-tech molded & extruded rubber goods**



- **Preblended dispersions can:**
  - **Improve the overall economics of your plant**
  - **Reduce complexity of your plant**
  - **Improve health & safety of your workers**
  - **Reduce regulatory tracking (SARA)**
  - **Improve the appearance of the compounding & mixing areas of your plant**
  - **Improve the overall quality of your finished goods**

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