

CHEMSTOR[®]

LIQUID PRESERVATIVE FOR HIGH MOISTURE CORN, SORGHUM,
WHEAT, OATS, BARLEY, GRASS FORAGE AND LEGUME FORAGE

TO BE USED IN ANIMAL FEED ONLY

ACTIVE INGREDIENTS: ORGANIC ACIDS 99% MIN. (19% ACETIC ACID AND 80% PROPIONIC)

INERT INGREDIENTS: (WATER) 1% MAX.

DANGER | CAUSES SEVERE BURNS
KEEP OUT OF REACH OF CHILDREN

Do not get liquid or vapor in eyes, on skin, or clothing. Use in well ventilated area and do not inhale. Wear goggles, rubber gloves and protective clothing when handling ChemStor. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes, get medical attention. After contents have been removed, drums should be washed and completely drained. Do not contaminate water by cleaning of equipment, or disposal of wastes. Do not use, pour spill or store near heat or open flame.

IMPORTANT | BEFORE USE SEE MANUFACTURERS TECHNICAL BULLETIN FOR DIRECTIONS AND OTHER CAUTIONS

WARRANTIES: Apart from the representations in the ChemStor[®] Product and Technical Bulletins, there's NO WARRANTY, representation or condition of ANY KIND, expressed or implied (including NO WARRANTY OF MERCHANTABILITY), concerning material sold hereunder or containers in which shipped. Farmland Industries shall have no responsibility, whether for breach of warranty, negligence, or otherwise, for any loss, damage or injury to persons or property arising out of the use, storage or handling of ChemStor[®] otherwise than in strict accordance with the directions contained in the ChemStor[®] Technical Bulletin.

E.P.A. Reg. No. 1990-373



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KANSAS CITY, MISSOURI 64116

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FOR[®]

MOISTURE CORN, SORGHUM,
RAGE AND LEGUME FORAGE

USED IN ANIMAL FEED ONLY

(19% ACETIC ACID AND 80% PROPIONIC)

**SEVERE BURNS
REACH OF CHILDREN**

Well ventilated area and do not inhale. Wear goggles,
In case of contact, immediately flush skin or eyes
medical attention. After contents have been removed,
rinse with water by cleaning of equipment, or disposal
e.

**MANUFACTURERS TECHNICAL
INSTRUCTIONS AND OTHER CAUTIONS**

Product and Technical Bulletins, there's NO WAR-
guarantee implied (including NO WARRANTY OF MERCHANT-
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liability, otherwise, for any loss, damage or injury to persons or
property otherwise than in strict accordance with the direc-

BY
FARMLAND INDUSTRIES, INC.

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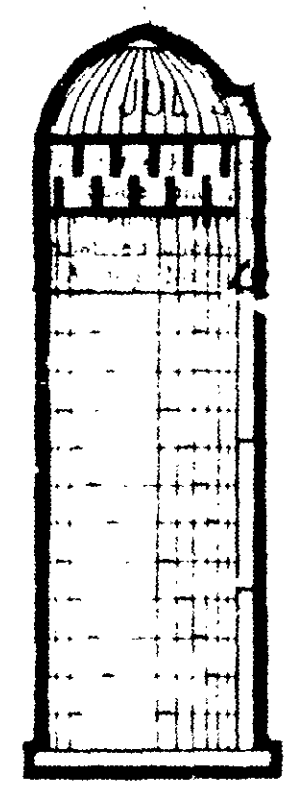
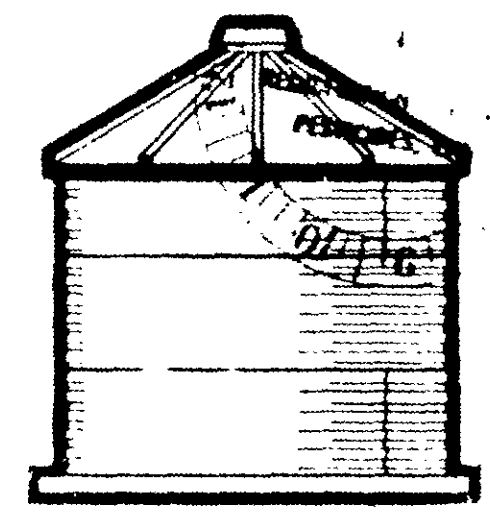
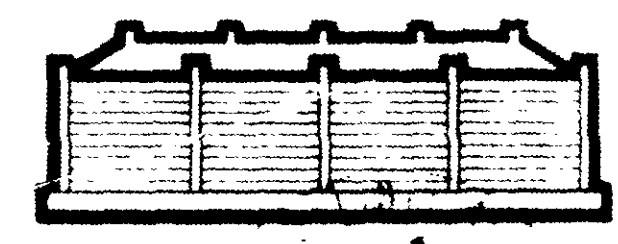
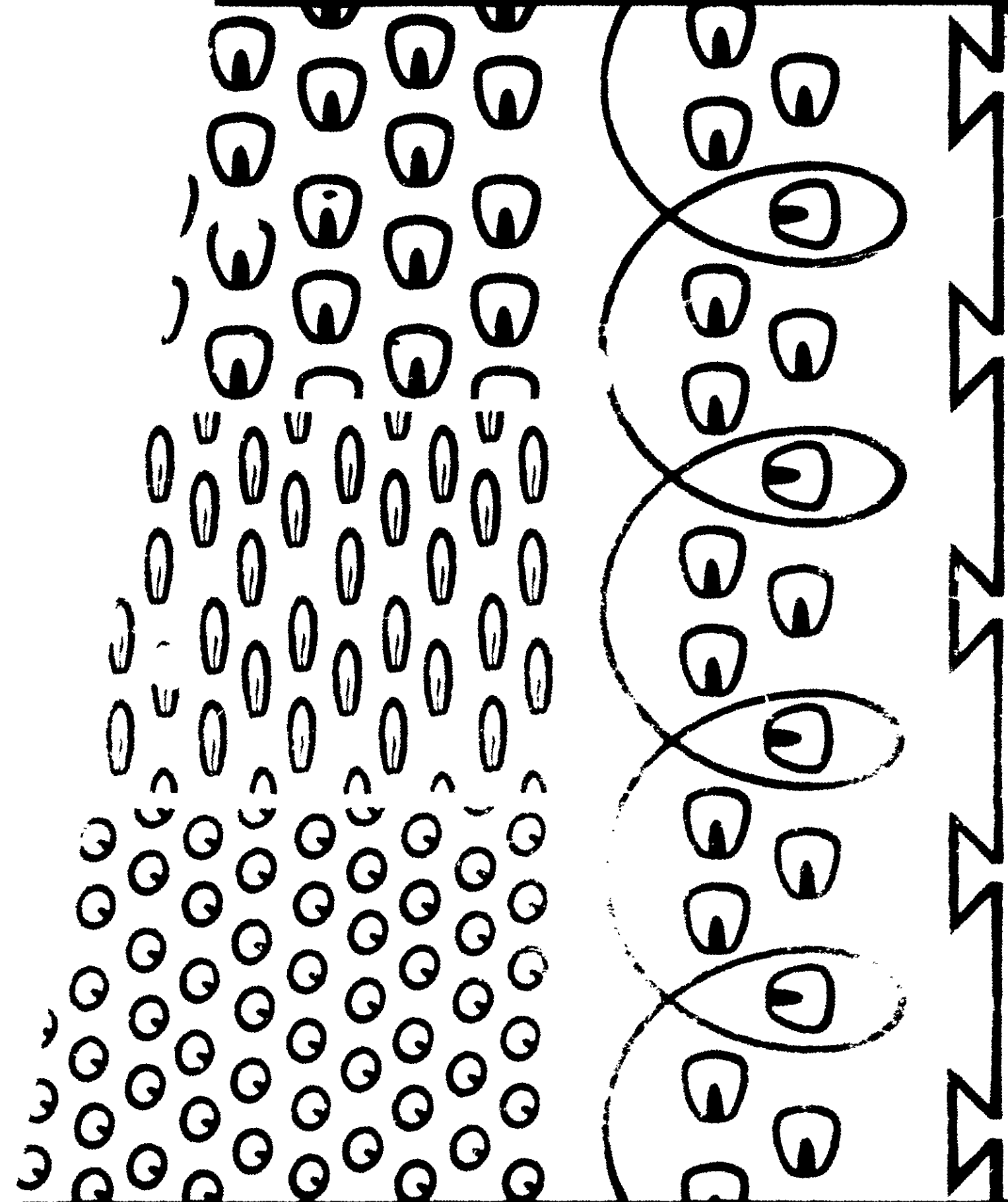
Indianapolis, Indiana Corporation



CORROSIVE CAUSES EYE DAMAGE
AND SKIN BURNS

CHEMISTOR

Preservative



Technical Bulletin

U.S. GOVERNMENT PRINTING OFFICE

ChemStor[®]
TECHNICAL BULLETIN
Supplement

USE IN FORAGE PRESERVATION

INTRODUCTION:

In this Technical Bulletin Supplement are those directions for use of ChemStor[®] when used as a forage preservative.

FOR PRESERVATION OF FORAGE TO BE STORED IN BALES OR AS LOOSE PILE

Spray ChemStor[®] completely over entire fresh forage prior to storage in a well ventilated barn or shed. The following application rates should be used:

15-20% moisture at 10 pounds ChemStor[®] per ton of forage

20-25% moisture at 20 pounds ChemStor[®] per ton of forage

25-30% moisture at 30 pounds ChemStor[®] per ton of forage

FOR PRESERVATION OF FORAGE INTENDED TO BE STORED AS SILAGE OR HAYLAGE

Apply 20 lbs ChemStor[®] preservative per ton of fresh forage by metering the preservative into the blower housing continuously as the forage is blown into upright silos, or by metering the preservative into the blower housing of the forage harvester if silage is to be stored compacted in bunkers or pits. Follow customary best practices for moisture levels and compaction of forages.

For peripheral protection of the top layers of spoilage which often spoil on exposure to the air, surface spray with ChemStor[®] preservative at a rate of 0.25 lb per sq. ft. of surface.

In either of the above applications the ChemStor[®] preservative can be diluted by adding an equal volume of water, to improve coverage and make metering easier, but such dilution is not necessary for good results.

This Supplement is to be affixed inside the front cover of the ChemStor[®] Technical Bulletin.

February, 1970.

1 1 CHEMSTOR

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ChemStor preservative is a liquid fungicide developed for use on high moisture whole and ground feed corn, sorghum, wheat, oats, and barley. It is a mild blend of organic acetic and propionic acids, which allows the farmer to store shelled corn and other high moisture cereal grains for animal feeds without the need for the use of air tight silos.

ChemStor acts as a preservative by preventing the growth of molds and most bacteria in high moisture cereal grains during storage, and is effective for the storage and preservation of both whole and ground cereal grains for animal feeds.

The purpose of this manual is to provide a basic introduction to the general aspects of the preservation of high moisture cereal grains via the ChemStor system. More comprehensive literature is available on such specific subjects as treatment of grain storage and comparative economics.

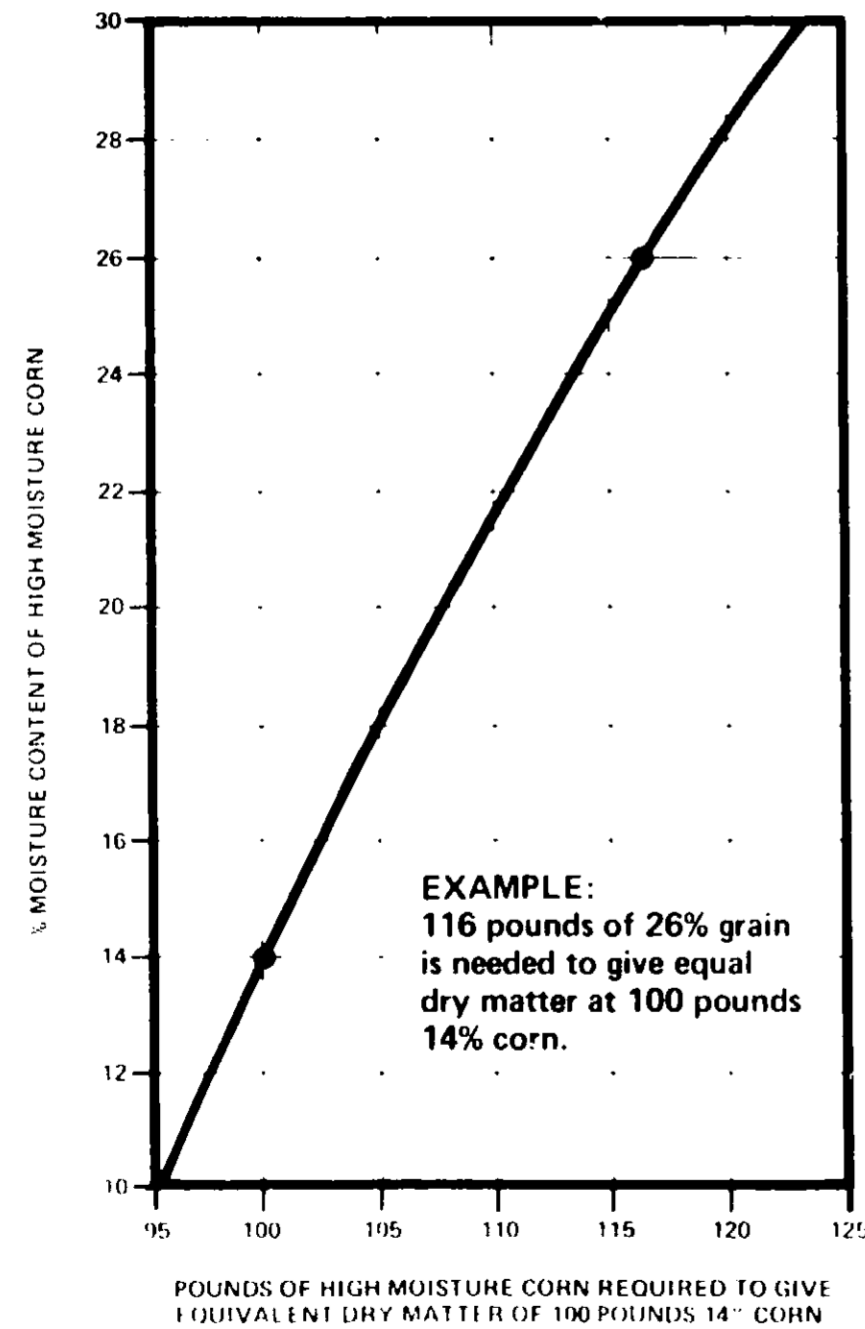
For further information on these and other subjects, contact your local ChemStor dealer.

In feeding high moisture grain, it is important to account for the additional moisture content when calculating the feed ration.

For example, 100 pounds of 14% moisture grain will weigh 116 pounds at a moisture content of 26%. See chart below.

Thus a ration consisting of 800 pounds of corn at a theoretical 14% moisture level, 150 pounds of roughage, and 50 pounds of supplement (total 1,000 lbs) should be adjusted upward to 928 pounds corn (actual 26% moisture) with the roughage and supplement rations remaining at 150 and 50 pounds respectively. Adjusted new total weight: 1,128 pounds.

When dairy rations are fed on a production basis, a similar adjustment for moisture should also be made to prevent underfeeding.



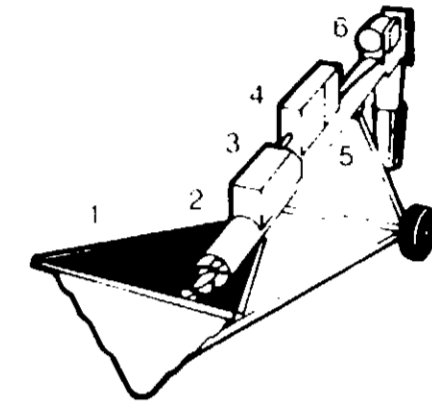
GRAIN TREATMENT WITH MISCELLANEOUS

Celanese has developed an exclusive application system for the treatment and handling of high moisture grain. It consists of the following components:

APPLICATOR

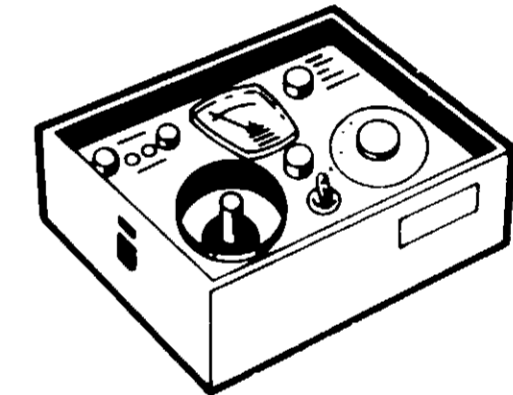
Applicators are available to treat approximately 400 to 1000 bushels per hour at 25% moisture, and is made up of the following: 1. Hopper, 2. Auger, 3. Spray Chamber, 4. Pump, 5. Control Panel, 6. Motor.

The applicator weighs 450 pounds, has tires and can be maneuvered by one man.



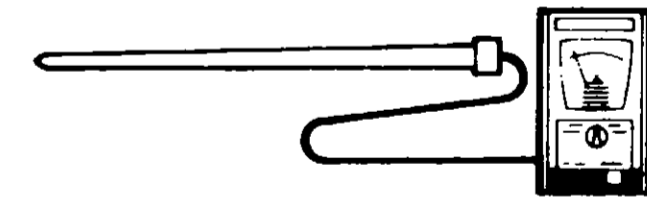
MOISTURE METER

The moisture meter is the key component in determining the moisture level of the grain to be treated.



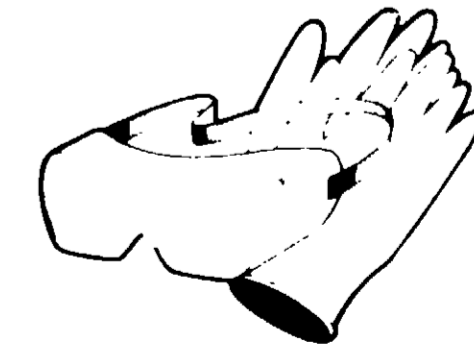
TEMPERATURE PROBE

The temperature probe is used for determining the temperature of grain during the storage period.



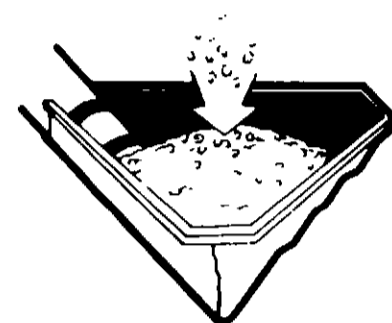
RELATED SAFETY EQUIPMENT

Goggles to protect the eyes and rubber gloves to protect the hands are essential for safe handling of the material.

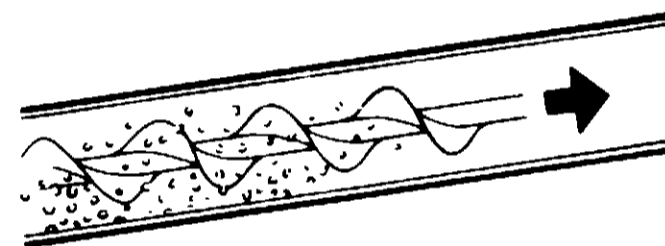


PROCEDURE

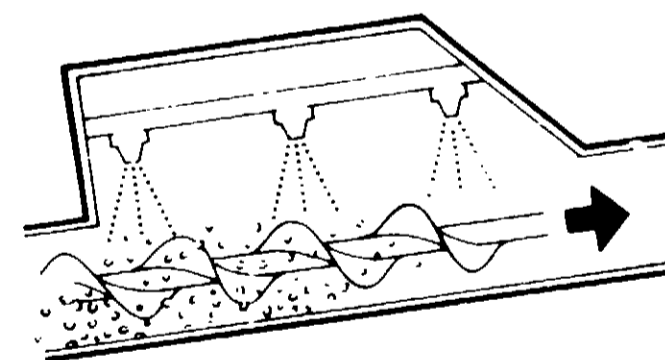
The treatment of the grain starts with the unloading of the grain into the polyethylene hopper of the ChemStar® Applicator.



Next, the grain travels up the auger at a pre-determined speed. See operating manual.



As the grain moves up the auger, it passes through the spray chamber where the correct amount of ChemStar preservative is applied automatically.



Note: The applicator control panel has a shut-down valve that automatically stops the unit should the supply of ChemStar run out.

The combination of auger speed, the turning action of the auger, and the movement of the three spray nozzles completely coats each of the grain to be treated.

Once the grain has traveled through the applicator, the delivery of the farmer's grain is uninterrupted. The crop is now ready for further treatment, if necessary.

FOR FURTHER INFORMATION, CONTACT THE MANUFACTURER OF THE CHEMSTAR® APPLICATOR AT 1-800-368-3333.

TREATING GRAIN ALWAYS. THE PROPER USE LEVELS OF CHEMSTAR® PRESERVATIVE NEARLY ALWAYS PROTECTS AGAINST ALL VARIATIONS OF INSECT DAMAGE TO GRAIN. CHEMSTAR® PRESERVATIVE IS ALWAYS THE BEST.

The treatment of grain is a very important step in the grain handling process.

Mixture: 1 quart per 100 bushels
The amount of grain treated per acre per year.

The rate of application is determined by the grain flow.

Amount of ChemStar to be applied.

The following chart is a guide to the correct use of the ChemStar applicator. It should be used in the field.

Directions:

First, take care in the treatment of the grain. The grain should be treated with the system. Use the proper amount of the grain and the amount of the grain.

Next, take care in the treatment of the grain. The grain should be treated with the system. Use the proper amount of the grain and the amount of the grain.

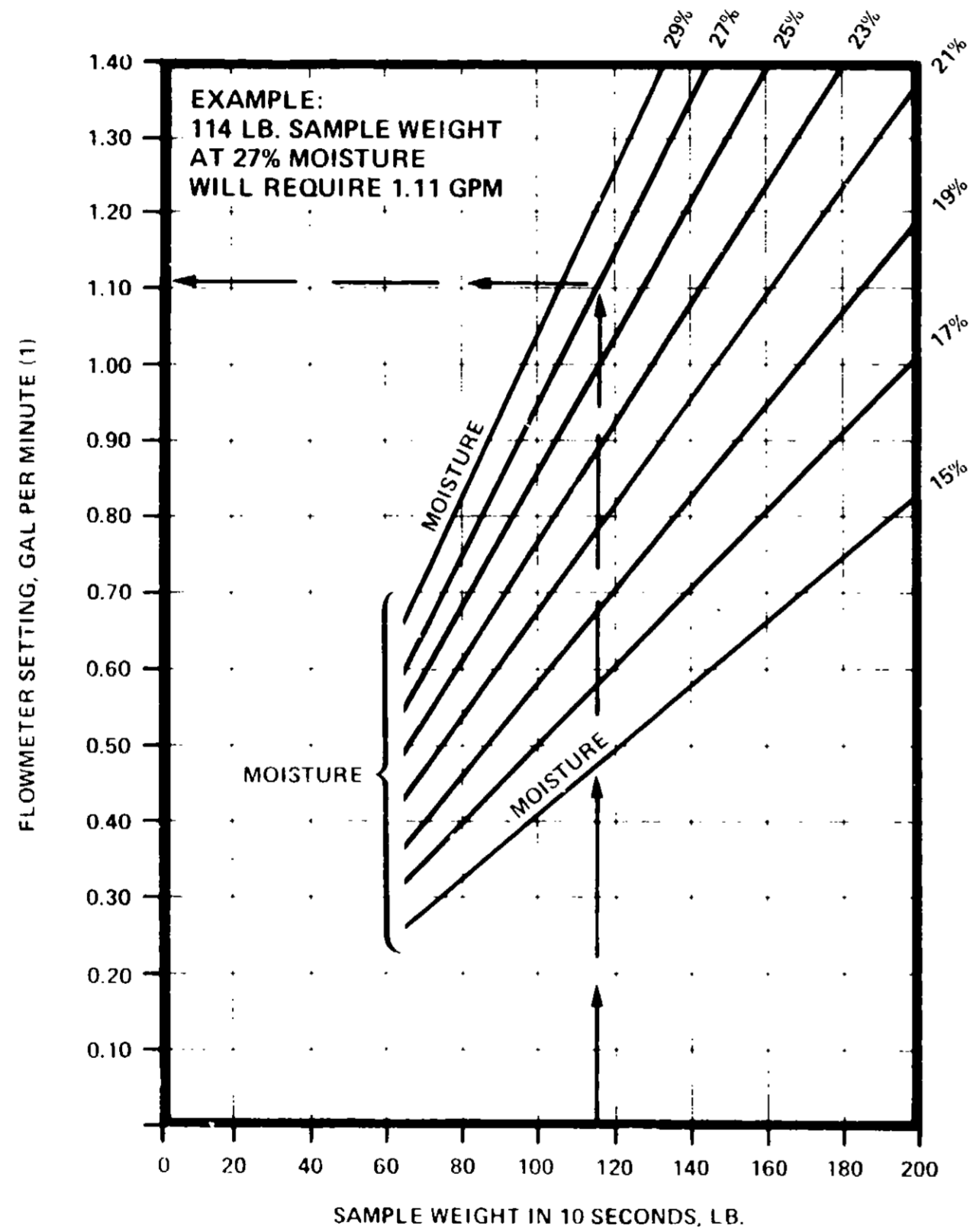
Finally, take care in the treatment of the grain. The grain should be treated with the system. Use the proper amount of the grain and the amount of the grain.

Example:

Apply the ChemStar applicator to the grain. The grain should be treated with the system. Use the proper amount of the grain and the amount of the grain.

By using the ChemStar applicator, the grain should be treated with the system. Use the proper amount of the grain and the amount of the grain.

**CHEMSTOR® APPLICATION RATE
FROM 10 SECOND TIMED SAMPLE WEIGHT**



(1) Check flowmeter scale and multiply flow rate by 60 if scale reads gallons / hour

HOW TO USE CHEMSTOR

Many farmers grind cob and kernel for feed to obtain the nutritional value available in the cob. Ground cob and kernel may be stored, treated with ChemStor preservative if allowance is made for the moisture content of the cob. Moisture of grain and cob will distort the moisture readings.

The following table and treatment table may be constructed to provide a ready means of determining the percent of ChemStor preservative to be added to treatment of ground cob and kernel.

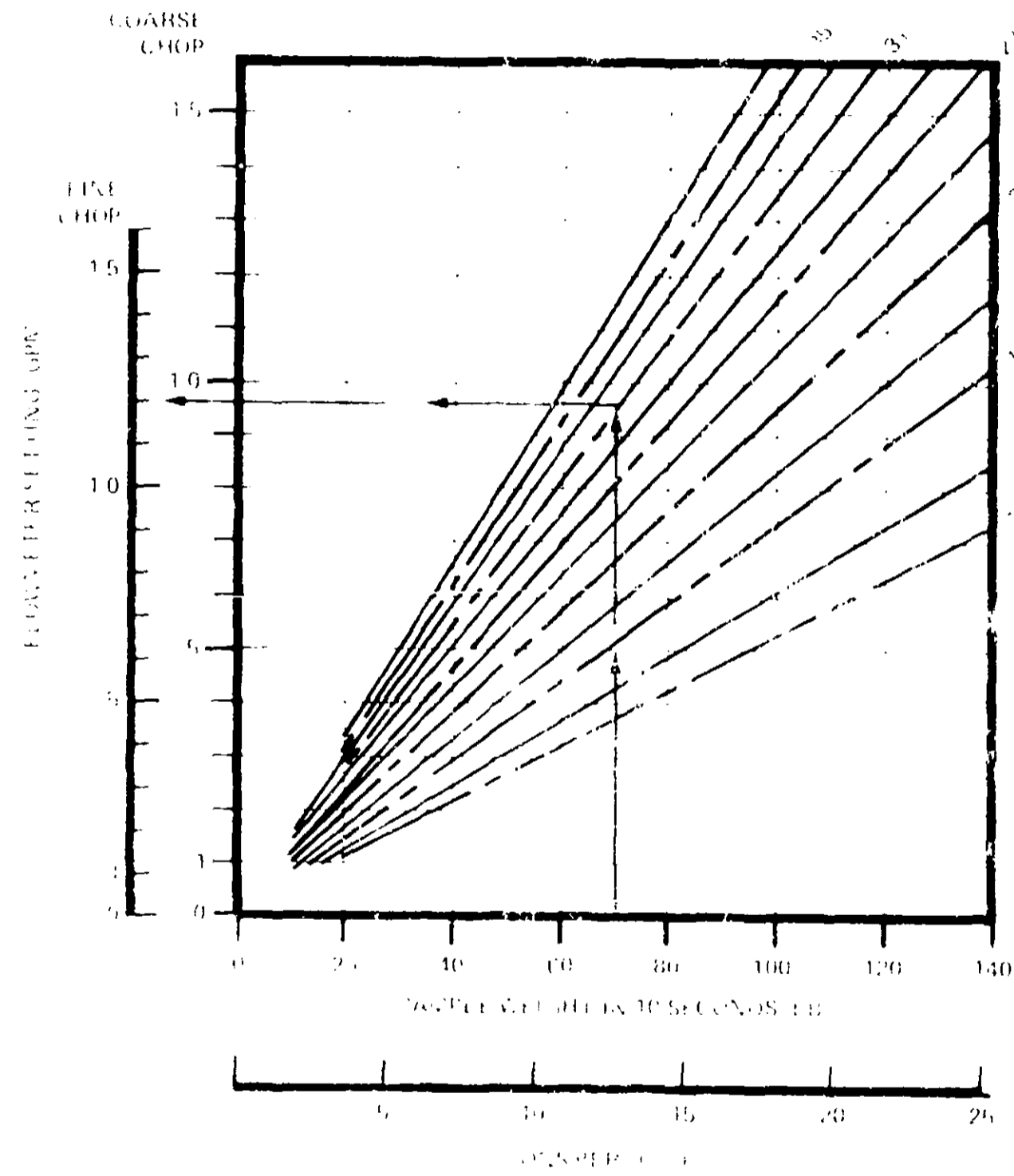
Moisture Content of Kernels Only	Moisture of Cob Only	Moisture of Kernel and Cob Mixture
15.0	17.5	15.4
20.0	32.5	22.5
25.0	44.4	29.0
30.0	57.0	35.1

The ChemStor treatment level for ground cob and kernels is based on the moisture level of the mixture as calculated by the addition of ChemStor preservative moisture uniformly throughout the mixture.

To determine the ChemStor treatment level for ground ears to obtain a representative sample of the grain, a moisture determination is made using the ChemStor grain bin moisture meter. Moisture of the kernel and cob mixture may then be determined from the above shown chart. Grain only treatment moisture readings for the moisture of the mixture is determined percent is added under treatment table.

CORN COB CHOP
CHEMSTOR APPLICATION RATE

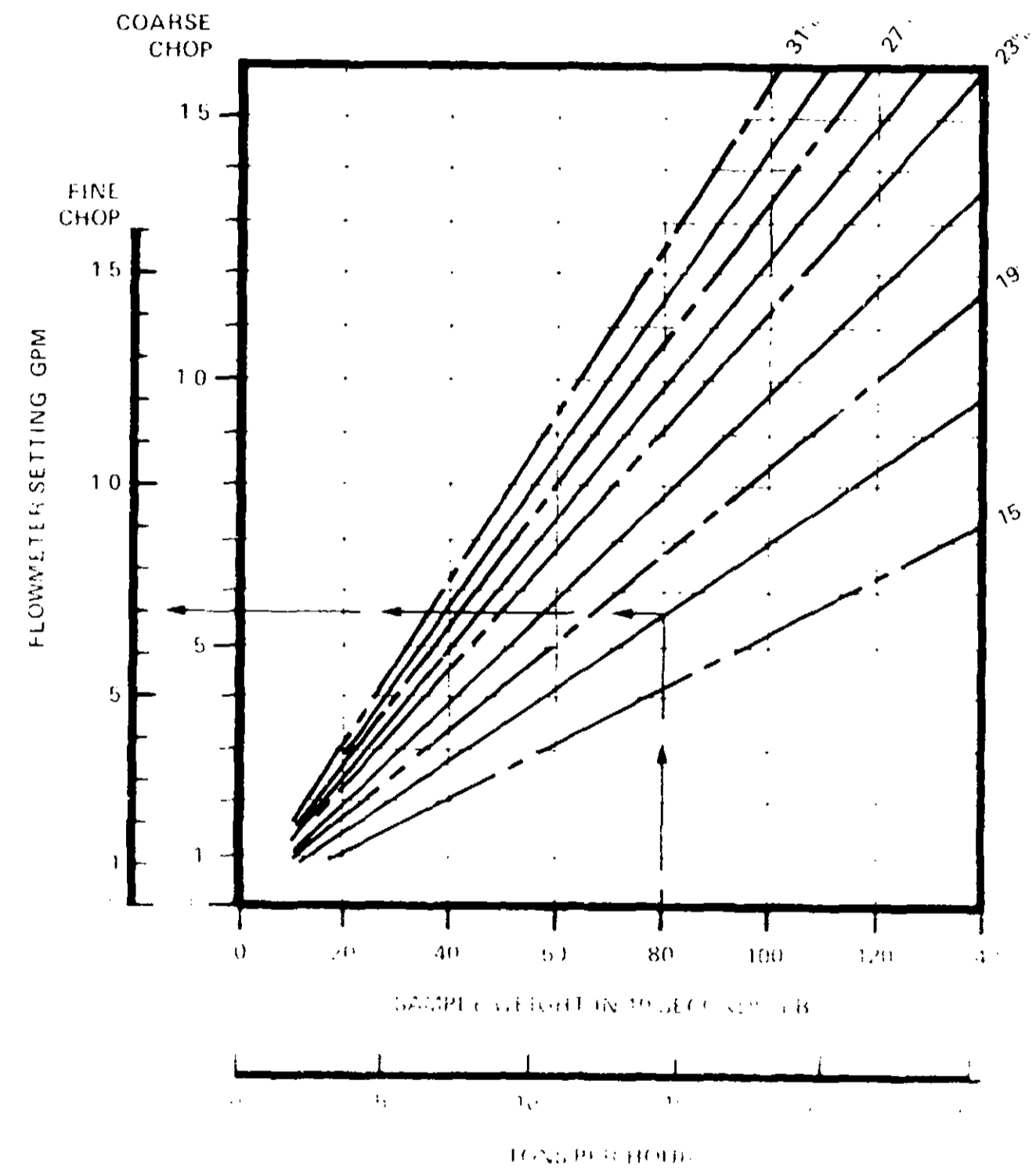
USE THIS CHART WHEN MOISTURE LEVEL OF CHOP MIXTURE IS MEASURED



EXAMPLE 70 LB SAMPLE WEIGHT IN 30 SECONDS
 11% MOISTURE MEASURED ON THE CHOP
 FINE CHOP USE 12 GPM
 COARSE CHOP USE 16 GPM

CORN COB CHOP
CHEMSTOR APPLICATION RATE

USE THIS CHART WHEN MOISTURE LEVEL OF KERNEL GRAIN ONLY IS MEASURED



EXAMPLE 80 LB SAMPLE WEIGHT IN 30 SECONDS
 15% MOISTURE MEASURED ON THE
 KERNEL CORN ONLY FOR FINE CHOP
 USE 7 GPM COARSE CHOP 6 GPM

Good harvesting and storage practices should always be followed in the treatment of stored grain. Start treated grain in a clean bin.

1. Do not mix treated and untreated grain.

2. Do not mix metal and concrete surfaces. ChemStar is a water-soluble fungicide that reacts with metal surfaces, causing damage to the metal and increasing the grain at the metal surface to mold. Fungus-resistant silos do not react with a concrete surface.

3. Know your harvest moisture and set the proper clean grain standards.

4. Treat grain as soon as possible after harvesting, preferably within 24 hours. Mold growth often starts within a few hours after harvest.

5. Do not store ChemStar-treated grain with untreated grain as the untreated storage of untreated grain.

6. Level the surface of stored grain in bins to prevent moisture from condensing in the cracks. Leveling grain should be done to reduce height, allow sufficient grain to remain above the surface of stored grain and covered to prevent spoilage.

7. Ventilate spaces between stored grain to prevent mold growth by providing a means for air to escape. If the spaces are not enough, for example, smaller pieces of grain, a washed natural ventilation should be provided. For ventilation in a multiple bin system, the spaces of bins should contain less grain than the previous bin. Size the fan to provide at least 10 cubic feet of air per bushel of grain. The fan should be sized to provide at least 10 cubic feet of air per bushel of grain. The fan should be sized to provide at least 10 cubic feet of air per bushel of grain. The fan should be sized to provide at least 10 cubic feet of air per bushel of grain.

8. Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

9. Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

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15. Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

16. Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

1. Concrete Silos or Bins: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

2. Galvanized or Steel Bins: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

3. Wooden Bins: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

4. Aluminum and Stainless Steel Bins: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

5. Buildings or Quonsets: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

6. Pits and Trenches: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

7. Sheds: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

8. Temporary Storage: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

9. Air-supported Structures: Do not store grain in a bin with a grain that has been treated with a different fungicide than the grain in the bin.

SAFETY

ChromStar preservative is corrosive and causes eye damage and skin burns if misapplied. Care should be taken to avoid contact with the vapor, and the concentrate should never be swallowed.

Gloves, safety goggles or glasses, and aprons should be worn at all times, whether handling the preservative or grain that is still wet from treatment. Protective gear should be made of rubber or equivalent impermeable material.

A water supply should be readily available in case of contact.

FIRST AID

ChromStar preservative will cause discomfort immediately following contact, and this does not give a true warning of possible burns. Therefore, speed is essential in removing any ChromStar that has made contact with the appropriate tissues. In case of exposure, the following first aid procedures should be followed:

SKIN SPLASH: If ChromStar is splashed on the face, wash with water immediately. If ChromStar is splashed on the rest of the body, wash with water for at least 15 minutes. A physician should be consulted in case of severe reactions or exposure.

EYE CONTACT: Flush immediately with water for at least 15 minutes. If ChromStar is splashed into the eyes, flush for at least 30 minutes.

SWALLOWING: If ChromStar is swallowed, do not attempt to vomit. Drink plenty of water immediately. If a doctor is called, show the ChromStar label to the doctor. If a doctor is not available, contact the nearest hospital with the possible exposure of ChromStar.

CLOTHING: As soon as possible, remove contaminated clothing and wash it separately. Wash any contaminated clothing before reuse.

HANDLING

ChromStar is highly corrosive and should be handled with care. Use appropriate safety gear when handling ChromStar.

ChromStar is highly corrosive and should be handled with care. Use appropriate safety gear when handling ChromStar.

When opening a drum, use the proper procedure, checking for internal pressure and then proceeding to pour the grain away. Allow the internal pressure to vent. Pressure should never be used to discharge the contents of a drum. After the contents have been removed, drums should be washed and completely drained.

DO NOT ENTER STORAGE FACILITIES WITHOUT ADEQUATE VENTILATION.

DO NOT TREAT CORN OR OTHER CEREAL GRAINS WHICH MIGHT BE USED FOR SEED MALTING PURPOSES FOR HUMAN CONSUMPTION.

TREATED CORN AND OTHER CEREAL GRAINS ARE TO BE USED ONLY AS ANIMAL FEED ONLY.

Fish and wildlife cautions - DO NOT CONTAMINATE WATER BY DISPOSAL OF WASTE OR WATER USED IN CLEANING EQUIPMENT.

DRUMS NOT TO BE REUSED FOR ANY PURPOSE OTHER THAN CHEMISTRY.

GENERAL SAFETY POINTERS

When labeling a drum, when treating with ChromStar, use appropriate safety gear. Use appropriate safety gear when handling ChromStar.

When the application is completed, keep hands away from the eyes. Avoid contact with the face and hair.

Make sure that the equipment is properly cleaned and that the equipment is used only for the purpose intended.

When using ChromStar, use the usual safety precautions for the use of any highly corrosive liquid, and avoid contact with the eyes and skin.

WARRANTIES

Except from the express warranty contained hereon, the manufacturer makes no representation or warranty of any kind, expressed or implied, as to the MERCHANTABILITY of any goods sold or any services rendered, and the goods are sold "as is" where they are sold, whether by express warranty, implied or otherwise. The manufacturer makes no representation or warranty, expressed or implied, as to the fitness of the goods for any particular use, and the user of the goods assumes all liability for any injury or damage to the goods or to the user of the goods, and the user of the goods assumes all liability for any injury or damage to the goods or to the user of the goods.

