



PROGRAMME MANUAL



MALAYSIAN PLASTICS MANUFACTURERS ASSOCIATION

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Information

Questions about or suggestions to improve the OCS programme or materials may be submitted to operationcleansweep@mpma.org.my or +603 7876 3027.

Contents

INTRODUCTION	5
PLASTICS RESIN IN THE ENVIRONMENT	6
PLASTICS RESIN LOSS—ITS IMPACT AND ITS MANAGEMENT	6
THE OCS PROGRAMME.....	6
HOW YOU CAN HELP.....	7
VALUE	7
IF YOU COULD TAKE A SIMPLE STEP TO HELP STRENGTHEN YOUR COMPANY’S:	7
...WOULD YOU TAKE IT?.....	8
IMPLEMENTATION	9
CONDUCT A SITE AUDIT	10
WORKSITE SET-UP	11
ENSURE YOUR WORKSITE IS PROPERLY SET UPTO PREVENT LOSS AND ASSIST CLEANUP	11
CONTAINMENT SYSTEMS	12
EMPLOYEE EQUIPMENT—ENSURE THATEMPLOYEES HAVE READY ACCESS TO EQUIPMNENT WHERE SPILLS MAY OCCUR:.....	13
DESIGNING A TRAINING PROGRAMME	13
EMPLOYEE PARTICIPATION AND ACCOUNTABILITY.....	14
PREVENTION, CONTAINMENT AND CLEAN-UP PROCEDURES	16
PROCEDURES: PELLETT, FLAKE AND POWDER TRANSPORT AND PACKAGING	17
PROCEDURES: SPILLS AND PACKAGING	20
PROCEDURES: OTHER TRANSPORTVEHICLE CONCERNS	23
PROCEDURES: MARINE TRANSPORT	24
PROCEDURES: WASTE RECYCLINGAND DISPOSAL.....	24
PROCEDURES: DUST AND POWDER	25

PLEDGE TO PREVENT PLASTICS RESIN LOSS.....	29
CHECKLIST	30
SITE AUDIT MANAGEMENT CHECKLIST	31
IMPLEMENTATION & TRAINING CHECKLIST	34
FACILITY EQUIPMENT CHECKLIST.....	35
EMPLOYEE EQUIPMENT CHECKLIST	36
PROCESSOR OPERATIONS CHECKLIST.....	37
WAREHOUSE CHECKLIST.....	38
CAR CLEANING/LOADING CHECKLIST	39
RAILROAD CHECKLIST.....	40
TRANSLOADER CHECKLIST	41
PLEDGE TO HELP PREVENT PLASTICS RESIN LOSS.....	42

Introduction

The Operation Clean Sweep® (OCS) programme and manual contain guidelines to help plastics industry operations managers reduce the accidental loss of plastics resin to the environment. Globally, abatement of plastics resin loss has been included in the [“Declaration of the Global Plastics Associations for Solutions on Marine Litter”](#) to help industry’s role in addressing marine litter. We encourage companies to join other similar companies globally by signing the Global Declaration and by adopting the OCS programme.

There are many ways to work toward zero plastics resin loss. The following guidance provides examples for users to consider as they establish management practices appropriate for their conditions and operations.

The OCS materials are designed to provide maximum utility for all types of plastics handling and transporting operations. The online checklists have been created to facilitate customisation for your company. For example, each checklist may incorporate a unique company logo and specific process steps may be added or removed to reflect those involved in a particular operation. These enhancements will make it easy to create and copy forms that have the greatest value for your company.

Plastics Resin in the Environment

PLASTICS RESIN LOSS—ITS IMPACT AND ITS MANAGEMENT

In recent years and with increasing frequency, researchers have reported that seabirds, turtles and fish are ingesting a wide variety of plastics items, including plastics resin that could affect their ability to breathe, swallow, or digest foods properly. Most of these plastics are used in consumer products (for example, bottles, caps, containers) that have been carelessly discarded. Some of this litter is in the form of plastics resin that enter the waste stream and can end up in the ocean and our natural environment. When plastics resin is accidentally eaten by wildlife, it may not pass through their digestive tracts, which could lead to malnutrition or even starvation. The impact of ingested marine debris can be significant and warrant efforts to prevent plastics materials from entering the environment.

While consumers are responsible for the proper recycling and disposal of consumer products and packaging, the plastics industry must focus on proper containment of plastics resin. We must prevent the plastics resin from getting into waterways that eventually lead to the sea.

All employees in every aspect of the industry must be educated on how to properly handle and dispose of plastics resin with the goal of zero resin loss to the environment.

THE OCS PROGRAMME

Plastics Industry Association (PLASTICS) began an education effort in the early 1990s to reduce pellet loss by resin producers, transporters, bulk terminal operators and plastics processors. A number of public service materials under the name of Operation Clean Sweep® (OCS) were developed and disseminated to companies nationwide. The message was simple: resin pellets should be contained, reclaimed and/or disposed of properly. It's now time to refocus our industry on this problem and to expand the OCS initiative to solve it.

Since then, the OCS programme has been promoted to other plastics associations around the world and adopted locally by many countries. OCS is now an industry-led global voluntary effort to showcase the industry's commitment in preventing leakage of plastics resin into the environment.

HOW YOU CAN HELP

Each segment of the industry—whether resin producers, transporters, bulk terminal operators or plastics processors—has a role to play in eliminating plastics resin loss. It's the little things that count—some plastics resin here, a handful there. They all add up when you consider the thousands of facilities in the industry and the frequency with which plastics resin are loaded and unloaded.

Commitment by everyone in every company, from top management to shop floor employees, is essential to eliminating plastics resin loss.

Plastics resin containment is good for the environment. It's good for business— plastics resin loss represents a source of revenue loss. And, in many jurisdictions, there are separate legal or permit requirements addressing plastics resin loss.

With your help and cooperation, we can make great strides to help our industry protect the environment. PLASTICS-MPMA looks forward to working with you on Operation Clean Sweep® to accomplish this important goal.

Value

IF YOU COULD TAKE A SIMPLE STEP TO HELP STRENGTHEN YOUR COMPANY'S:

- Sustainability initiatives;
- Contribution to preserving water quality and wildlife;
- Compliance with federal and state regulations and avoidance of fines;
- Safety/housekeeping programme;
- Employee well-being;
- Operational efficiency;
- Financial bottom line; and
- Reputation in the community...

...WOULD YOU TAKE IT?

That step is implementing Operation Clean Sweep® (OCS) in your premise(s).

THE CAMPAIGN'S GOAL IS: to help every plastics resin handling operation implement good housekeeping and plastics resin containment practices to work towards achieving zero resin loss. OCS is being conducted in thousands of plants around the world, all adding to the effort to protect the environment.

Plastics resin loss has many negative impacts on individual companies, on the plastics industry, and on the environment.

- Slips and falls are a major cause of plastics industry accidents.
- Accidents mean lost work time, higher worker compensation costs and lower employee morale.
- Spilled plastics resin can eventually end up in our waterways and the ocean. Whether they're handled in a plant or a seaside facility, plastics resin can be transported to storm drains that lead to rivers and then to the ocean resulting in litter and posing a threat to marine life such as sea birds, turtles and fish.

When the industry handles plastics resin as responsibly as possible:

- Plastics resin is kept out of the natural environment, including waterways and oceans.
- Companies enhance their reputations as good stewards of the environment—an increasingly important factor for attracting the investment community and high-quality employees.
- More material stays a valuable product rather than becoming waste, improving efficiency.

OCS' ultimate goal is to help keep plastics resin out of the environment, but these efforts can also help improve relations with stakeholder groups and community organisations that expect the industry to minimise its environmental footprint.

The industry needs every processor's help to get positive results.

Please contact us with any input or questions:

MPMA: +603 7876 3027 or operationcleansweep@mpma.org.my

Implementation

1. Commit to making zero plastics resin loss a priority.

- Sign the OCS Pledge.

2. Assess your company's situation and needs.

- Comply with all applicable environmental laws and regulations that address plastics resin containment.
- Conduct a site audit.
- Determine if you have appropriate facilities and equipment.
- Determine if employees have and are following appropriate procedures.
- Identify problem areas and develop new procedures to address them.
- Communicate your experiences to peers in the industry.

3. Make necessary upgrades in facilities and equipment as appropriate.

4. Raise employee awareness and create accountability.

- Establish written procedures. The procedures and checklists in this manual may need to be modified to suit your needs.
- Make certain the procedures are readily available to employees.
- Conduct regular employee training and awareness campaigns on OCS.
- Assign employees the responsibility to monitor and manage plastics resin containment.
- Encourage each worker to sign the employee commitment pledge.
- Solicit employee feedback on your programme.
- Use workplace reminders such as stickers, posters, etc.

5. Follow up and enforce procedures—when management cares, employees will too.

- Conduct routine inspections of the facility grounds—production areas and parking lots, drainage areas, driveways, etc.
- Continuously look for ways to improve the programme. Share helpful management practices through company and/or MPMA websites.

Conduct a Site Audit

One of the most effective ways to improve your facility's containment of plastics resin is to identify the areas where spills and losses are most likely to or have occurred and fix them.

1. Use the site audit checklist to audit every transfer point at your site.
2. Identify the major spill areas.
3. Determine the cause of spills in each area.
4. Research/brainstorm ways to solve each problem.
5. Implement the simplest effective solution.
6. Follow up to measure success.
7. Repeat as necessary.

Most companies may not perform all of the operations on the site audit checklist. Customise the checklist to suit your facility. Add any missing operations.

Worksite Set-up

ENSURE YOUR WORKSITE IS PROPERLY SET UP TO PREVENT LOSS AND ASSIST CLEANUP

1. FACILITIES— Consider use of the following steps wherever possible and practical:

- To pave or not to pave—that is the question.
 - ▶ A paved area facilitates cleanup, but allows plastics resin to be carried into storm drains and the environment by wind and water.
 - ▶ Unpaved areas are more difficult to clean, but plastics resin tends to stay where they fall and can be easily recovered.

2. Choose the solutions that are best for your facility.

- Pave loading/unloading areas where greatest risk of spills occur to facilitate cleanup.
 - ▶ Include a slope or a berm to contain plastics resin within paved areas.
 - ▶ Equip areas with vacuums or brooms and dust pans.
 - ▶ Cordless vacuums may be best suited for outdoor cleanup.
- For cleanup in gravel yards, consider fitting vacuums with screen mesh on intake hoses to collect plastics resin without disturbing gravel.
- Provide catch trays for use at all car/truck unloading valves.
- Use bulk-handling equipment that is designed to minimise plastics resin leakage.
- Install central vacuum systems where practical.
- Install connecting hoses equipped with valves that will close automatically when the connection is broken.
- Properly empty and seal bulk containers (rail or truck) prior to shipment. Loss of residual plastics resin from unsealed “empty” bulk cars and trucks is a primary area for potential improvements.

PREPARE FOR FLOODING

Make sure the containment system can handle heavy rains and flooding. The system should be capable of handling 100-year flood conditions.

- Place resin disposal cans at rail yards for loading and unloading.
- Assure proper handling when storing and removing waste plastics resin. Stress to vendors the value of “no loss to the environment” procedures.
- Seal expansion joints in concrete floors with a flexible material to avoid resin accumulation in hard to clean spaces.
- Conduct routine inspections and maintenance of equipment used to capture and contain plastics resin.

CONTAINMENT SYSTEMS

- Storm drain screens are the last line of defense against accidental plastics resin release. They are often considered a #1 priority for installation.
- Install zero loss containment systems (such as storm drain screens) wherever necessary to prevent plastics resin from escaping plant boundaries. There are two possible containment systems that could be installed:

- ▶ Area-specific containment systems in each resin handling area. Area-specific containment systems would be the primary resin containment systems and the facility-wide system would serve as a backup.
- ▶ Facility-wide containment systems, which are effective in controlling resin releases from facilities covering a large area and handling large volumes of plastics resin.

- Place screening in all storm drains. The mesh of the screening should be smaller than the smallest type of resin handled at the facility. Clean the storm drain screens frequently (for example, weekly) to prevent drain clogging and overflow. Pay particular attention to cleaning screens after every rain. Two-stage screens minimise clogging problems.
- Install baffles, skirts and booms in containment ditches or ponds. Use surface skimmers or vacuum systems to remove accumulated plastics resin.
- To help prevent storm drain contamination, employ dry cleanup methods whenever possible. Dry cleanup procedures also prevent plastics resin from being further contaminated by compounds in the storm water.

ANTICIPATE RAIN

Design systems to handle 100-year flood conditions.

Use a collector grate and filtered storm drain system with a screen consistent with the range of pellet, flake and powder size handled.

EMPLOYEE EQUIPMENT—ENSURE THAT EMPLOYEES HAVE READY ACCESS TO EQUIPMENT WHERE SPILLS MAY OCCUR:

Examples may include...

- Brooms, dustpans, rakes, etc.
- Heavy-duty shop vacuums for inside use.
- Portable shop vacuums for outside use.
- Catch trays or tarps.
- Wide-mouth sample collection jars or poly-bags.
- Tape for repairing bag or box damage.
- Scrap pellet containers (drums, bulk boxes, etc.).
- Procedures you expect workers to undertake and checklists to assist in follow-through (Checklists are available to customise).
- Forklift cleanup kit (see page 22).

SLIPS AND FALLS

Slips and falls are the number one cause of plastics industry accidents.

A CLEAN WORK AREA

A clean work area reduces slips and falls and improves employee morale.

Designing a Training Programme

Designing a training programme involves a sequence of steps that can be grouped into five phases: conducting a needs assessment, defining training objectives, detailing programme specifics, implementing the training and evaluating its effectiveness.

1. **Needs assessment** — conduct a site audit and determine if employees have and are following appropriate procedures. Make needed site improvements and write/modify procedures prior to launching a training programme.
2. **Instructional objectives**—identify what training is needed to help ensure procedures are being followed.
3. **Details**—determine how, who, where, and when you will train. Consider the following areas - explaining the environmental impact of pellet loss, defining the role each individual plays in affecting change and ensuring knowledge of appropriate procedures:

- ▶ Use OCS guidelines as one of your resources in design and development of the training programme and programme content.
 - ▶ Select the techniques used to facilitate learning (crew meetings, handouts, video, website, etc.).
 - ▶ Select the appropriate setting for your meetings.
 - ▶ Prepare materials.
 - ▶ Identify and train the instructors
 - ▶ Create department goals.
4. **Implementation**—Schedule classes, facilities, participants, and instructors, deliver materials, conduct training.
 5. **Evaluation** — Determine participant reaction to the training, how much they learned and to what degree the department goals were met. Re-evaluate all procedures to assess the effectiveness of the OCS programme annually.

EMPLOYEE PARTICIPATION AND ACCOUNTABILITY

Ensure employees are aware of and accountable for plastics resin loss prevention, containment, cleanup and disposal. Establish written procedures. (The procedures and checklists in this manual may need to be modified to suit your needs).

Make certain the procedures are easily available.

Conduct regular employee training and awareness campaigns on the Operation Clean Sweep programme.

- Explain the impact of plastics resin loss on the environment and the company.
- Make spill prevention, cleanup, and containment a company philosophy and priority.
- Promote that philosophy daily.
- Assign specific employees the responsibility to monitor and manage plastics resin containment. If it is assigned as a regular part of employee jobs, it is prioritised.
- Consider hiring a full-time housekeeping/warehouse sweeper, if appropriate. Having one person assigned this job improves the efficiency of other workers.

IF SPILLS HAPPEN

Ensure that employees:

- Take ownership by taking the pledge.
- Immediately clean up the spill.
- Recycle or dispose of loose resin properly.

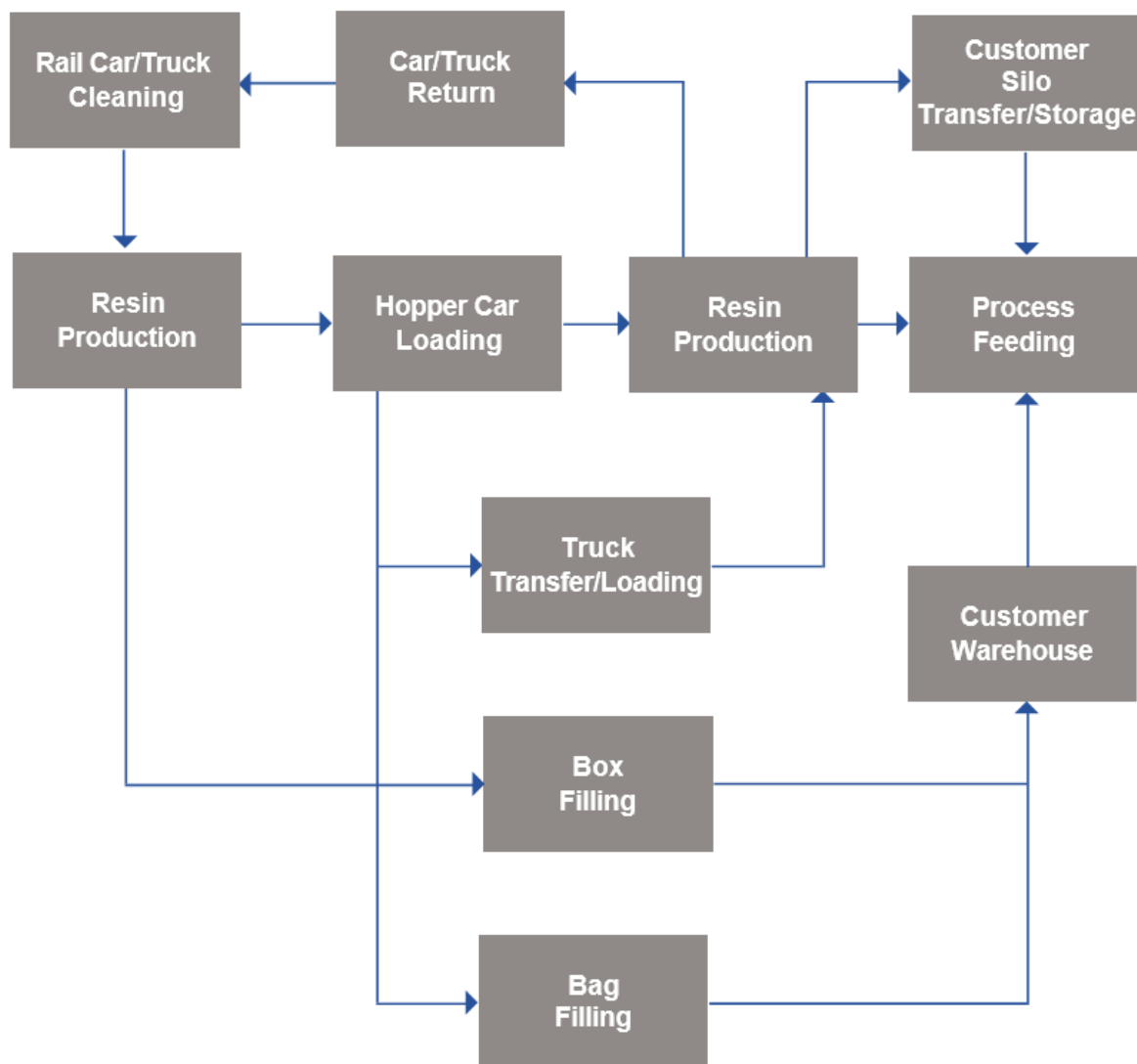
- Stress the importance of immediate cleanup of any spills by the person associated with the spill.
- Review current procedures and identify whether there has been a history of problems in a certain area.
- Reaffirm existing, or develop new, procedures.
- Use workplace reminders such as stickers, posters, etc.
- Encourage teamwork and employee feedback.
- Conduct regular inspections of the entire facility to assure compliance with OCS principles.
- Reward and/or recognise milestones and significant achievements of the crew or crews that achieve designated goals of the plastics resin loss prevention programme.

ACKNOWLEDGE HARD WORK

Simple steps, like bringing in a special lunch, to acknowledge employee's hard work to prevent loss can go a long way in keeping your company's commitment front and center.

Prevention, Containment and Clean-up Procedures

There are many steps involved in the movement of plastics resin from the resin production facility, through the distribution network, to the processor. Spills and resin loss to the environment can occur at any step. The procedures in this section provide helpful practices for each handling step. Making employees aware of and holding them accountable for these prevention, containment, cleanup, and disposal procedures, will support progress towards our goal of zero plastics resin loss.



PROCEDURES: PELLET, FLAKE AND POWDER TRANSPORT AND PACKAGING

Hopper car and hopper truck cleaning, loading, storage and unloading present special resinhandling challenges.

Cleaning Empty Hopper Cars and Trucks

- Use air lance to make total plastics resin removal easier.
- Ensure hopper car and truck cleaning areas have wastewater collection and resin filtration systems installed.
- Recover all plastics resin from wash water.
- Recycle, resell, or dispose of collected plastics resin properly.
- Operate the conveying system properly to avoid clogging and necessitating the opening of lines.
- If a line must be opened to clear blockage, anticipate the potential for plastics resin loss and always place a catch pan or tarp under the connection.
- Remove any spilled plastics resin from the top of the car/truck before leaving the containment area—residual plastics resin will fall to the ground as cars are moved outside the plant.

CLEANING CARS & TRUCKS

Good housekeeping practices will support proper handling of residual materials.

Sealing Loading Cars/Trucks

- Close all outlet caps properly before cars/trucks are moved (and request customers to do the same when returning empties).
- Apply seals on all outlet caps (e.g., 1/8" stranded steel cable or its equivalent is common).
- Design or modify loading systems so that transfer lines can be completely emptied, with any residual resin being discharged into a container after loading is completed.

Storing at Intermediate Sites

- Consider exposure to vandalism when selecting sites.
- Establish security procedures as necessary (e.g., fencing and lighting).
- Advise companies to report any incidents (e.g., shippers, railroads, trucking companies and processors).

Unloading Hopper Cars and Trucks

- Contain possible spill during hook-up by placing a catch pan under the unloading valve before opening.
- Purge unloading tubes within containment area.
- Keep area swept up or vacuumed.
- Consider installing connecting hoses equipped with valves that will close automatically when the connection is broken. Clogged hoses, material bridging in outlets, etc., can require unloading lines to be opened, which presents the risk of spillage.
- Anticipate the potential for plastics resin loss before opening the line.
- Place plastics resin disposal cans at rail yards for loading and unloading.
- Have a catch pan or tarp ready to catch plastics resin.
- Immediately clean up and properly dispose of any spilled pellets.
- Surges in unloading lines can cause plastics resin to be vented into the environment. To help prevent this, install a bag house, filter bag assembly or other control device at the unloading system vent.

BE VIGILANT

Plastics resin loss can occur at any stage of operations. Be vigilant to ensure that resin doesn't escape into the environment.

Completing Unloading

- Ensure that the car/truck is thoroughly unloaded.
- Cycle the outlet valve while air is flowing.
- Visually confirm that each compartment is empty.
- Purge the line before disconnecting.

FOCUS AREAS

Open valves, outlet caps and top hatches are frequent causes of material spills. Make sure to close off all pellet “escape routes” once the car is unloaded.

Sealing Valves

- Close all valves.
- Secure outlet caps and top hatches.

Sampling

- Conduct sampling only in areas protected by containment equipment.
- Review procedures for taking samples to eliminate any possible spillage.
- Use wide-mouth containers or poly-bags for samples.
- Use a funnel collection system to effectively channel plastics resin into containers.
- Sampling from unloading tubes:
 - ▶ Place a catch pan or heavy-duty tarp under outlet before opening to catch any spills. (Several commercial devices have been developed specifically for preventing spills during sampling.)
- Sampling from top hatches:
 - ▶ Exercise extra caution to avoid spillage, which can also pose a slipping hazard.
 - ▶ Close hatches and apply cable seals to prevent access by vandals.

PROCEDURES: SPILLS AND PACKAGING

Spills

- Exercise caution to avoid spillage.
- Clean up any spills immediately.

Packaging

- Using the proper packaging, filling, and material-handling procedures can go a long way in minimising plastics resin loss.

Selecting Packaging Materials

- Use packaging designed to minimise the possibility of breakage and plastics resin leakage. Use puncture-resistant shipping containers where possible.
- Consider reinforced bags, such as woven polypropylene bags, and line larger containers with puncture-resistant material.
- Minimise the use of valved bags, or seal valved bags immediately after filling.

COLLECTING SPILLED RESIN

Collecting spilled resin reduces contamination, permitting normal usage rather than requiring disposal.

Bags: Filling and Handling

- Inspect all pallets for protruding nails or broken boards.
- Use bags that are not easily punctured.
- Use a heavier weight container/bag if breakage is a recurring problem.
- Move and stack bags immediately after filling to avoid seepage.
- Tape leaks or replace leaking bags.
- Regularly clean up plastics resin spilled during the filling process. Where possible, select filling equipment designed to prevent resin loss.
- Implement warehouse and handling procedures that minimize the chance of resin spillage.

CAUTION

Shipping bags often use a mechanical closure that does not provide a positive seal against leakage once the bag is filled.

- Dispose of collected plastics resin properly.

Bags: Emptying and Disposal

- Thoroughly empty bags.
- Collect, handle, store and transport the empty bags to avoid/contain the escape of plastics resin.
- Recycle plastics resin bags, shrink-wrap and stretch-wrap, whenever possible.
- Dispose of packaging by incineration or in a well-managed landfill.
- Stress the need for “no loss to the environment” procedures.

Bulk Boxes

- Tape leaks or replace leaking boxes.
- Use bulk boxes that are not easily punctured.
- Tape leaks or replace leaking boxes.
- Regularly clean up plastics resin spilled during the filling process.
- Dispose of collected plastics resin properly.

CAUTION

Some loss also occurs during the filling process

Improve Palletising Methods

- Move and stack bags immediately after filling to avoid seepage from valves.
- Stack bags on pallet in tight, interlocking patterns.
- Shrink or stretch-wrap pallet to stabilize stacks and help contain lost plastics resin.
- Use corrugated cardboard caps on the top and bottom of pallets to minimise puncturing or tearing bags and to contain loose plastics resin.
- Block and brace outbound loads to avoid broken bags in transit.

SELECT PROPER BAGS AND PELLETS, FLAKES AND POWDER

Bags typically are stacked 40 to 50 per pallet, and pallets are usually sorted at least two high. Both individual and palletised bags are subject to the rigors of warehouse movement and storage. Proper bag and pallet selection can help reduce damage.

Handling Materials

- Train forklift operators so they are skilled in damage prevention as well as proper cleanup.
- Institute handling procedures that minimise puncture of bags and boxes with forklift tines.
- Repair or replace punctured packages and cleanup any spills immediately to prevent loss of plastics resin. Sealing a leak when it occurs is much easier than sweeping 100 yards of warehouse.

FORKLIFT CLEANUP KIT

- Broom
- Long-Handled Dust Pan
- Repair Tape
- Bucket for Collection/Disposal

Select these items to fit together in the bucket to the forklift using elastic cords. Situate the kit so as not to interfere with the safe operation of the forklift.

- Consider outfitting all forklifts with a Cleanup Kit.
- Place catch trays between the dock and trailer at shipping and receiving bays.
- Inspect plastics resin packaging before offloading, particularly plastics resin bagged in unreinforced paper or corrugated bulk boxes. This will help prevent resin release through the gap between the vehicle and the loading dock.

Storage

- Consider covering all packaging resin stored outside (gaylords, supersacks, etc.) to reduce photo degradation of the containers.

PROCEDURES: OTHER TRANSPORT VEHICLE CONCERNS

Container Trucks

- Shipping
 - ▶ Sweep or vacuum any loose plastics resin in the truck/container.
 - ▶ Carefully inspect empty trailers for damaged interior walls or defective floors that can tear bags. Consider refusing to use such containers or cover problem areas with corrugated liner board.
 - ▶ Block and brace outbound loads to avoid broken bags in transit.
- Receiving
 - ▶ Inspect truck and rail shipments containing palletised bags of plastics resin and document the condition of bags and pallets received. If the shipment is significantly damaged, notify the transporter and manufacturer. Consider refusing to accept delivery.

Hopper Cars and Trucks—Repairs

- Work in a paved area to facilitate containment and cleanup.
- Properly contain, handle, or recycle small quantities of residual plastics resin. If larger quantities are involved, contact the shipper.

Transport Accidents

- Contact the shipper for assistance/advice if a derailment or highway accident results in a spill of plastics resin.

PROCEDURES: MARINE TRANSPORT

Marine transport of plastics resin requires special attention due to the high potential for release into the environment. Because of the close proximity to water, loose plastics resin in and around waterfront warehouses, docks, ocean-going containers and on ships themselves must receive extra attention.

Anyone handling plastics resin directly or managing their shipment must be well-informed about the importance of spill prevention, the need for prompt cleanup and proper disposal practices.

- Do NOT sweep plastics resin into the water.
- Properly contain and handle any plastics resin from previous shipments when cleaning ship holds or ocean containers.
- Keep ocean containers in good repair—eliminate protrusions that could tear bags and boxes.
- Avoid stowing resin containers on deck. Place resin containers in ship holds.
- Do NOT jettison containers of resin.

PROCEDURES: WASTE RECYCLING AND DISPOSAL

Ensure plastics resin are properly disposed of to avoid contaminating the environment.

- Store waste plastics resin in properly labeled containers.
 - ▶ Do not permit loose plastics resin to accumulate on the ground or floors.
 - ▶ Install pellet-specific waste container (e.g., one or more) in each resin-handling area.

PREFERRED DISPOSAL METHODS

- Recycle
- Resale
- Approved incineration (where available)
- Controlled landfill
- Fuel-blending programme

- ▶ Routinely check that there is adequate waste storage capacity.
- Use separate containers for recyclable and non-recyclable plastics resin.
- Use only covered containers or vehicles without leaks.
- Inspect and confirm proper handling and storage procedures if an outside vendor is used for waste removal.

- ▶ Stress the need for “no loss to the environment” procedures.
- Preferred disposal methods are:
 - ▶ Recycle or resell waste plastics resin.
 - ▶ Approved incineration of waste plastics resin in properly licensed and operated incinerators.
 - ▶ Deposit in a controlled landfill only after confining plastics resin in such a manner that prevents their loss due to rain, wind, flooding, etc.
 - ▶ Consider using waste plastics resin in a fuel-blending programme.
- Include pellet, flake and powder retention capabilities and practices in criteria for selecting waste disposal companies.

FINAL STEP

Careful disposal is the final step so that plastics resin does not affect the environment.

PROCEDURES: DUST AND POWDER

Methods to Help Minimise Generation and Release of Plastics Dust and Powder

This specifically focuses on methods to help minimise generation and release of plastics dust and powder. There are several approaches that can be taken. You may wish to consider whether other ways are more appropriate for your operations. Consult with the manufacturer of the resin you are handling for specific handling, containment, and disposal information.

For purposes of this discussion:

Plastics Dust is particulate matter that may be formed when plastics are handled, conveyed and/or processed. One of the most common means of generation is via abrasion during the air conveying of plastics pellets and flakes. In addition to conveying, plastics dust may be generated when plastics raw materials or finished products are:

- Granulated
- Pelletised
- Cut
- Machined
- Filed
- Transported

Plastics Powder is a form of plastics raw material used in operations where a fine particle size is critical for processing. Plastics powder can escape plastics handling or processing equipment. If that occurs; handling, containment and recovery considerations are similar to plastics dust. Typically, powders may escape through:

- Leaks in storage silos, tanks, and containers.
- Leaks in pneumatic or mechanical conveyors.
- Leaks in blenders or other processing equipment.
- During loading/unloading operations or transfer operations.

Methods to Consider for Minimising the Generation of Plastics Dust

The best way to control dust is to minimise its creation in the first place. There are several approaches that can be taken to help minimise the generation of plastics dust. For example:

- When pelletising or flaking, keep cutting equipment in good condition with sharp blades.
- Design conveying systems to treat the plastics gently and take other steps to help avoid collisions and impacts with hard surfaces and other plastics resin, thereby avoiding plastics fracture. Methods to consider, can include, use of long sweep elbows and avoid having the plastics pass through a blower.
- Use appropriately sized granulators.
- When machining plastics, use an appropriate machine set up for the material and provide appropriate waste collection equipment.
- Store plastics and additives in appropriate containers maintained in good condition.
- Promote awareness to employees of methods of handling and processing of the plastics to help minimise dust creation.

Methods to Consider for Minimizing the Release of Plastics Dust and Powder

There are several approaches that can be taken to help minimise the release of plastics dust and powder. For example:

- Keep storage silos, tanks, and containers in good condition, to help avoid holes, cracks, or leaks.
- Maintain loading/unloading and transfer equipment with good seals to help avoid leaks.
- Conveying equipment should be appropriate for the task and maintained in good condition.
- Place collection trays under discharge/loading valves and connection points when making or breaking connections.
- Use processing equipment (and the equipment that feeds it) that helps minimise the release of dust/powder.
- Clean up all spills promptly; wind and traffic can quickly disperse dusts and powders.
- Encourage employees and/or contractors to look for dust/powder leaks and to correct any that occur.
- Promote employee awareness of training and reminders regarding the need to prevent dust/powder from escaping into the environment.

Methods to Consider for the Capture and Containment of Plastics Dust

Plastics dust creation can be minimised but not eliminated entirely. There are several approaches that can be taken to help in the capture and containment of plastics dust.¹ For example:

- Use properly designed and sized dust collection equipment in all operations that generate or liberate plastics dust.
- Maintain the dust collection equipment according to manufacturers' recommendations.
- Use the recommended filters for the type and amount of dust generated.
- Clean or replace filters or other collection equipment as needed.
- Promote awareness of procedures for cleanup of plastics dust spills, or plastics dust that has settled on surfaces in and around the plant.
- Promote maintenance/housekeeping procedures that minimise dust accumulation around the facility.

- Store captured plastics dust in containers that are designed to help minimise leaks.
- Promote employee awareness in procedures for handling plastics dust, including industrial hygiene considerations.
- Comply with applicable federal, state, and local regulations for containment systems.

Proper disposal of plastics dust and powder can be critical to help minimise the amount released to the environment. Choosing a disposal method involves considering the materials that constitute the dust /powder and the disposal requirements of those materials.

- Review the Material Safety Data Sheet (MSDS) for each type of plastics used in the process.
- Dispose of dust or powder using a method that complies with all federal, state, and local regulations and guidelines and/or applicable codes and standards.

¹ Dust from plastics may combine with dust from other materials within the plant site. Review MSDS for information on the proper capture, containment and disposal equipment and procedures.

Any dust, no matter what the material, can be explosive if in the proper concentration in air. When handling dusts, take precautions not to aerate it and to keep ignition sources away.

Pledge to Prevent Plastics Resin Loss

Take the Pledge for Your Company

To demonstrate your commitment to a clean environment, please register for the OCS Pledge at <https://mpma.org.my/sustainability/operation-clean-sweep/ocs-registration>.

In return, your company will receive a certificate suitable for display affirming your commitment to being an Operation Clean Sweep Member.

Signing this pledge will qualify your company's name to be added (unless otherwise specified) to the list of OCS Programme Members on the MPMA Operation Clean Sweep® page. Listed member company names may be used in publicity for the programme.

Have Your Employees Take the Pledge

- Individual personal commitment of every employee is the key to success.
- Encourage every employee to be fully engaged and committed to following the OCS principles every day.
- Having each employee sign a personal pledge found in the checklist section is an effective way to gain that commitment.



Checklist

We have provided a number of checklists to assist you in implementing OCS. The checklists are divided into two categories: Management and Employee. The checklists have been created so they are customizable for your company. For example, you can insert your company logo and specific process steps may be added or removed to reflect those involved in a particular operation. These enhancements will make it easy to create and copy forms that have the greatest value for your company. For online checklists, visit:

<https://mpma.org.my/sustainability/operation-clean-sweep>.

Management Checklists

- Site Audit
- Implementation & Training
- Facility Equipment
- Employee Equipment

Employee Checklists

- Processor Operations
- Warehouse
- Car Cleaning/Loading
- Railroad
- Transloader



Site Audit Management Checklist

Company: _____

Department: _____

Bulk Hopper Car/Truck Unloading Area

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Receiving Dock—Bags and Boxes

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Silo Area

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Transfer Equipment—Blower

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Audited By: _____

Audit Date: _____

Operation Clean Sweep® Site Audit Management Checklist

Transfer Equipment—Bag House

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Transfer Equipment—Line Connectors

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Box/Bag Handling

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Blending Equipment

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Processing Line—Extrusion Feed Hoppers

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Audited By: _____

Audit Date: _____

Operation Clean Sweep® Site Audit Management Checklist

Packaging Areas—Bulk Box

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Packaging Areas—Bag

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Warehouse/Storage

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Shipping Dock

Spill Problem: Yes No

Cause of Spill: _____

Solution: _____

Implementation Date: _____

Audited By: _____

Audit Date: _____



Implementation & Training Checklist

Company: _____

Department: _____

PROCEDURES

- Signed the "Pledge" Conduct site audit.
- Review or create written procedures.
- Assign responsibility for each crew/individual Put management inspection programme in place Plan follow up and review.

TRAINING

- Crew training meetings conducted
- Shift #1 _____
- Shift #2 _____
- Shift #3 _____
- Shift #4 _____

Manager: _____

Signature/Date: _____



Facility Equipment Checklist

Company: _____

Department: _____

STORM DRAIN SCREENS

- Number of drains: _____
- Number of drains with screens: _____
- Target date to complete screen installation: _____
- Drain screen inspection/cleaning frequency: _____
- Screen repairs required: _____

UNLOADING AREAS

- Paved
- Unpaved
 - Tarps/catch pans available in area
 - Disposal receptacles in area

TRANSFER SYSTEMS

- Bag House/filters OK
- Pipe, hoses and connections leak free
- Disconnects with auto closing valves

SWEEPINGS DISPOSAL

- Contractor agrees to "zero loss" disposal procedures
- Proper interim storage containers available

Inspected By: _____

Inspection Date: _____



Employee Equipment Checklist

Company: _____

Department: _____

AVAILABLE FOR USE

- Brooms
- Dust pans
- Repair tape
- Vacuum system
 - Central
 - Portable
- Catch pans
- Sample containers
- Scrap pellet, flake and powder container
- Elastic cord
- Buckets for forklift cleanup

Inspected By: _____

Inspection Date: _____



Processor Operations Checklist

Company: _____

Department: _____

Operation: _____

Crew/Shift: _____

Inspector: _____

Date: _____

	Condition at START of Shift			Condition at END of Shift		
	Excellent <input type="checkbox"/>	Good <input type="checkbox"/>	Poor <input type="checkbox"/>	Excellent <input type="checkbox"/>	Good <input type="checkbox"/>	Poor <input type="checkbox"/>
Silos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transfer Lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bag/Box Feeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dryer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Extruder Hoppers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Problem Areas						
Spill Recovered:	<input type="checkbox"/> Yes <input type="checkbox"/> No If not, why:					
Sweeping Properly Disposed of:	<input type="checkbox"/> Yes <input type="checkbox"/> No If not, why:					
Samples Taken:	Number:					

Inspected By: _____

Inspection Date: _____



Warehouse Checklist

Company: _____

Department: _____

Operation: _____

Crew/Shift: _____

Inspector: _____

Date: _____

RECEIVING AREA

- Loading dock catch pans in place for receipt of container shipments
- Rail truck unloading valve catch pans in place before openings
- Samples collected in approved containers
- Container trucks cleaned after unloading
- Hopper car/truck valve covers in place before moving
 - Full walk around conducted
 - Transfer lines flushed and clean
- Dock area swept clean
- Car/Truck unloading area clean
- Raw Material Storage area clean
- Aisles in clean condition
- No leaking boxes
- No leaking bags
- Waste collection containers emptied
- Boxes cleaned and flattened
- Bags fully emptied prior to disposal
- Broken pallets repaired or replaced

Inspected By: _____

Inspection Date: _____



Car Cleaning/Loading Checklist

Company: _____

Department: _____

Operation: _____

Crew/Shift: _____

Inspector: _____

Date: _____

RECEIVING AREA

- Containment for wash area operational
- Compartments empty and clean
 - Air lance operational
 - Unloading outlet tubes totally clean
 - Plastics resin recovery from wash water 100%

CAR LOADING

- No line blockages or clogging
- Catch pans in place for connections
- Transfer lines flushed after each car loading completed
- All outlets secured and sealed after filling (Seals are all 1/8-inch braided steel or stronger)
 - Top
 - Bottom
- Top of car clear before release

Inspected By: _____

Inspection Date: _____



Railroad Checklist

Company: _____

Department: _____

Operation: _____

Crew/Shift: _____

Inspector: _____

Date: _____

STORAGE IN TRANSIT AREAS

- Secure
 - Fenced
 - Adequate lighting
- Regular Inspections
- Car valve covers and seals in place or shipper notified

Inspected By: _____

Inspection Date: _____



Transloader Checklist

Company: _____

Department: _____

Operation: _____

Crew/Shift: _____

Inspector: _____

Date: _____

RECEIVING AREA

- Wash system containment operational
- Compartments empty and clean
 - #1 #2 #3 #4
- Unloading outlet tubes totally clean

TRANSFER (Transfer area: Gravel Asphalt)

- Car seals in place before start of transfer
- Catch pans in place prior to valve opening
- Transfer lines flushed and clean after transfer
- All outlets secured & sealed at completion and prior to moving
 - Car
 - Top
 - Bottom
 - Truck
 - Top
 - Bottom
- Spills cleaned and disposed of properly
- Samples taken without material loss
- Unloading problems experienced

Inspected By: _____

Inspection Date: _____



Pledge to Help Prevent Plastics Resin Loss

EMPLOYEE PLEDGE TO HELP PREVENT PLASTICS RESIN LOSS

I recognise our company's commitment to Operation Clean Sweep and the goal of preventing plastics resin loss into the environment. I will do my daily job in a manner that strives to:

- Prevent Plastics Resin Loss;
- Contain Spills;
- Cleanup Swiftly and Effectively; and
- Dispose of Plastics Resin Appropriately

Company Name: _____

Department/Crew: _____

Employee Name: _____

Signature: _____ Date: _____

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