



Otto Environmental Systems North America, Inc.  
12700 General Drive, Charlotte, North Carolina 28273

## CORPORATE PROFILE

### Company History

With a legacy spanning over 80 years, Otto's original company was founded in Kreutzal, Germany, in 1934. The company entered the waste management industry in 1950. With the introduction of injection molded containers in 1965, Otto pioneered the two-wheeled trash cart in use today. The largest brand of plastic waste containers in the world, Otto has more than 100 million carts servicing communities around the globe.

### Diversified Portfolio

Not only does Otto manufacture a wide range of waste container products, Otto also owns a waste container service group, a custom and contract molding group, and a venture capital group. Some of the principal activities of these divisions are:

#### ***Waste Container Products: Municipalities and Private Haulers***

Offering waste containers for various types of waste streams in both the residential and commercial categories. These include but are not limited to general waste, recycling, yard waste, organic waste, and e-waste.

#### ***Container Management Services***

Providing services such as assembly, distribution and recovery (A&D), logistics, cart repair, inventory management, warranty management, and cart re-branding for deployed waste containers.

#### ***Waste Container Products: Retail Sector***

Offering waste container options to retailers that allow consumers to purchase containers for needs beyond their weekly collection service or for those whose collection service requires containers to be purchased by the individual.

### Operations Overview

Otto Environmental Systems North America, Inc. (OESNA) is a wholly owned subsidiary of Otto Industries North America, Inc. After entering the United States market in 1983, the company rapidly gained market share by importing containers from its European factories. In 1988, Otto invested \$40 million toward its first domestic manufacturing facility located on a 16-acre tract of land in Charlotte, North Carolina. Due to the company's consistent growth, Otto has expanded this facility to accommodate additional machinery, assembly and staging areas, and storage space. The North Carolina facility now houses 177,000 square feet of indoor space, including Otto's North American corporate offices. It is also equipped with an impressive array of modern injection molding equipment.

In 2002, Otto opened its second North American facility in Eloy, Arizona. The Eloy facility contains 27,300 square feet of manufacturing space, 400,000 square feet of inventory space, and 4,700 square feet of administrative office space. The plant features several large injection molding machines and various types of manufacturing equipment, which have significantly increased production capacity.

**Otto: Serving Municipalities and Private Haulers**

Since 1983, Otto has developed and maintained lasting relationships with many diverse municipalities and private haulers. As a result, Otto's reputation is that of a valued and dependable partner. (references provided upon request.)

Otto provides a range of products – dumpsters, two-wheel carts, litter receptacles, and kitchen pails – for a variety of waste streams in both residential and commercial sectors. For complex municipal contracts, Otto offers consultation services to guide you through the waste collection process. Whether it is going to council meetings or educating residents, Otto has experts with hands-on experience to help every step of the way.

Otto's experienced sales force is uniquely qualified to understand your needs and offer custom, cost-effective solutions. Our dedicated customer service team oversees the order process from order entry until well after delivery. Finally, our strategically located facilities, manufacturing partners and distributors help improve product lead time and decrease freight costs.

**Container Management**

A division of OESNA, Otto Container Management, LLC (OCM) is a logistics company that focuses on container management – assembly, distribution and recovery (A&D); container evaluations and maintenance; inventory management; and container re-branding.

Originating in Europe, OCM has over 30 years of experience in cart maintenance and repair programs with service contracts throughout France, Italy, Britain, Germany, Spain, Mexico, and Brazil. OCM has taken the best practices from these locations to bring the greatest value to its customers in the United States.

OCM began U.S. operations in 2000 and is headquartered alongside its product manufacturing division in Charlotte, North Carolina. OCM currently employs 75 full-time team members and has a fleet of 81 service box trucks identifiable with professionally applied graphics. The fleet operates under D.O.T. standards, and all trucks are equipped with GPS systems linked to route planning software that provides accurate service verification.

OCM has a growing fleet of locations across the United States, collectively handling about 2.1 million carts. Between 2014-2016, OCM completed over 1.3 million cart actions (approximately 44,000 actions per month) and distributed more than 1.4 million containers to end-user locations via A&D (assembly and distribution) projects.

Heightened environmental awareness has led to goals such as becoming 95% emissions free or better by 2018. To accomplish this, OCM is proud to purchase only zero-emission diesel or CNG trucks for existing and future projects. The fleet currently includes 81 vehicles, 13 of which are zero-emission vehicles.

**Otto: Serving the Retail Sector**

Finding a niche in the consumer waste market, Otto's retail division provides containers to high-volume retailers for business-to-consumer sales. Otto Retail got its start in 2013, quickly gaining traction by landing big accounts such as Walmart and The Home Depot. Otto Retail continues to expand its offerings to suit the needs of consumers.

**Expert Engineering**

Otto strives to provide a breadth of products and services for its customers. Our engineering and product design team has the expertise to provide the best cost-effective solution to meet your needs for quality, durability and longevity. Otto uses a plastic injection molding process using high density polyethylene (HDPE) to produce many of its products, including two-wheel carts, dumpsters, and contracted and custom molded parts. Injection molding provides consistency and durability with design features that are built into the mold to strengthen areas that face unique stress points. Otto containers are engineered with the appropriate balance of stiffness and flexibility to provide flex and conformity for an automated grabber, resulting in fewer stress points. Special features of our two-wheel carts feature a molded-in wear ridge at the bottom of the cart to prolong the container lifespan and patented dimples at four sides to assist with gripping power.

### **Quality Management**

Otto Environmental Systems North America and its ICM division are ISO 9001:2008, ISO 14001:2004, and ISO/TS 16949:2009 certified, and Otto is regularly audited to maintain these certifications. Every order is inspected to meet specified project requirements. Otto carts are manufactured using high density polyethylene (HDPE). Otto only uses HDPE grades that have longer molecular chains to decrease the melt index and give the material "melt strength." The higher molecular weight also gives the material increased environmental stress crack resistance (ESCR), impact strength, and cold-temperature toughness over a material with a similar density but shorter molecular chains. Each lot of resin is put through extensive testing to verify the melt flow index and check for moisture and contamination to ensure the resin meets Otto's established standards.

### **Advantages of the Otto Injection Molded Container**

Otto Environmental Systems North America, Inc. refuse containers are manufactured by an injection molding process. The injection molding process is capable of making products with complex designs that would not be possible by other manufacturing processes such as rotational or blow molding. For example:

- HDPE (high-density polyethylene) composition is heavy duty and fully recyclable.
- The automated manufacturing process yields lower container prices.
- Injection molding allows for intricate design features, such as wear strips, support ribs, and assembly slots, where other molding processes create simpler outputs with limited mold design capability.
- Consistency in wall thickness allows isolation of special features in order to strengthen areas where the container faces special stress, for example:
  - Lid attachments are cylindrical-shaped and double-ribbed, creating a robust attachment to the container body.
  - The container base is manufactured with a dual molded-on "wear strip" to take the brunt of the wear and abuse. The flat bottom of the container does not touch the ground.
  - Molded gussets contribute greater strength to the axle mounting details.
- High pressure injected resin ensures complete and even coverage throughout the mold, providing overall consistent wall thickness and eliminating thin spots or "windows."
- An extra deep toehold assists with handling heavy loads.

Other benefits include:

- A guaranteed ten-year, non-prorated warranty on carts and a five-year, non-prorated warranty on recycling bins.
- A container failure rate of less than 1%.
- Standard snap-on wheels that roll easily, quietly and provide greater control of the cart.
- A large oversize solid steel axle, which is manufactured from recycled material, to provide exceptional durability.
- A cart design that leads the industry in wind stability.
- A virtually maintenance-free container, decreasing costly labor for repair.
- A choice of either a plastic or a metal lower “catch” bar.
- Free graphic design services for instructions and container branding.
- A selection of seven standard colors and superior hot stamping using the latest heat sink technologies.
- An aesthetically pleasing container that complements both inside and outside environments.

### **Innovative Technology**

Otto is actively investing in cloud-based technologies to change our world for the better. Our investment in “the cloud” aims to reduce our manufacturing footprint and in turn, increase efficiencies that will lead to a cleaner community, less printed paper, more recycled product, and reduced product lead times.

The Otto Service Portal, a cloud-based tracking system, provides full transparency for rollout and work order management projects. The Service Portal allows customers to monitor container inventory in real time, process warranty claims, and enjoy the ease of automatic work order closing. It also confirms container specifications such as waste type, quantity and serial number validity. Handheld scanners and tablets read RFID tags/barcodes that provide real-time service verification that updates and closes while in the field. Otto also provides truck collection solutions that record RFID tags and truck position as a container is emptied into a truck. With this information, dispatchers receive real-time information on current truck locations and completed actions. These value-added service not only makes it easier for customers to check status on their inventory, it also provides an avenue for both Otto and the customer to participate in carbon footprint reduction efforts.

All Otto carts can be equipped with RFID tags or permanent barcodes that can link a cart to a specific address. With RFID, a plastic RFID tag is placed inside the handle of the cart during assembly at Otto’s manufacturing facility and secured in place once the hinge pins are fastened to the lid. Barcodes are available at the time of manufacture with several application options.

### **ANSI Approved**

Otto carts meet or exceed A.N.S.I. (American National Standards Institute) Z245 standards for compatibility dimensions to ensure that containers and lifters work together to safely empty and return the container to the ground after collection. These include bib and lift bar dimensional requirements based on the container type. For required markings, Otto carts include a code for the date of manufacture, the maximum payload weight rating, the volumetric capacity, and safety “close lid before moving” instructions. Cart testing is always executed with the maximum load weight of 3.5 pounds per gallon. Additional proprietary tests are also performed and recorded to ensure variables such as different working shifts, raw materials, and equipment are consistent for optimal output.

A.N.S.I. tests include:

1. **Curb Test:** This test determines whether the cart's handles, wheels and axles will withstand the repeated impact forces experienced during a normal 10-year useful life. A maximum loaded cart is pushed off a curb of 5.5 inches and repositioned at the top and repeated for 520 cycles! Otto's steel axles and strong axle ribs ensure a strong base to absorb the impact without breaking.
2. **Lid Test:** Otto cart lids can withstand a load of 80 pounds (comparable to the weight of a small child) without collapsing.
3. **Force to Tip Test:** Cart testing measures the force required to start container movement or tip a maximum loaded cart to ensure ease of operation. Otto carts are well below the industry standard of not exceeding 120 pounds of force.
4. **Center of Balance Position Test:** To further ensure ease of operation, Otto carts are tested to ensure that the height of the handle at the center-of-balance position is between 29-40 inches.
5. **Slope Stability Test:** This test checks the static stability of an empty and loaded cart on a 5-degree slope. Otto carts stand, without tipping or moving, in three different orientations.
6. **Volumetric Loading Capacity Test:** To determine the volume of a container, Otto carts are immersed in a tank of water to verify the volume of the cart.
7. **Loading and Unloading – Automated (Cycle Test):** A loaded cart is engaged by the lifter and emptied. The cart is reloaded and inspections are made every 100 lifts.
8. **Loading and Unloading – Semi-Automated (Cycle Test):** A loaded cart is engaged by the lifter and emptied. The cart is reloaded and inspections are made every 100 lifts.

#### **Corporate Sustainability**

Otto is committed to corporate sustainability at our manufacturing locations and in our community. Within the manufacturing process, Otto uses the highest possible levels of recycled content without compromising product integrity.

Otto has centered its policies and procedures around environmental sustainability – those actions that reduce the impact that the company's manufacturing has on both local and global environments. Our manufacturing operations have increasingly incorporated additional efforts to reduce their carbon footprint. In the past few years, Otto has been able to reduce six-fold its solid waste generation through reclamation, recycling and recapturing efforts. Otto recycles 13 million pounds of plastic annually through both internal and externally sourced operations.

# ExxonMobil™ HDPE HD 6605.70

## High Density Polyethylene Copolymer Resin

### Product Description

HD 6605.70 is a narrow molecular weight hexene copolymer designed for a wide range of injection molding applications, offering excellent ESCR with good stiffness-toughness balance. Ideally suited for articles requiring rugged physical performance in cold temperature environments.

### General

Availability <sup>1</sup>	• Latin America	• North America	• South America
Additive	• Anti-gas fading: Yes		
Applications	• Automotive Components • Industrial Closures	• Recreational Vehicle - Components • Waste Carts	
Revision Date	• March 2013		

Resin Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Density	0.948 g/cm <sup>3</sup>	0.948 g/cm <sup>3</sup>	ASTM D4883
Melt Index (190°C/2.16 kg)	5.0 g/10 min	5.0 g/10 min	ASTM D1238
Thermal	Typical Value (English)	Typical Value (SI)	Test Based On
Deflection Temperature Under Load (DTUL) at 66psi - Unannealed	156 °F	69 °C	ASTM D648
Deflection Temperature Under Load (DTUL) at 264psi - Unannealed	108 °F	42 °C	ASTM D648B
Peak Melting Temperature	266 °F	130 °C	ASTM D3418
Molded Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Strength at Yield	3400 psi	23 MPa	ASTM D638
Elongation at Break	1000 %	1000 %	ASTM D638
Flexural Modulus			ASTM D790B
1% Secant	160000 psi	1100 MPa	
2% Secant	140000 psi	970 MPa	
Environmental Stress-Crack Resistance			ASTM D1693B
10% Igepal, F50	20 hr	20 hr	
Impact	Typical Value (English)	Typical Value (SI)	Test Based On
Notched Izod Impact (-40°F (-40°C))	1.0 ft-lb/in	55 J/m	ASTM D256

### Additional Information

- Properties are based on compression molded samples.
- Test procedures may be modified to accommodate operating conditions or facility limitations.
- Tensile Strength at Yield and Elongation at Break tested using ASTM D638 Type IV, 50 mm/min.

Typical properties: these are not to be construed as specifications.

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**ExxonMobil Chemical ExxonMobil™ HDPE HD 6605.70**  
**High Density Polyethylene Copolymer Resin**

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**Legal Statement**

Contact your ExxonMobil Chemical Customer Service Representative for potential food contact application compliance (e.g. FDA, EU, HPFB).

This product is not intended for use in medical applications and should not be used in any such applications.

**Notes**

<sup>1</sup> Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability.

For additional technical, sales and order assistance:

**Worldwide and the Americas**

ExxonMobil Chemical Company  
13501 Katy Freeway  
Houston, TX 77079-1398  
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**PERRY JOHNSON  
REGISTRARS, INC.**

## *Certificate of Registration*

*Perry Johnson Registrars, Inc., has audited the Quality Management System of:*

***Otto Environmental Systems N.A., Inc.***  
***12700 General Drive, Charlotte, NC 28273 United States***

*(Hereinafter called the Organization) and hereby declares that  
Organization is in conformance with:*

***ISO 9001:2015***

*This Registration is in respect to the following scope:*

***Manufacture and Assembly of Injection Molded Plastic Parts for the Solid Waste Industry***

*This Registration is granted subject to the system rules governing the Registration referred to above, and the  
Organization hereby covenants with the Assessment body duty to observe and comply with the said rules.*



*Terry Boboige*

Terry Boboige, President  
Perry Johnson Registrars, Inc. (PJR)  
755 West Big Beaver Road, Suite 1340  
Troy, Michigan 48084  
(248) 358-3388

*The use of the UKAS accreditation symbol is in respect to the activities covered by the Accreditation Certificate Number 0105.*

*The validity of this certificate is dependent upon ongoing surveillance.*

*Effective Date:*

November 15, 2019

*Expiration Date:*

November 14, 2022

*Certificate No.:*

C2019-03110



# **OTTO Environmental Systems North America, Inc.**

## **TEN YEAR, NON-PRORATED WARRANTY**

### **1. Otto Roll Out Waste Container Warranty**

For all new residential waste containers, Otto warrants that they will meet applicable specifications and be free from defects in material and workmanship while in normal use for a period of Ten (10) years from the initial date of shipment from Otto's manufacturing facility. Otto extends this warranty only to the first purchaser of the waste container, except when the purchase is made through an authorized Otto distributor, when the warranty will extend to the first purchaser from the distributor and not to the distributor.

### **2. Exclusions From Warranty Coverage**

- 2.1 Normal wear and tear for serviceable containers
- 2.2 Negligent and Abusive Use: including improper storage, use and handling, vandalism, and damage from wildlife
- 2.3 Damage from incompatible, improperly installed, operated, or damaged lifting mechanisms
- 2.4 Improper use of container exceeding specifications
- 2.5 Unauthorized repair or alteration
- 2.6 Damage caused by natural calamities such as fire, storm, or high winds

*Types of damages excluded from this warranty will be determined, each on its own merit, by an Otto warranty representative.*

### **3. Warranty Administration**

- 3.1 Buyer representative shall notify Otto's applicable Area Sales Manager or Otto Representative in writing before the end of the warranty period for the allegedly defective container(s).
- 3.2 The Serial Number(s) of the alleged defective container(s) shall be submitted via email on the Otto Damage Submittal Form (F-9400) and must be accompanied by the appropriate warranty code identifying where the failure occurred. To properly evaluate the claim, electronic photos of the failure types should be submitted for 20% of the claim quantity.
- 3.3 Buyer agrees that Otto or its designated representative shall have the right to inspect and test the allegedly defective container(s) at the customer's site or a predetermined location.
- 3.4 At the time a Damage Submittal Form is submitted, the containers become Otto's property. Otto requires the right to collect/reclaim and recycle the container(s). Buyer agrees to empty, disassemble, and stack containers for shipment set up by Otto.
- 3.5 Otto reserves the right to either repair, replace or grant credit for defective containers.

### **4. Exclusive Warranty Remedy**

Upon determination of containers/parts as defective by Otto, said product shall, at Otto's sole option, be repaired, replaced or the first purchaser shall be given a credit for the amount of the original purchase price of the affected product. Any repaired or replaced containers/parts will assume the remainder of the ten (10) -year (or) applicable warranty from the original containers initial shipment date.

This warranty is in lieu of any other remedy warranty, express or implied, including any implied warranty of merchantability or fitness for a particular purpose. In no event shall Otto be liable for incidental or consequential damages (including freight charges) or delay in performance resulting from the defect. Products manufactured by a supplier or third party manufacturer, specifically RFID components; distributed products and customers specified items, are not covered by this warranty and may be warranted by the manufacturer's warranty as offered.

Credits not used within six (6) months of issue will expire.

12700 General Drive, P.O. Box 410251 Charlotte, NC 28241  
Attn: Warranty Dept. Phone: 1(800)-227-5885

Revision August 20, 2015

# **Cart Test Procedures**

Otto Environmental Systems, LLC manufactures carts that are of the highest quality and durability possible. One way we accomplish this is through a series of tests that simulate the "true to life" abuses to which carts are subjected week after week.

Otto's performance testing requirements were designed to simulate the effects of hard use in waste collection field conditions. The severity of some tests was scaled to anticipate an expected 10-year minimum life of the containers.

<b><u>Test Description</u></b>	<b><u>Performance Requirements</u></b>
1. Loaded Cart Drop Test	Five (5) drops with 300 lbs. load from 12 ft. with no damage.
2. Wheel Durability	520 drops with no failure of wheels
3. Axle Strength Test	800 Lbs. without permanent deformation of axle.
4. Bottom Wear (Abrasion Resistance)	100 lbs. load dragged for 9,500 feet without wear-through or leakage.
5. Wind Resistance	40 mph for 30 seconds from any direction without blowing over.
6. Loading & Unloading	520 complete cycles without any failures

In addition, ANSI outlines the following test procedures in the guidelines set down for refuse collection containers (Z245.30-1999):

Slope Stability Test (Appendix B)	Cart is stable on 5 degree slope
Durability During Pulling (Appendix C)	See # 2 above.
Loading & Unloading (Appendix D)	See # 6 above.
Center of Balance (Appendix E)	Balance position achieved with handle positioned 29" (min) to 40" (max) from ground.
Force to Tip (Appendix F)	Maximum force to tip of 120 lbs.
Lid Test (Appendix G)	Lid withstands 80 lbs. force.

# **Cart Test Procedures**

The tests outlined in this document primarily focus on measurement of the container's ability to withstand the rigors of regular usage in a waste collection system. Additional consideration should be given to the testing described in ANSI Z245.30-1999. These ANSI tests focus to a greater extent on ease of use and safety issues.

## **1. LOADED CART DROP TEST**

The subject cart is loaded with 300 pounds of sand or other static ballast. The carts are then lifted to a height of 12 feet and dropped onto a concrete surface. The test is repeated five (5) times. Carts are then carefully inspected for evidence of any failure.

The Loaded Cart Drop Test simulates the stresses that carts must endure through years of lift cycles, especially in fully-automated applications. This test provides a very good indication of the overall strength and durability of the cart.

## **2. WHEEL DURABILITY**

The test cart is fitted with the subject wheels. The cart is loaded with 336 pounds of static ballast. The cart is then rolled off of a standard curb with a dead drop of at least 6 inches, onto a solid surface.

The test is repeated a minimum of 520 times. Wheels are inspected for cracks, flat spots or any deformation.

## **3. AXLE STRENGTH TEST**

The subject axle is positioned for testing with support 1" from each end. Weights are added to apply downward force against the center of the axle. Additional weight is added until a permanent deflection in the axle is noted.

The amount of force it takes to bend an axle is a measure of how well it will hold up when being rolled while fully loaded.

In conjunction with the wheel durability test, the axle strength testing also indicates how well a cart will perform when dropped onto the wheels, being rolled up and down curbs or stairs, or is rolled over rough surfaces.

## **Cart Test Procedures (Page 2).**

### **4. BOTTOM WEAR**

Carts are loaded with 100 pounds of water and dragged on a horizontal asphalt surface at a rate not to exceed 5 MPH. When water begins to leak, the test is discontinued and the distance is recorded.

### **5. WIND RESISTANCE**

An empty cart is placed in a wind test fixture. Wind velocity is increased to at least 40 MPH against the front, back, and either side. The point at which the cart tips over is noted.

Wind on the street can come from not only inclement weather, but also from passing vehicles. This test shows not only how well a cart will stand up in the wind, but also indicates how easily it may be tipped over by dogs or other animals.

### **6. LOADING AND UNLOADING TEST**

The test cart is loaded with 336 pounds of static ballast and cycled at least 520 times, or until failure occurs. A cycle is defined as grab, squeeze, lift, dump, replace on ground, and release (re-load after each dump).

The cart is visually inspected for cracks, any indication of stress failure, or any other indication of damage.

This test is described in greater detail in the ANSI guidelines outlined in Z245.30-1999; Appendix D. The test simulates the approximate one pickup per week for a 10 year period. It is an important indicator of whether or not a cart will last through its intended life.