U.S. Metalcasting: Competing in a Global Economy

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Topics

- U.S. Industry Profile
- U.S. Casting Forecast
  - Macro
  - Micro
- Sizing Up the Foreign Competition

Profile of the U.S. Metalcasting Industry

- **2190 Operating Casting Facilities**
  - **700+ Ferrous**
  - **1400+ Nonferrous**
  - **Employs More Than 200,000 People**
  - **80% of Metalcasters Are Small Businesses (less than 100 employees)**
  - **Global Leader in Casting Application; 2nd in Production**

U.S. Metalcasting Plants

In 1955, there were **6150** foundries.

In 2007, there are **2190** foundries.

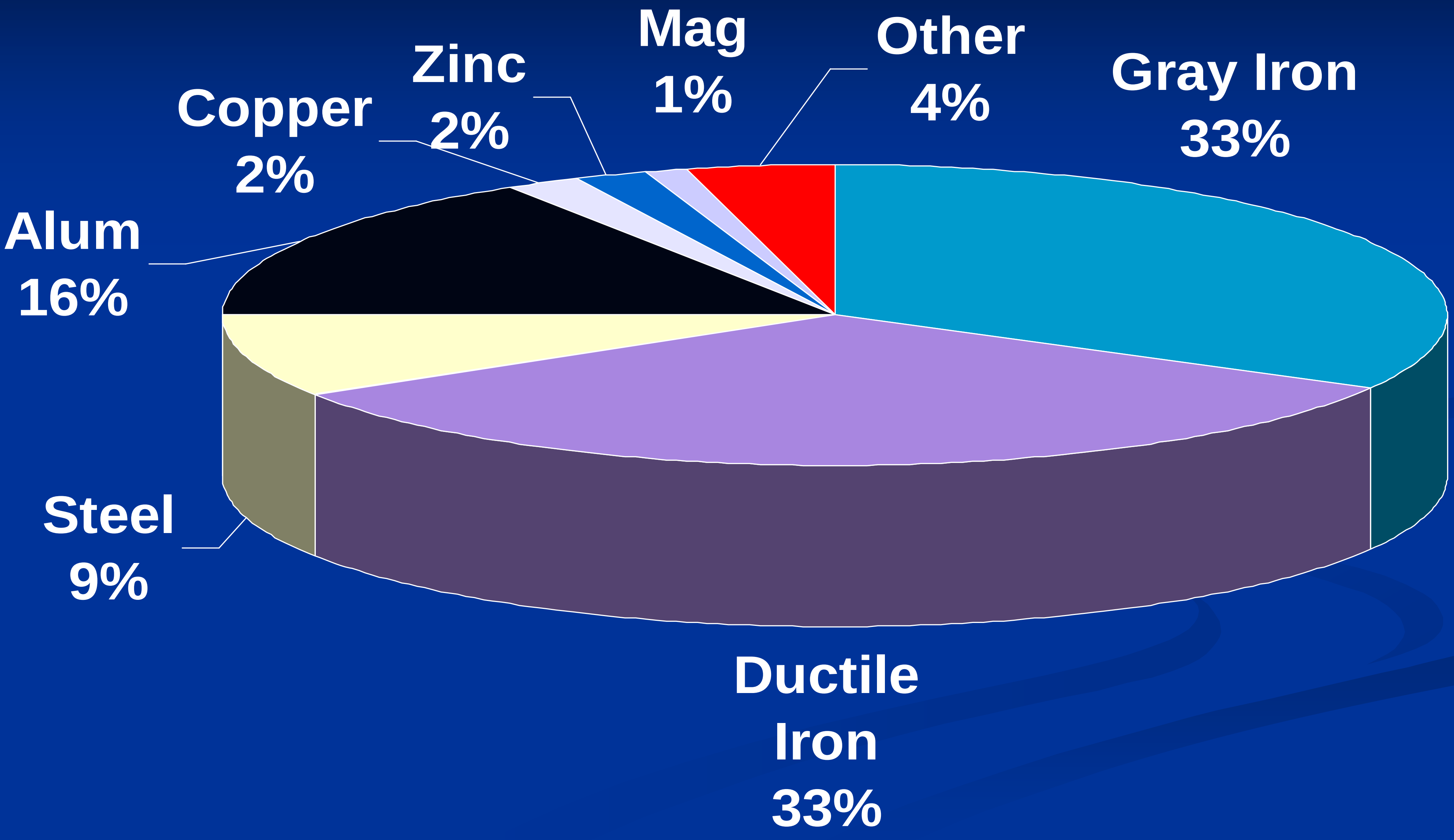
U.S. Casting Industry Profile

- **2005: $33.3 Billion in Shipments; 14.4 Million Tons Shipped**
- **2006: $34.9 Billion; 14.6 Million Tons**
- **2007: $36.3 Billion; 14.6 Million Tons**
- **Operating at 87% of Capacity**

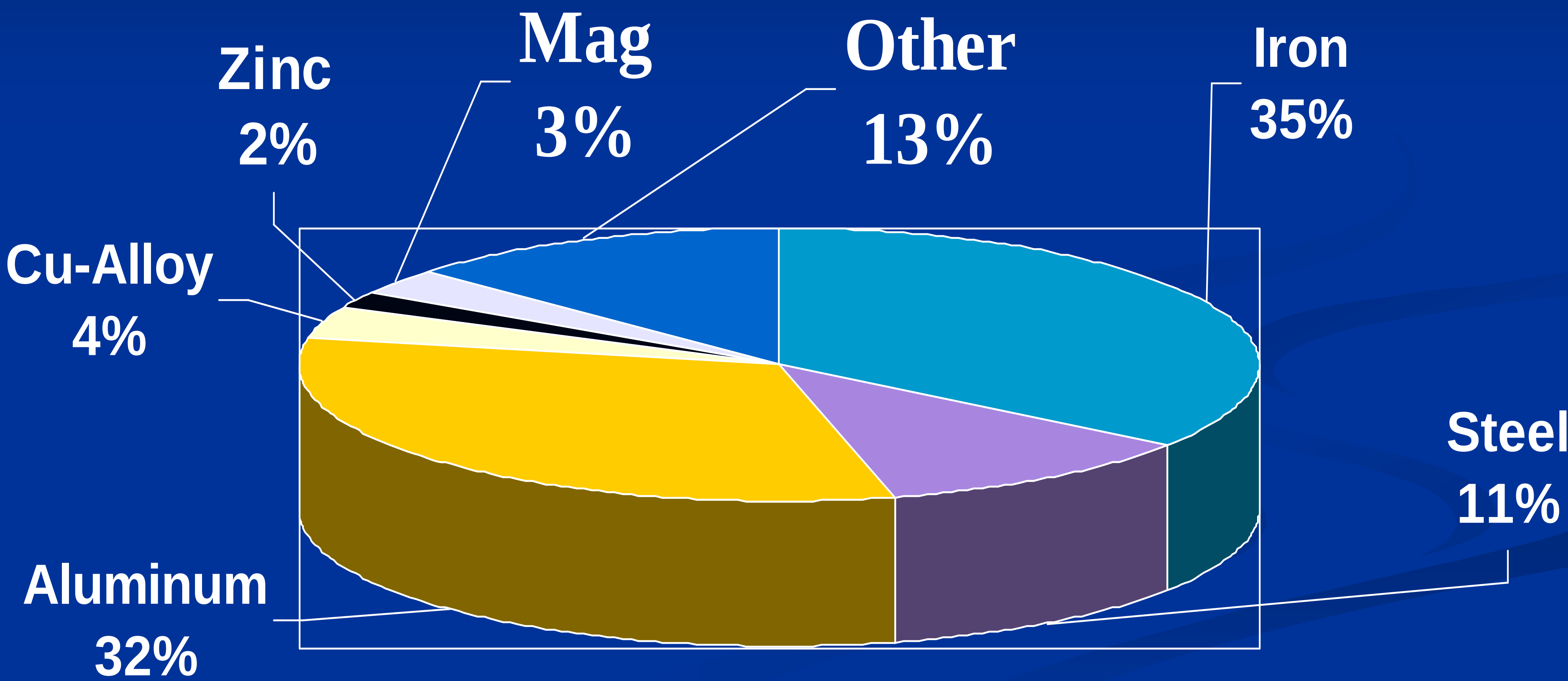
2007 Capacity & Utilization

Metal	Capacity (Tons)	Utilization (%)
Iron	11,200,000	87
Steel	1,510,000	90
Aluminum	2,840,000	84
Copper Base	380,000	88
Magnesium	180,000	88
Zinc/Lead	390,000	87
Other Nonferrous	70,000	86
Investment	230,000	86
TOTAL	16,930,000	87

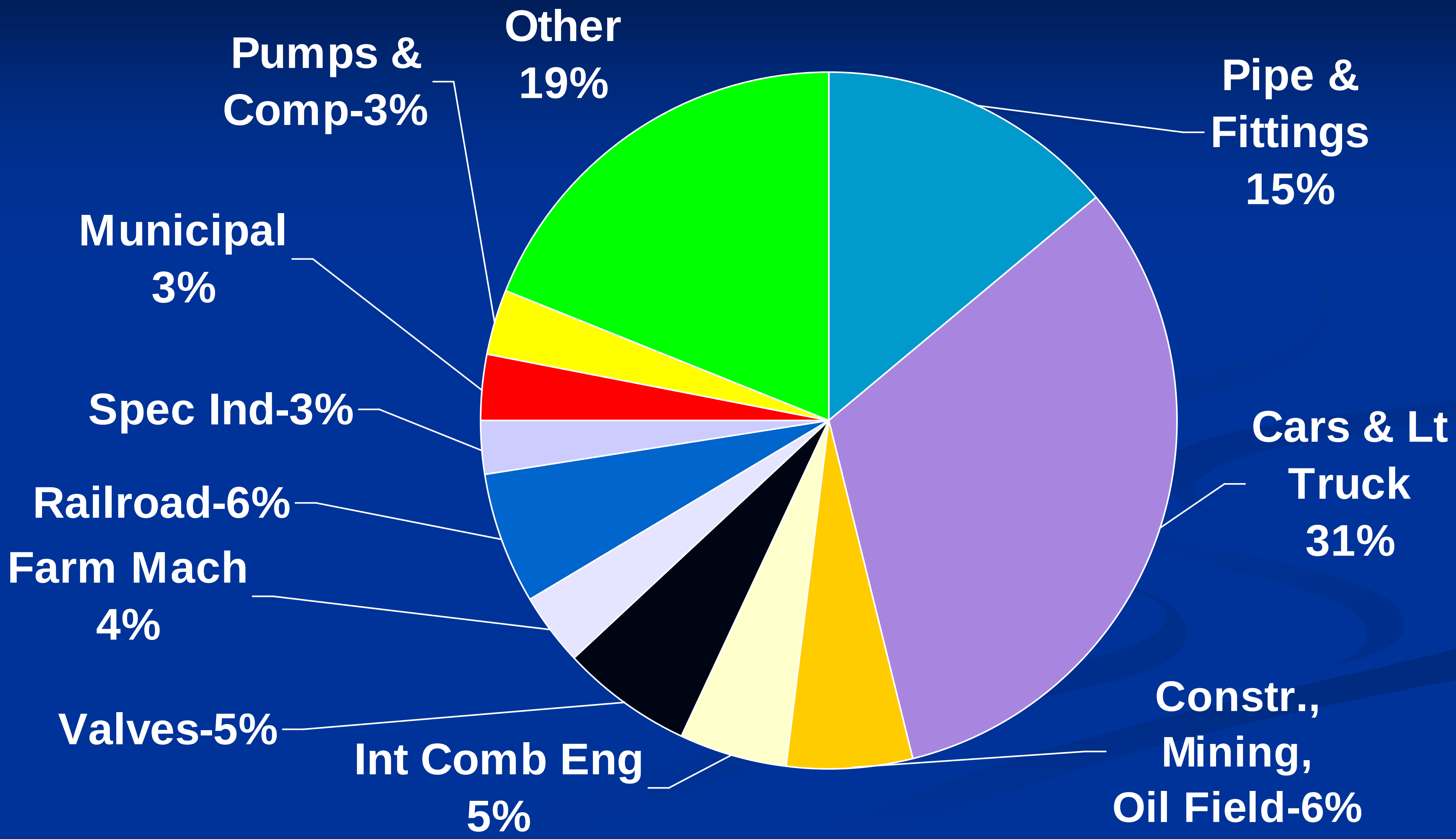
2006 Shipment Mix: Tons



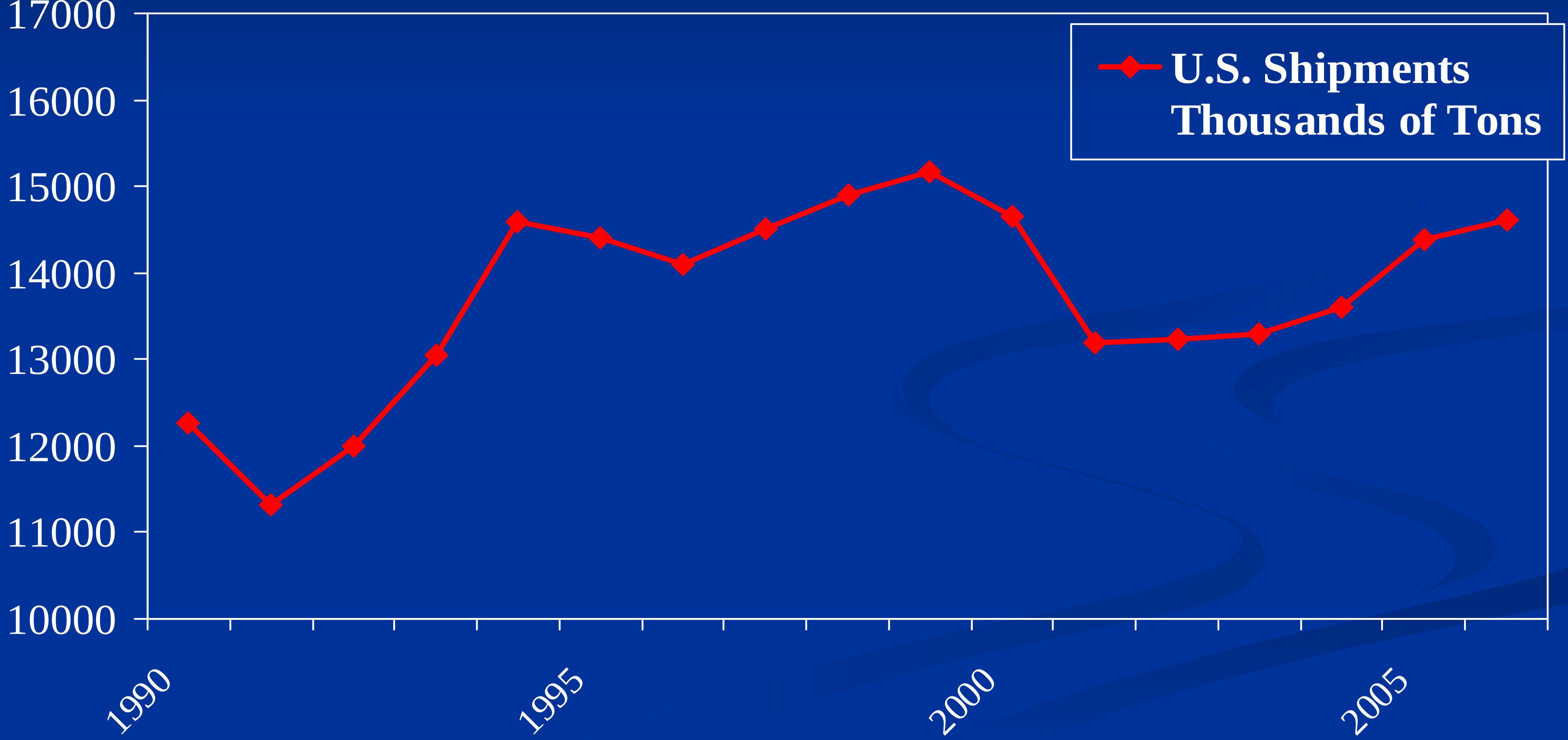
2006 Shipment Mix: Sales



Casting End-Use Markets

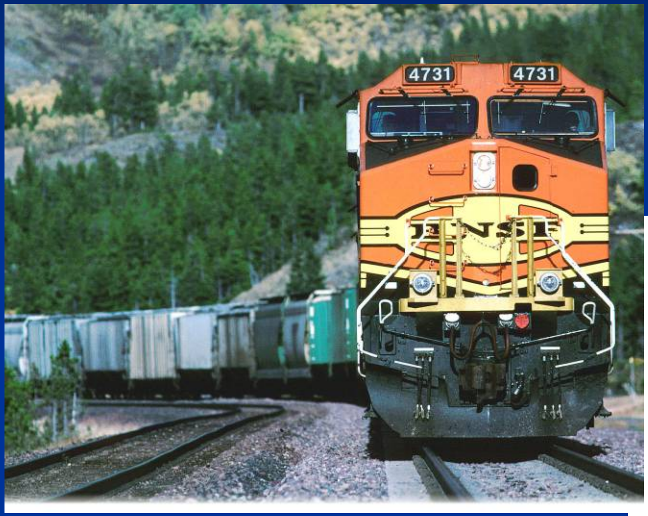


Cast Shipments 1990-2006



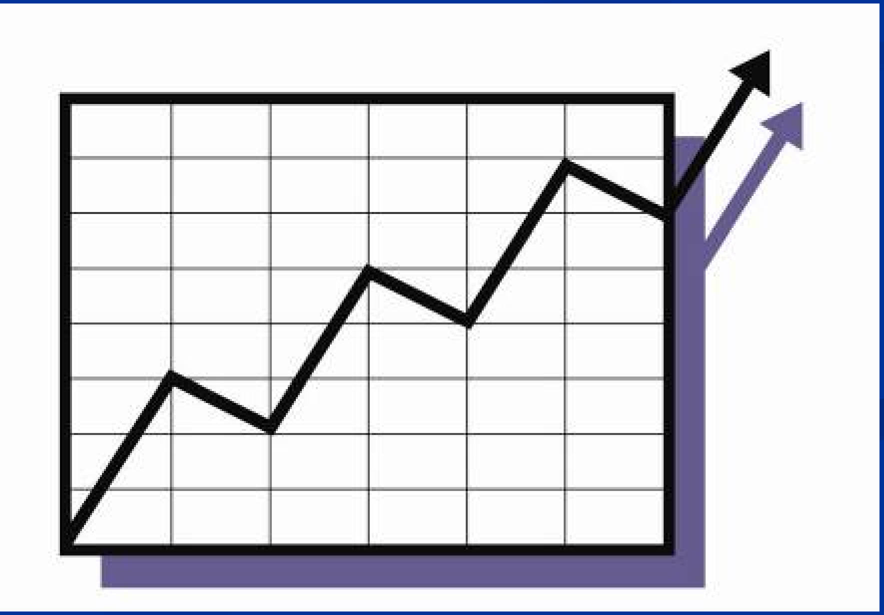
Forecast By Metal & Market

Casting Demand is Strong in Most Markets, Most Metals



PROJECTED SHIPMENTS

- **$37.7 Billion in Sales in 2008**
- **14.61 Million Tons of Shipments in 2008**
- **Lower tonnage than previously forecast, due to increased aluminum in auto and heavy truck**
- **Growth of 22% in sales; 9% in shipments from 2003-2008**



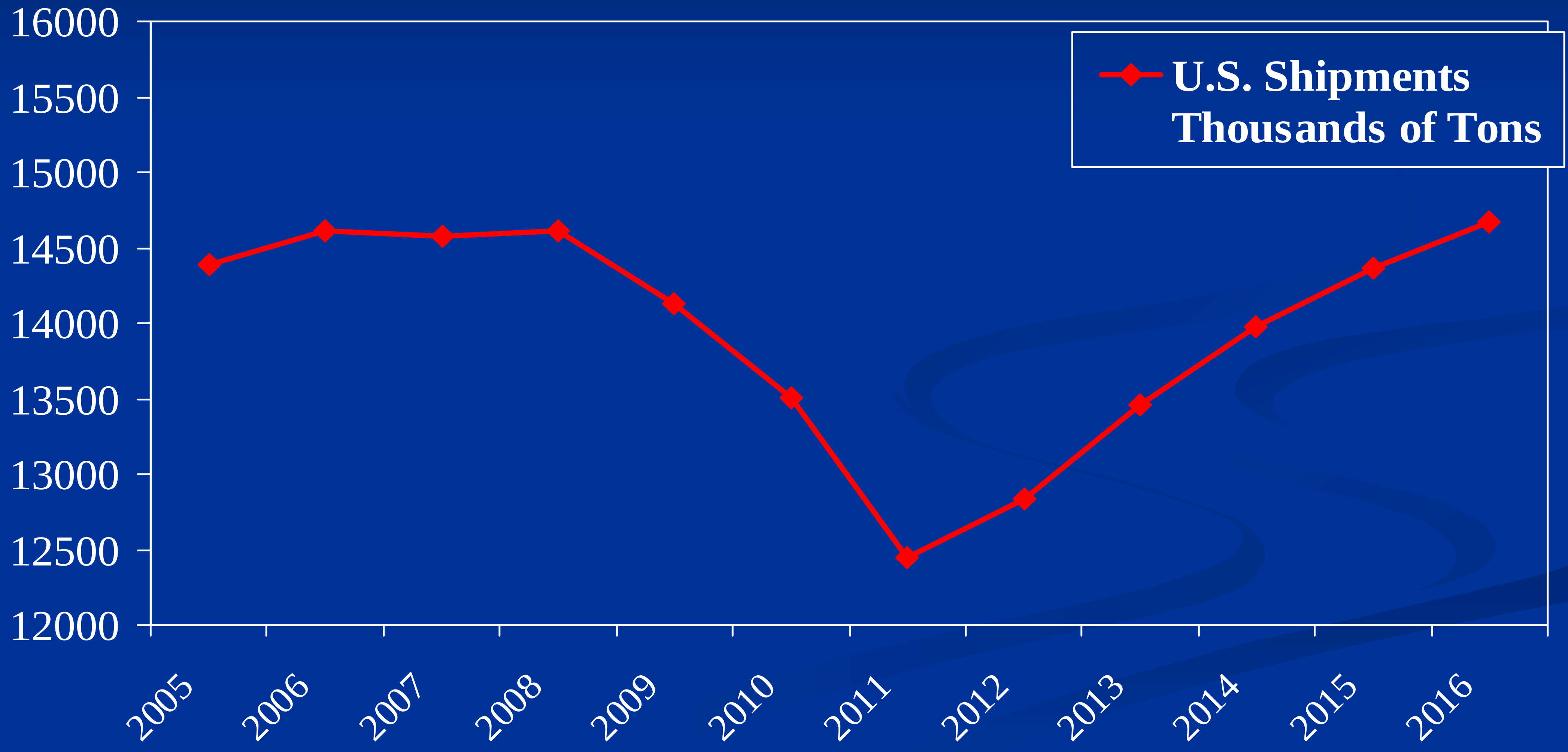
WHY?

"One fundamental that drives our economy in a predictable manner is consumption. Baby boomers are entering peak earning and spending years from 2004-2009."

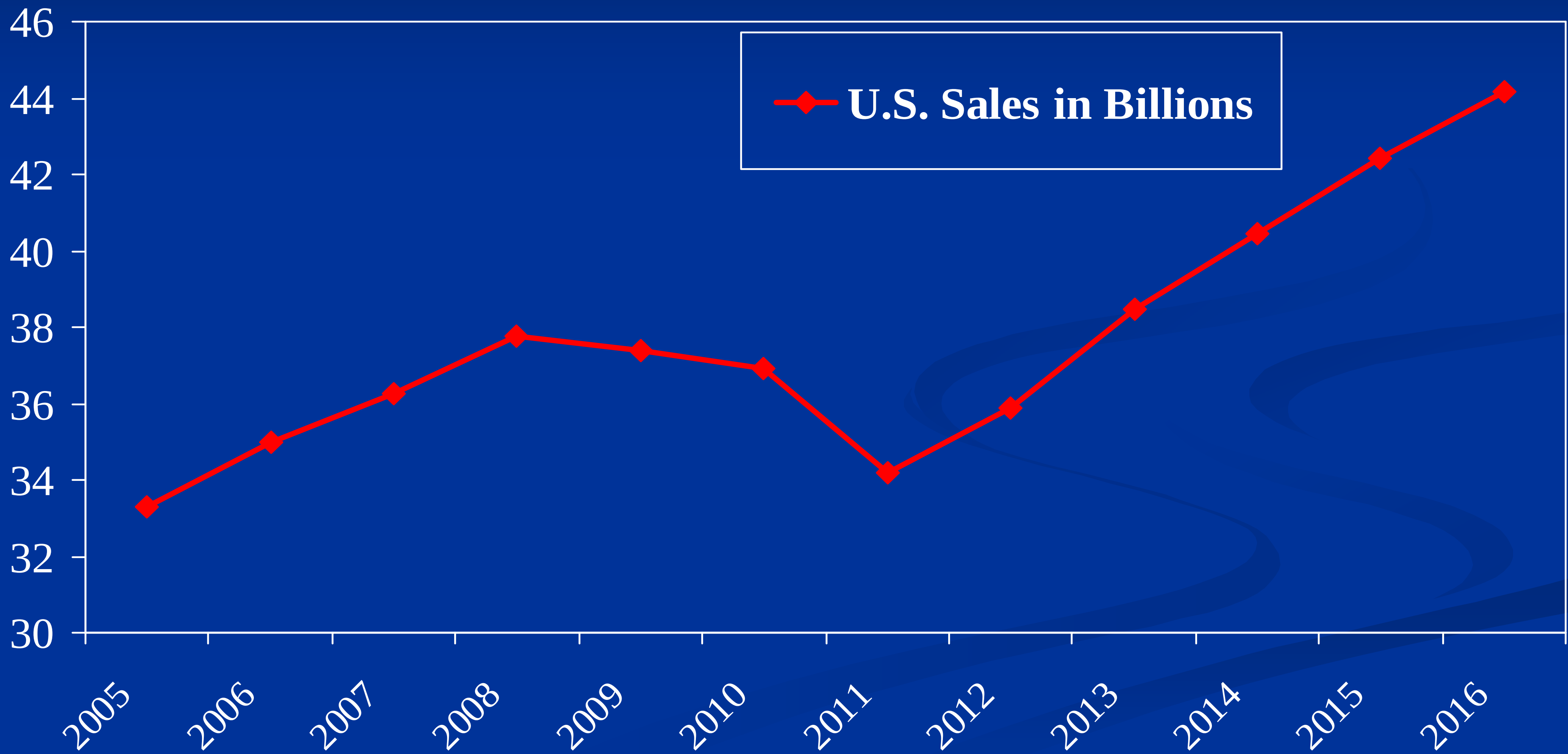
Casting shipment forecasts based on forecasts for:

- GDP
- Housing Starts
- Auto, Railcar and Truck Production
- Construction Activity

Shipment Forecast Through 2016



Sales Forecast Through 2016



What Happens in 2011?

- Cyclical economic recession is expected every 10 years, affecting auto, railcar, heavy truck, construction, etc.
- Happened in 2001, 1991, 1981, 1971, etc.
- Affects auto, heavy truck, construction, mining, etc.
- Forecasted by economic experts for 2011
- Similar Shipment tonnage as 2001
- Sales to be at $34.2 Billion

Gray & Ductile Iron Trends

- **2006 Shipments:** 4.774 million tons gray iron (-15% from ‘00); 4.772 million tons ductile iron (+9.5% from ’00)
- **2007 Forecast:** gray down less than 1% in shipments ($5.3 billion); ductile up less than 1% ($6.7 billion)
- **2016 Forecast**: gray down 7.7% in shipments since ‘06; ductile up 4.6% in shipments since ‘06

Gray Iron Heat Exchanger

Break Away Hinge

Iron Trends Through 2016

Ductile Iron Drive Wheel Converted From Fab

Gray Iron

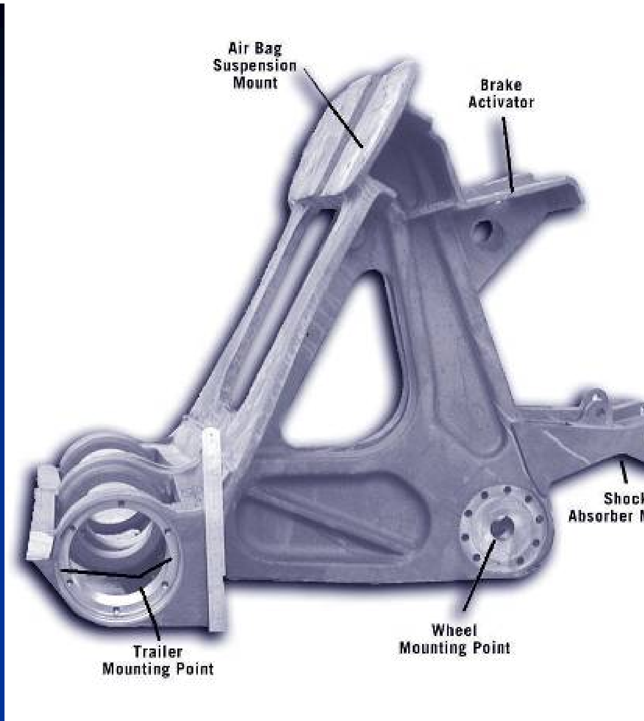
- Pumps & Compressors (0.6%); Construction Equipment (0.2%)
- Household Appliances (-5.8%), Soil Pipe (-4.1%); Sanitary/Radiator (-4%)
- 270 lb of gray iron/vehicle in 2005 to 140 by 2012 (down from 650 lb in '81).

Ductile Iron

- Construction (1.9%); Special Ind. Machine (1.6%); Gears/Power Transmission (1.6%); Light Vehicles (-1%)
- 190 lb of ductile iron per vehicle in 2003 to 150 lb. by 2016

Iron Trends: ADI & CGI

- Austempered Ductile Iron: finding new inroads replacing forgings.
- ADI: 18% growth from 2004-08.
- ADI: Reached 4% of ductile iron shipments (excl. pipe) in 2005, and is forecast to grow to 8.1% by 2008
- Compacted Graphite Iron: 2007 Forecast-126,000 tons; 2009-146,000 tons; 2016-174,000 tons
- CGI: Markets in motor vehicles and internal combustion engines (engine blocks and heads in diesel engines, bedplates, gear covers)



ADI Truck Suspension Bracke

CGI Brake Drum

Steel Trends

- **2006 Shipments:** 1.49 million tons (+9% from ‘00)
- **2007 Forecast:** -9%
- Annual Growth/Decline through 2016: -2% overall;
  - Pumps (0.8%)
  - trucks/military (-7%);
  - Railroad (-3.2%) with 62,000 freight cars (reduction from 2006, reduction expected for 2008)
  - Oil Field (-2%)

Locomotive Axle Housing

Diving Helmet

Potential U.S. Supply Shortages

Gray Iron

- Vertically Parted
  - 1,739,000 tons supply in 2007
  - 1,673,000 tons demand in 2007
  - 1,706,000 tons demand in 2008
- Horizontally Parted Matchplate
  - 1,100,000 tons supply 2007
  - 954,000 tons demand in 2007
  - 972,000 tons demand in 2008

Ductile Iron

- Vertically Parted
  - 1,681,000 tons supply 2007
  - 1,565,000 tons demand in 2007
  - 1,580,000 tons demand in 2007
- Horizontally Parted Matchplate
  - 600,000 tons supply 2007
    530,000 tons demand 2007
  - 548,000 tons demand in 2008

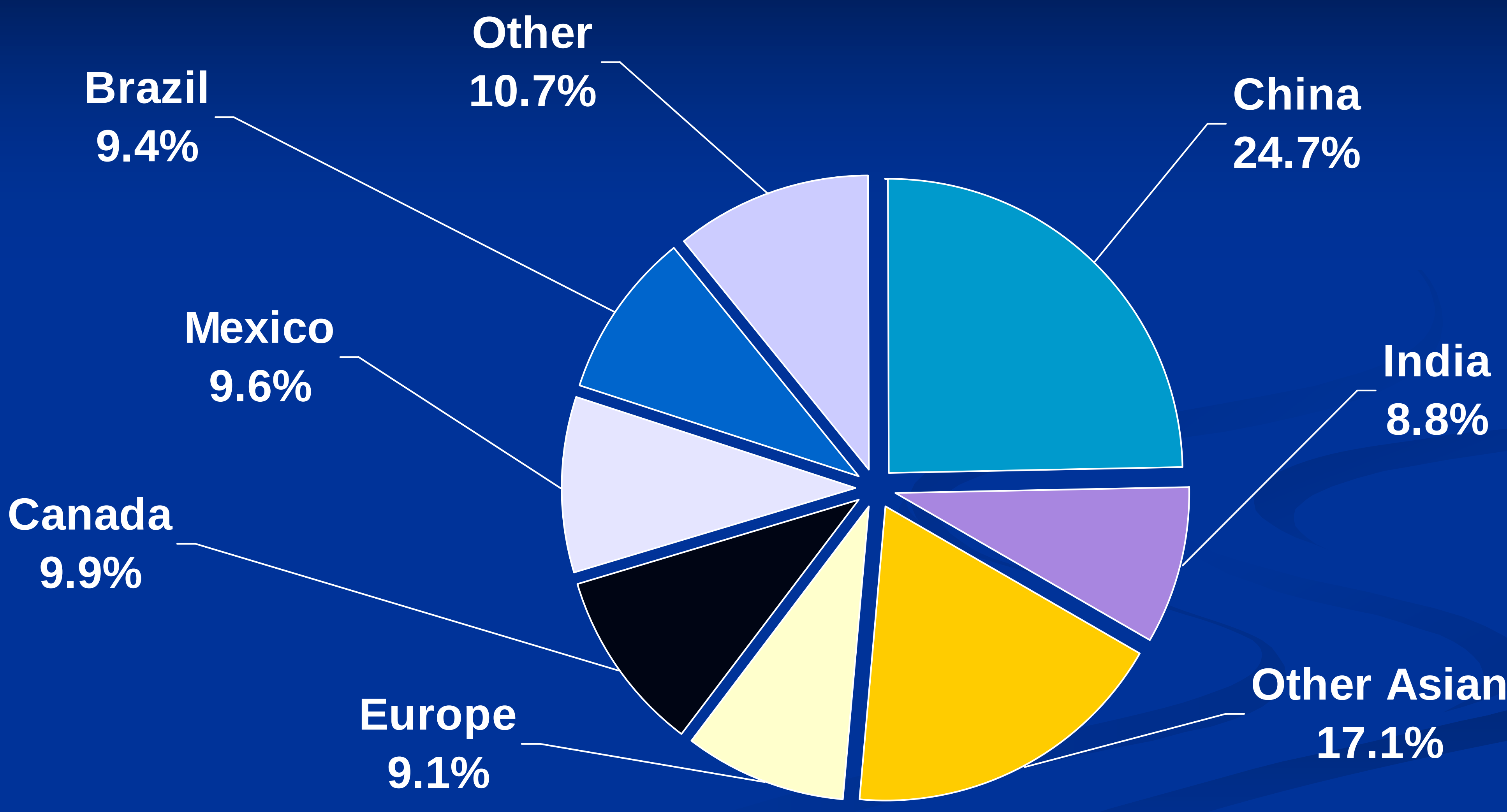
Forecast of Imports: 2007

3,529,000 tons of castings

22% of demand (from 7% in 1998)

- Gray Iron: 1,596,000 tons (28% of demand)
- Ductile Iron: 580,000 tons (12% of demand)
- Carbon and Low Alloy Steel: 265,000 tons (21% of demand)
- Aluminum Die Castings: 365,000 tons (24% of demand)
- Aluminum Permanent Mold/Sand: 487,000 tons (38% of demand)
- Copper-Base: 69,000 tons (19% of demand)

Imports of Castings into the U.S.: 2007



China

- Exported 3.2 million tons total, 870,000 tons to U.S.
- Capacity Utilization: 67% gray iron and 75% for ductile iron and aluminum

Casting Shipment (000s tons)

METAL	2003	2004	2006	2008		
Ductile Iron	3,300	5,603	6,100	6,700		
Gray Iron	10,800	11,267	12,050	12,750		
Aluminum	1584	2475	2772	3,100		

Russia

- Produced 26 million tons of castings in 1991
- Capacity Utilization: 67% for ductile iron, 59% for gray iron, 92% for aluminum
- Inflation hovers between 15-20%; Real GDP from 9 in 2000 to 2 in 2005
- An unknown: Suppliers love the possibilities

Casting Shipment (000s tons)

METAL	2003	2004	2005	2006	2007	2008
Gray Iron	4200	4200	4200	4100	4000	4000
Ductile Iron	320	340	370	400	420	440
Aluminum	420	500	520	550	570	600

India

- Exports to the U.S.=310,000 tons in 2007
- India's car production is forecast to double in 8 years (from 760,000 auto/lt truck in 2001 to 1,100,000 in 2004).
- Capacity Utilization: 84% for gray iron, 80% for ductile iron and 81% for aluminum

Casting Shipment (000s tons)

METAL			2004	2006	2008	
Gray Iron			3180	3225	3350	
Ductile Iron			442	480	520	
Aluminum			300	350	410	

Brazil

- Casting imports to the U.S.=330,000 tons in 2007
- Current issues with currency has made Brazil uncompetitive
- Brazil and Mexico are battling for the U.S. diesel engine block and head market. Prices can be classified as "dumping".

Casting Shipment (000s tons)

METAL	1999	2001	2003	2004	2006	2008
Gray Iron	971	950	1200	1730	1850	1800
Ductile Iron	361	350	400	597	620	650
Aluminum	98	100	140	160	180	200

U.S. Casting Exports: 2007

- Gray Iron (non pipe/municipal): 583,000 tons
- Ductile Iron: 316,000 tons
- Carbon Low Alloy Steel: 133,000 tons
- Aluminum Die: 212,000 tons
- Fluctuates Based on the Value of the Dollar
- Opportunities for Growth

SWOT Analysis of U.S. Metalcasting

- Strengths
  - Mfg. Engineering skill, raw material availability, close proximity to customer base, communication skills, technology development, annually increasing productivity
- Weaknesses
  - Labor rates, regulatory burden, industry perception, shrinking industry size (plants/people), new technology adoption, complacency, fixation on production not profit
- Opportunities
  - Conversions to castings, exports, strategic alliances and joint ventures, machining, casting design services, increased education of customer base, close proximity to customer base, communication compatibility with customers, rapid prototyping/time to market
- Threats
  - Foreign competition, plastics, powdered metals, fabrications, industry’s reactive rather than proactive nature

Thank you!

Questions???

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