

Ternium S.A.  
Form 6-K  
May 18, 2010

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FORM 6 - K

SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

Report of Foreign Private Issuer  
Pursuant to Rule 13a - 16 or 15d - 16 of  
the Securities Exchange Act of 1934

As of 5/17/2010

Ternium S.A.  
(Translation of Registrant's name into English)

Ternium S.A.  
46a, Avenue John F. Kennedy – 2nd floor  
L-1855 Luxembourg  
(352) 4661-11-3815  
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or 40-F.

Form 20-F  Form 40-F

Indicate by check mark whether the registrant by furnishing the information contained in this Form is also thereby furnishing the information to the Commission pursuant to Rule 12G3-2(b) under the Securities Exchange Act of 1934.

Yes  No

If “Yes” is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b):  
Not applicable

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The attached material is being furnished to the Securities and Exchange Commission pursuant to Rule 13a-16 and Form 6-K under the Securities Exchange Act of 1934, as amended.

This report contains Ternium S.A.'s press release informing Ternium and Nippon Steel Corporation sign memorandum of understanding to form joint venture in Mexico.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

TERNIUM S.A.

By: /s/ Pablo Brizzio  
Name: Pablo Brizzio  
Title: Chief Financial Officer

By: /s/ Daniel Novegil  
Name: Daniel Novegil  
Title: Chief Executive Officer

Dated: May 17, 2010

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#### Ternium and Nippon Steel Corporation Sign Memorandum of Understanding to Form Joint Venture in Mexico

Luxembourg, May 17, 2010 – Ternium S.A. (NYSE: TX) and Nippon Steel Corporation announced today that they have signed a non-binding memorandum of understanding with the intention to form a joint venture in Mexico for the manufacturing and sale of hot-dip galvanized and galvanized steel sheets to serve the Mexican automobile market.

The joint venture, which would require an investment of approximately US\$350 million over two and a half years, would be expected to build a hot-dip galvanizing plant (equivalent to the state-of-the-art equipment now in operation at Nippon Steel's steelworks in Japan) in the vicinity of Monterrey City, and subsequently to manufacture and sell high-grade and high-quality galvanized and galvanized steel sheets, including outer-panel and high-strength qualities. The plant, which would have a production capacity of about 400,000 metric tons per year, would be primarily intended to respond to customer demand (including that of Japanese car makers) for high-grade automotive steel sheets in Mexico. The Mexican automobile market is a growing and important market for both Nippon Steel and Ternium and is expected to further grow in the future.

The two companies will now maintain exclusive negotiations towards a binding joint venture agreement, which shall be subject to final documentation, due diligence, feasibility studies, agreement on other issues, and regulatory and corporate approvals.

#### Forward Looking Statements

Some of the statements contained in this press release are "forward-looking statements". Forward-looking statements are based on management's current views and assumptions and involve known and unknown risks that could cause actual results, performance or events to differ materially from those expressed or implied by those statements. These risks include but are not limited to risks arising from uncertainties as to gross domestic product, related market demand, global production capacity, tariffs, cyclicalities in the industries that purchase steel products and other factors beyond Ternium's control.

#### About Nippon Steel

Nippon Steel, with its consolidated annual crude steel production of 40 million metric tons, is one of the leading steelmakers in the world. By virtue of its technical expertise of the world's highest level, which keeps on advancing day by day, and deployment of global and domestic strategic alliances, the company holds an unchallenged position in the global market of high-end steel products. More information about Nippon Steel is available at <http://www.nsc.co.jp/en/index.html>.

About Ternium

Ternium is a leading steel company in Latin America, manufacturing and processing a wide range of flat and long steel products for customers active in the construction, home appliances, capital goods, container, food, energy and automotive industries. With its principal operations in Mexico and Argentina, Ternium serves markets in the Americas through its integrated manufacturing system and extensive distribution network. The Company has an annual production capacity of approximately nine million tons of finished steel products. More information about Ternium is available at [www.ternium.com](http://www.ternium.com).