Nitrogen Trifluoride (NF3) & Fluorine Gas (F2) Market Analysis By Application (Semiconductor Chips, Flat Panel Display, Solar Cells, Uranium Enrichment, Sulfur Hexafluoride, Electronic Cleaning) And Segment Forecasts To 2020

Description:
Industry Insights
Nitrogen Trifluoride (NF3) market is expected to reach over USD 1.20 billion by 2020 owing to growing demand in electrical & electronics applications. NF3 is used as a cleansing agent for silicon wafers in solar energy appliances and semiconductors which are expected to drive demand over the forecast period. NF3 is considered a better cleansing agent in comparison to other agents such as perfluorocarbons, sulfur hexafluoride and hexafluoroethane due to environmental effectiveness and eco friendly properties. The Kyoto Protocol has listed NF3 as the second most global warming potential gas after SF6 and included it in the list for second commitment period after 2012. The acceptance of Kyoto Protocol by the U.S. and European nations is expected to be a major restraint for NF3 market growth over the forecast period. Major restraints for F2 market is high reactivity making it toxic for human beings in case of prolonged or direct exposure.

Application Insights
NF3 is mainly used in manufacturing of flat panel displays, semiconductor chips and solar cells. With increasing environmental concern and lucrative policies implemented by government for installation of solar power units, there is a drastic increase in solar panel demand. NF3 demand is expected to rise over the forecast period due to application in solar cells. NF3 is used in flat panel display and is expected to be the fastest growing application with a CAGR of about 13% from 2014 to 2020. With increasing demand of flat panel display due to less power consumption and compact size, the demand for NF3 is expected to rise over the forecast period. The largest application segment of NF3 market was semiconductor chip which accounted for above 45% of total demand in 2013. It is used in semiconductor industry to clean manufacturing chambers of silicon chips. NF3 is utilized in cleaning of PECVD (Plasma Enhanced Chemical Vapor Deposition) chambers for manufacturing of laptop screens, mobile phones, camcorder, digital camera, point and shoot camera. Additionally, NF3 market application includes cleaning of silicon wafers for thin film photovoltaic cells or thin film solar cells production.

F2 market demand is mainly driven by utility as an electronic cleansing agent and is expected to rise at a CAGR of above 13% over the forecast period. With increasing utility and electronics application there is a growing demand around the world, with increase in number of products cleaning agent demand has increased which in turn has augmented F2 market. F2 is used to produce sulfur hexafluoride (SF6) which is generally used in electronic application as a dielectric medium. The other application of SF6 includes contrast agent for ultrasound imaging, casing medium for magnesium production and tracer compound.

Regional Insights
Asia Pacific was the largest NF3 and F2 market with a demand of about 43% and 45% respectively. NF3 being utilized in electrical and electronic industry has fueled demand in the region. Countries such as South Korea, Japan and China are expected to boost NF3 demand with growing semiconductor industry. F2 is utilized in uranium enrichment in nuclear power plant. With growing power demand in China and India due to rapid industrialization and increasing population nuclear power plant is emerging as a power source owing to long term benefits. There is a steady growth for NF3 and F2 market both in North America and Europe due to stringent rules and regulation by the governments.

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