

## 800MPa급 무예열 용접 판재의 수중 폭파변형시험

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### Explosion Bulge Test in Underwater of 800MPa Grade

#### Pre-Heat Free Welding Plate

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#### Abstracts

The pre-heat free consumables for GMAW, SAW and FCAW processes that matches the Cu-bearing PFS-700 steel which has yield strength over 700MPa were developed and evaluated to see the suitability in military such as submarine and battle ship. Explosion bulge test in underwater was developed and applied to see the reliability of welded structure. All welding was conducted without pre-heat before welding, the interpass temperature was below 150°C for all welding conditions. Tensile strength for the weld metal in GMAW, SAW and FCAW process is 887MPa, 875MPa and 813MPa, respectively, these values are similar to the base metal of PFS-700 steel of 838MPa. EBT results in GMAW, SAW and FCAW show 14.0%, 14.02% and 15.9% reduction of thickness without generation of crack, respectively and stand-off distance was set up properly to have over 14.0% reduction of thickness. Through EBT results, the developed new consumables are applicable to the weapon systems such as submarine and battle ship.

**Key Words** : Pre-heat Free Steel, PFS-700, Welding Consumables, Explosion Bulge Test, Underwater