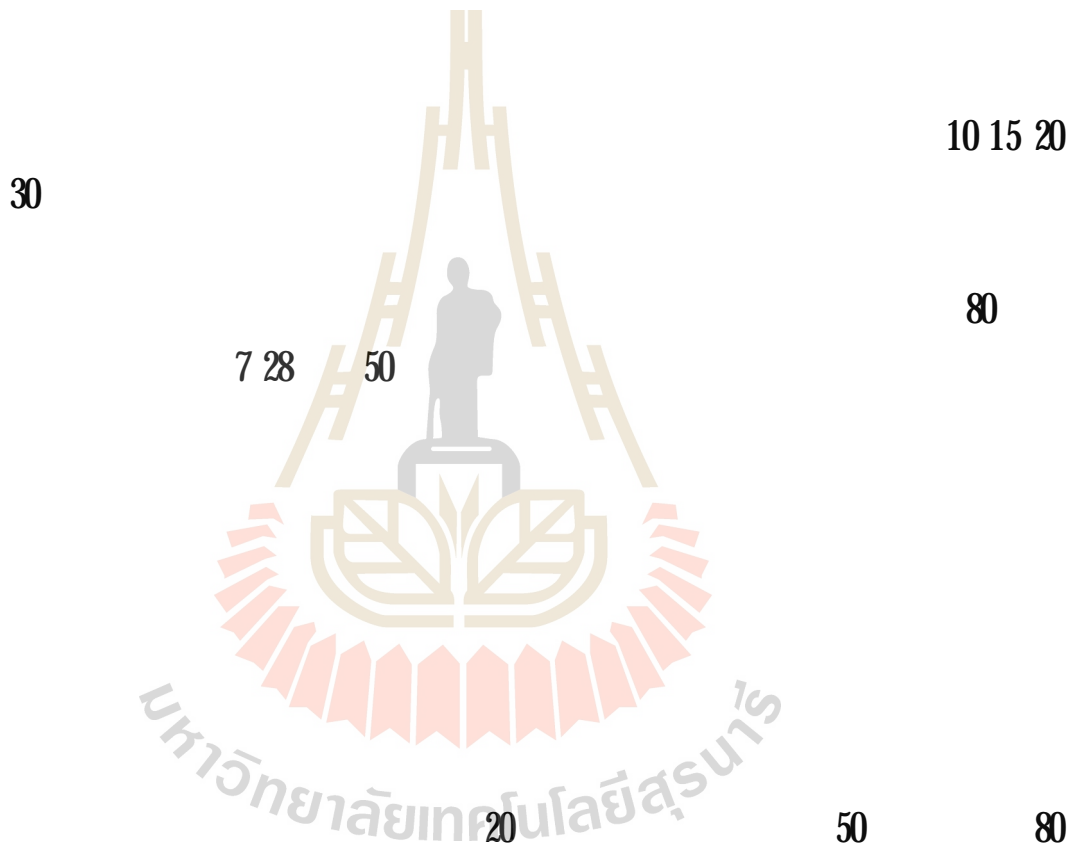


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(STUDY OF USING POZZOLANIC MATERIALS AS ADDITIVES
FOR API CLASS G CEMENT) : .
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สามารถช่วยเพิ่มความแข็งแกร่งในการต้านทานแรงกด และยังสามารถช่วยลดค่าความซึมซาบของ
ตัวอย่างซีเมนต์แข็งได้อย่างมีประสิทธิภาพอีกด้วย



สาขาวิชา เทคโนโลยีธรณี
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ลายมือชื่อนักศึกษา อัครกาน
ลายมือชื่ออาจารย์ที่ปรึกษา [Signature]

WATCHARAKON SETWONG : STUDY OF USING POZZOLANIC
MATERIALS AS ADDITIVES FOR API CLASS G CEMENT. THESIS
ADVISOR : ASST. PROF. AKKHAPUN WANNAKOMOL, Ph.D., 107 PP.

FLY ASH/ PALM OIL FUEL ASH/ SUGARCANE BAGASSE ASH/ FILTRATE
LOSS ADDITIVE

The main objective of research is to study the using of selected pozzolanic material, including fly ash (FLYA), palm oil fuel ash (POFA), and sugarcane bagasse ash (SCBA), as an additive of the oil well API Class G cement in order to lighten and improve the compressive strength and permeability property of the mixed cement. In this study cement slurry sample was replaced by each selected pozzolanic material at 10, 15, 20 and 30 by weight percent (wt%). The pozzolan cement slurry viscosity, density, filtrate loss volume and thickening time were measured. Some pozzolan cement slurry samples were used for marking set (solid) cement specimens. These set cement specimens were cured at room temperature and at 80°C with curing time of 7, 28, and 50 days. Results of measurement indicated that the viscosity of pozzolan cement slurry samples was not different significantly. It was also noticeable that the density and fluid loss volume of pozzolan cement slurry sample were reversely proportional to the amount of selected pozzolanic materials. The selected pozzolanic material could prolong the cement thickening time. Results of the set pozzolan cement samples measurements indicated that the compressive strength of set pozzolan cement specimens was directly proportional to the amount of mixed pozzolanic material and curing time due to the effect of pozzolanic reaction. It was found that when the set

cement was made from cement slurry mixed with more than 20 wt% of each selected pozzolanic material and the curing time of 50 days at 80°C its compressive strength decreased. This is because the amount of calcium hydroxide to pozzolanic reaction was reduced. The permeability of set pozzolan cement sample also decreased with increasing amount of pozzolanic materials and curing time. It can be concluded that the selected pozzolanic materials could be used as an oil well API class G cement additive if it is used to replace oil well API class G cement at range between 15-20 wt%. This is because with this replacement ratio the filtrate loss volume and viscosity of the cement slurry are not much different from those of the cement without pozzolanic material while the density is lowered. These selected pozzolanic materials can increase the compressive strength and can also reduce the permeability of the set cement specimens effectively.



School of Geotechnology

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