



## Technical Support Information Bulletin 1127

### Removal of S-Tryl Groups

The S-tryl group is used in peptide synthesis employing Fmoc chemistry, both in solution phase and solid phase syntheses. The S-tryl group typically is removed with trifluoroacetic acid (TFA) with deprotection occurring simultaneously with cleavage of the peptide from Wang resin. The cysteine side chain is released as a thiol. Disulfide bonds can be formed by subsequent oxidation.

The S-tryl group may be removed with simultaneous oxidation to form disulfides using iodine or thallium (III) trifluoroacetate.

#### Removal with Iodine<sup>1</sup>

1. Dissolve the protected peptide in dichloromethane (DCM) (1 mL/ $\mu$ mol peptide).
2. Add a 0.1 M solution of iodine in DCM (22  $\mu$ L/  $\mu$ mol peptide). Stir 5 minutes at room temperature.
3. Add 0.2 M citrate buffer containing ascorbic acid (5 mg/ mL) (Add 100  $\mu$ L of buffer per  $\mu$ mol peptide).
4. Isolate the peptide by chromatography on a Sephadex column.

#### Thallium Trifluoroacetate Oxidation<sup>2</sup>

---

<sup>1</sup> Sieber, P.; Kamber, B.; Riniker, B.; Rittel, W. *Helv. Chim. Acta* **1980**, 63, 2358-2363.

<sup>2</sup> Yajima, H.; Fujii, N.; Funakoshi, S.; Watanabe, T.; Murayama, E.; Otaka, A. *Tetrahedron* **1988**, 44, 805-819.

**CAUTION:** Thallium compounds are highly toxic. These compounds must be used with great care. Proper protective equipment and efficient fume hoods must be used when handling these compounds.

S-acetamidomethyl and S-p-methoxybenzyl protecting groups may also be removed under these conditions.

1. Dissolve the S-protected peptide in trifluoroacetic acid (10 mg/mL). Add anisole (1  $\mu$ L/mg peptide) and cool to 0 °C.
2. Add thallium trifluoroacetate (1.2 equivalents per acetamidomethyl group). Stir for 60 minutes.
3. Evaporate the trifluoroacetic acid *in vacuo*. Add ether to precipitate the peptide. Centrifuge to collect the peptide and decant the ether.
4. Suspend the peptide in fresh ether, centrifuge, and decant. Repeat this washing process two to three times.