

Welcome to dive for science in Sweden!

## Legal status of scientific diving

In Sweden, scientific diving (SD) is classified as occupational diving. Any diving performed by an employee as part of their work classifies as occupational diving.

Regulations on occupational diving (at all levels) are governed by The Swedish Work Environment Authority's Provisions on Diving Work and General Recommendations on the implementation of the Provisions (AFS 2010:16, English version attached as PDF), which states how occupational diving is to be conducted in Sweden. The Armed Forces is the certifying authority in Sweden, and they specify the Swedish training standards and issues all Swedish professional diver certificates. The Swedish certificate S30 (short for SCUBA 30) covers most scientific diving work (e.g. sampling, conducting experiments, inventories and documentation) down to a maximum depth of 30 m. The basic scuba skills within the S30 certificate are harmonized with the minimum scuba skills standards for the European Scientific Diver (ESD) and to the standards of IDSA level 1 ([www.idsaworldwide.org/training-standards](http://www.idsaworldwide.org/training-standards)). A Swedish diver with a S30 certification that want's to attain the Swedish Scientific Diver certification (which corresponds to the ESD standards) needs to show proof of additional scientific diving skills to apply for the Swedish SD. In terms of certification *you are therefore able to conduct SD in Sweden to a maximum depth of 30 meters simply by providing your ESD documentation*. Other occupational dive certification from other countries may be permitted if they are in agreement with the basic standard for the S30 or ESD, but this must be validated by the hosting institute where the diving will be conducted. Diving deeper than 30 m requires additional training and certification. The Swedish A40 certificate allows you to dive to greater depth than 30m and there are several other occupational dive certificates and dive competences that can be obtained. Note that A40 is *not* comparable to Advanced ESD which means that you cannot dive deeper than 30m in Sweden on your AESD certification if you do not have additional training.

To supervise diving, you need a separate dive-leader/dive supervisor certificate (sv: "dykarledarcertifikat"). In Sweden you can supervise a dive that corresponds to your training level if you have an AESD certification, provided that you have approved knowledge of Swedish work environment regulations. The hosting institute has to approve you as a dive supervisor.

The S30 certificate can be obtained by training at several occupational diving schools, but the certificate is formally issued by The Swedish Armed Forces. The Swedish Armed Forces can also convert your certificate according to ESD and/or AESD standards (or other approved occupational dive certificates) and documented knowledge of the Swedish work environment regulations to a Swedish S30 certificate.

The following three diving schools are approved by the Armed forces to provide you with S30 training:

1. The Armed forces own diver school FM DNC in Karlskrona (<https://www.forsvarsmakten.se/sv/organisation/sjostridsskolan/fmdnc/>)
2. YRGO (Higher occupational education in Gothenburg ) diver school in Svanesund (<https://yrgo.se/yrkesdykning/> )

3. Greater Stockholm Fire department divers school in Stockholm (<https://www.storstockholm.brand.se/utbildningar/dykarutbildningar/>)

When diving occupationally in Sweden, the minimum dive team consists of 3 persons: 1 dive supervisor (having a Dive leader certification or approved AESD see above) and 2 divers that act as each other's standby divers (both with at least S30/ESD-level certification or equivalent). The two divers should stay connected with a buddy-line (if the risk assessment does not entail greater risk using the line). In the scenario where you only have one diver in the water. The standby diver can then be on land or in the boat, but each of these 2 divers still need to have their own dive tender. The dive team is therefore increased to 4 persons. Note that this also means that the dive supervisor tends one of the divers. The diver in the water should in this scenario stay connected with the surface using a tending line, communication line or surface supplied air. The risk assessment dictates whether more persons needs to be included in the dive team.

A lot of responsibility resides with the dive leader/supervisor, who is in charge of the dive plan and risk assessments that govern whether the work is conducted with, e.g. tethered divers, buddy lines or both. For additional reading, both AFS 1977:1160 The work environment act and AFS 2010:16 The Swedish Work Environment Authority's Provisions on Diving Work and General Recommendations on the implementation of the Provisions are available from the authorities in English.

#### Medical examinations

Medical examinations (certificate of Fitness id health for work diving) obtained in other countries may be valid in Sweden, as long as they apply with- and are conducted by approved doctors with hyperbaric medicine training according to the EDTC's Training standards for diving and hyperbaric medicine (<http://edtc.org/documents/>). However, the hosting institutes decide if your medical examination is valid. When you make the examination in Sweden for occupational diving, this is valid in Sweden for 5 years until you reach age 40. After age 40, the examinations are valid for 2 years. When you first arrive, the hosting institute may require that you make a new medical examination or that your examination should not be older than 1 year. Details are provided in the working environment regulations for medical controls (AFS 2019:3) (in Swedish):

<https://www.av.se/globalassets/filer/publikationer/foreskrifter/medicinska-kontroller-i-arbetslivet-afs-2019-3.pdf>

#### Insurance

If you are employed for diving at work by a Swedish employer, they should have an accident insurance, but you should check that this insurance also covers diving. All Universities in Sweden have insurances that cover any kind of work accidents. If you are acting as a volunteer, if you are employed by a non-Swedish employer, or if you are self-employed, you or your employer need to arrange your own insurance.

#### Decompression issues

Diving is planned and conducted according to dive-tables (Nordic-Standard Table, NST, modelled from Royal Navy). Diving computers are generally used during dives as a bottom timer, but as to date there is no dive computer algorithm approved in Sweden for planning dives. Only dives without planned decompression stops are allowed within the S30 certification. The work regulations (AFS 2010:16) require the dive team to have access to treatment with hyper-baric oxygen in a two-compartment decompression chamber within 6 hours from breaking the surface after a dive. Help from Emergency Rescue Services can normally be relied upon to provide help but the emergency line must be accounted for in the dive plan and risk assessment. The only public pressure chamber operating on a 24:7 basis in Sweden is the one at Östra hospital in Gothenburg. Emergency contact in Sweden is 112.

### First Aid

All SD team members should be familiar with all first aid equipment available and needed, including oxygen administration to diving accident casualties. All scientific divers should conduct regular emergency exercises. A First aid including CPR course certificate no older than three years is required.

### Breathing gas

The limit for professional scientific diving with air is dependent on the risk assessment and the divers' qualifications. The S30/ESD certificate allows diving down to 30 meters with air, the A40 certificate allows diving at greater depth than 30m. Diving below 30 m and/or in confined spaces has to be conducted with surface supplied air, and divers performing such tasks are expected to be trained in these techniques. Using a breathing gas other than air is not standard, but allowed if you have the adequate training and equipment is available.

### Volunteers and students

Volunteers from outside the University or research institutes are in general not allowed to join SD teams since they are not protected by the employer insurances. However, students are always protected by insurance during their studies and may therefore join such dive activities that is a part of their studies even though they are not employed. This is provided it is accepted by the dive mission leader and the institute. Note that the institutes themselves decide what certification is required in order to dive during e.g. university studies.

### More information

The legislation for scientific diving in Sweden is the same as for any kind of professional diving in Sweden, and these are regulated by the Swedish Work Environment Authority: <https://www.av.se/arbetsmiljoarbete-och-inspektioner/publikationer/foreskrifter/dykeriarbete-afs-201016-foreskrifter/>,

Work environment act AFS 1977:1160 (in English):

<https://www.government.se/government-policy/labour-law-and-work-environment/19771160-work-environment-act-arbetsmiljolagen/>

Work environment act AFS 2010:16 (in English):

[http://www.yh-dyk.se/wp-content/uploads/2017/03/AFS-2010\\_-16-ENGLISH-TRANSLATION.pdf](http://www.yh-dyk.se/wp-content/uploads/2017/03/AFS-2010_-16-ENGLISH-TRANSLATION.pdf)