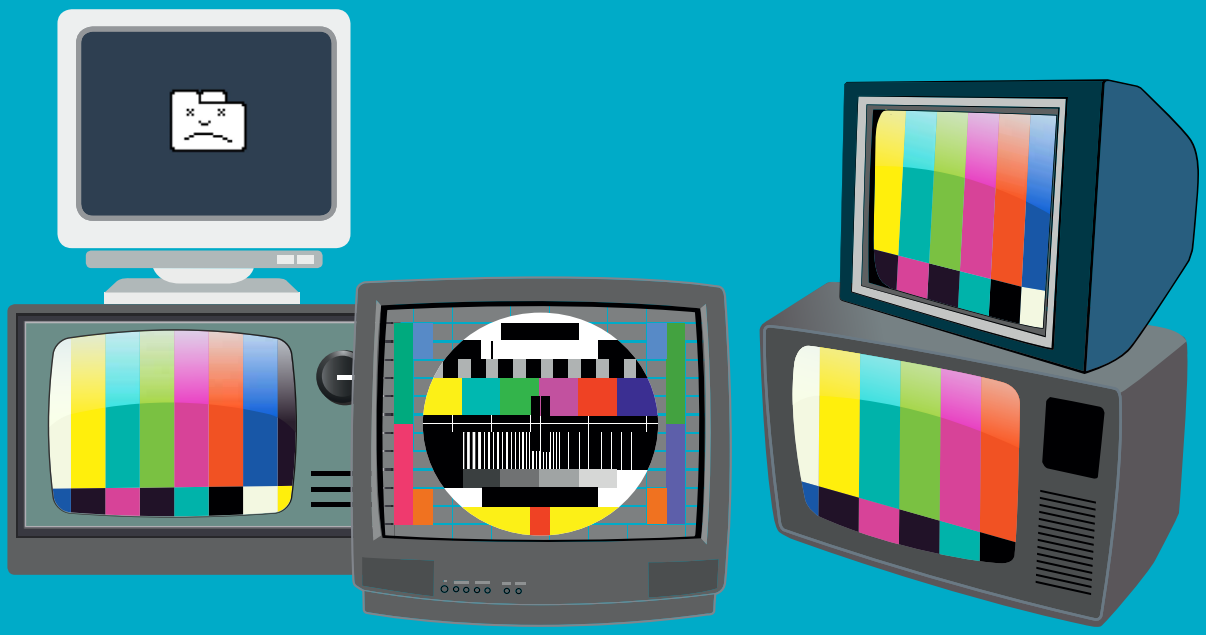
Responsible recycling of CRT screens

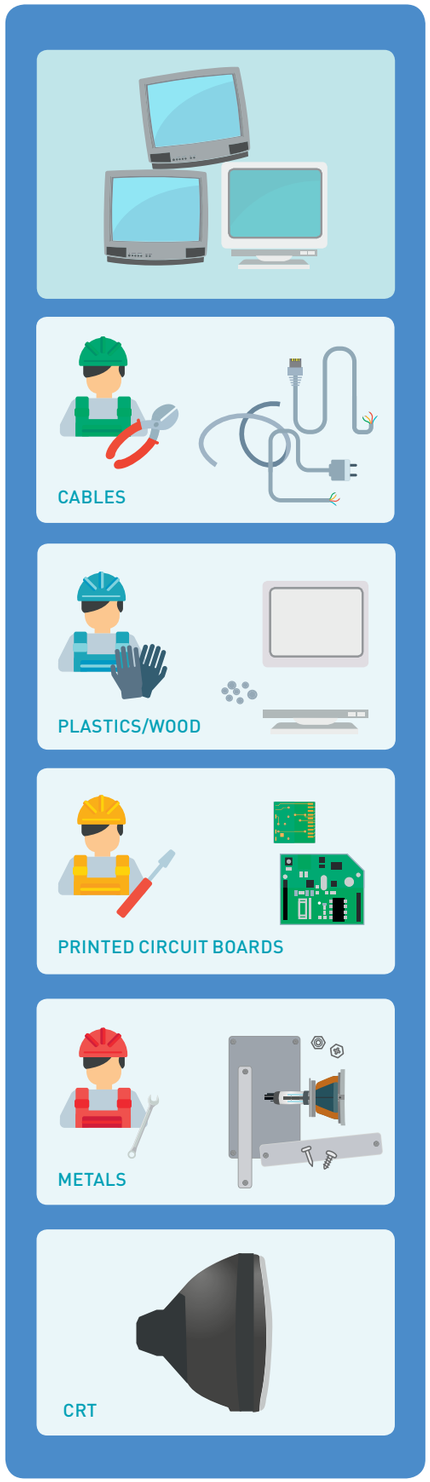


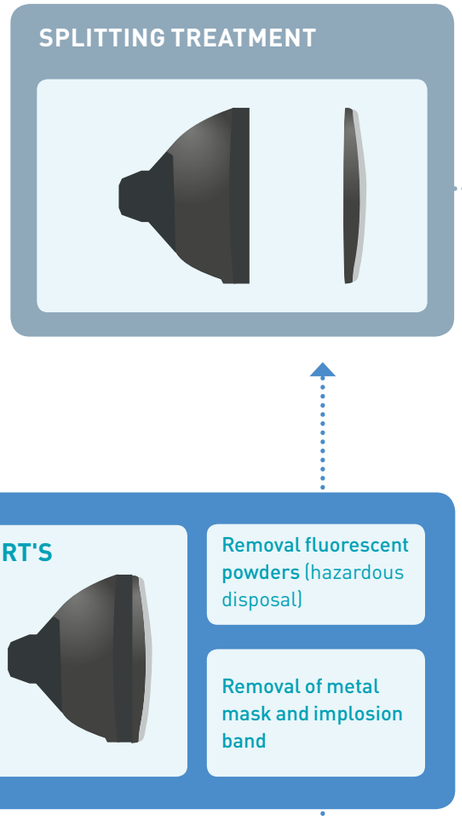
CRT SCREENS

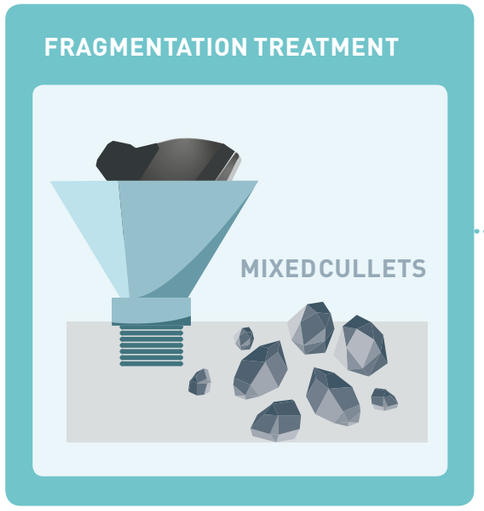
This brochure describes how WEEE recyclers treat CRT screens from TV's and computer monitors with Best Available Technology in compliance with the WEEE Directive.

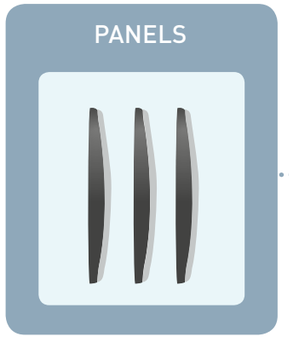
CRT stands for Cathode Ray Tube. Despite the fact that CRT's are not produced any longer, which makes closed loop recycling not possible anymore, the phase out in the waste stream is still taking at least another 10 – 15 years. It is estimated that in the year 2020 still 2.400.000 tonnes of CRT's are present in Europe in households and companies that need to be treated. CRT's make up some 85% of the weight of TV's and monitors. A CRT consist of ± 65% panel glass (Barium-Strontium glass), ± 30% funnel glass and ± 5% neck glass (both containing lead glass). Panel and funnel are sealed together by frit glass that also contains lead metal – Pb. Depending on the producer and the year of production the funnel glass contains 10 – 25% Lead Oxide – PbO and the neck glass 20 – 25%. On average a CRT screen contains 1 – 1,5 kg of PbO.

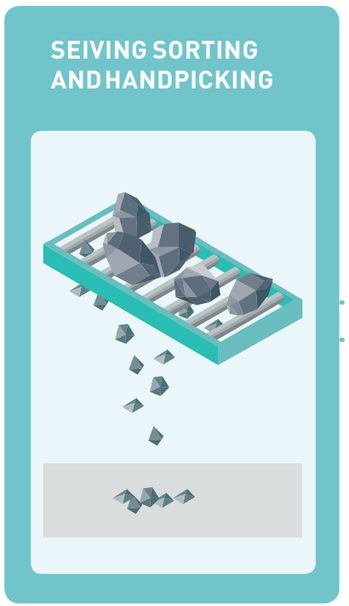
Options for treatment of Cathode Ray Tubes (CRT's)

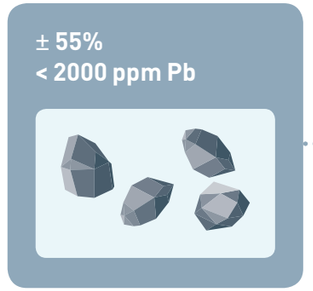


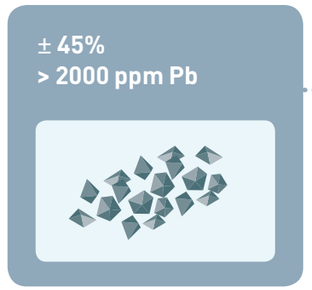


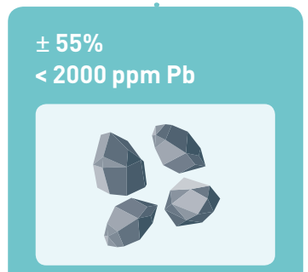


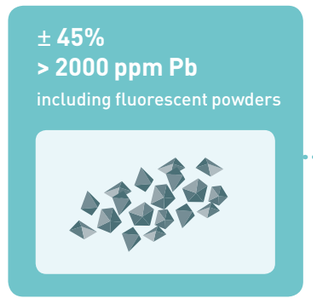












Legal aspects

DIRECTIVE 2008/98/EC ON WASTE AND EUROPEAN LIST OF WASTES - COMMISSION DECISION 2000/532/EC.

- Untreated CRT's and cullets thereof are classified as hazardous waste (indicated with an *) and need to be notified when they are transported across borders. Depending on composition of the CRT's and/or fractions thereof the following European Waste Codes - EWC.
  16 02 13*
  16 02 15*
  19 02 04*
  19 12 11*
  20 01 35*

- The limit value for Pb in non-hazardous materials is based on the methodology in Annex III of the Waste Directive. Because of criterium HP14 CRT glass is considered hazardous waste when the concentration of Pb is > 0.25%. This means that when the concentration of Pb in glass is < 2500 ppm it is not a hazardous waste.

WEEE DIRECTIVE 2012/19/EU

Annex VII requires the removal of CRT's and of fluorescent powders which are present inside the CRT. Removal means that the handling must result in an identifiable stream with the hazardous material/substance. For CRT's it means that glass containing lead and fluorescent powders must be monitored till environmentally sound treatment (recycling and/or disposal) is proven.

Facts & figures

- EN 50625-2-2 and TS 50625-3-3 on collection, logistics and treatment of WEEE containing CRT's and Flat Panel Displays. These standards give normative requirements for the effective removal of the CRT's from WEEE and the separation of leaded - PbO glass and fluorescent powders from the resulting fractions. Certification of the process is proof that an operator complies with the applicable EU legislation.

- It is estimated that in the year 2020 in Europe still 2.400.000 tonnes of CRT's can be found in households and companies. Therefor it is expected that the treatment of CRT's will still be required for another 10 – 15 years.

- Laboratory analyses on leaching of Pb from CRT glass are done in compliance with the ISO 17294-2 standard. For application of CRT glass with a Pb content < 2000 ppm leaching tests are required in order to show that the glass complies with legal criteria that are applicable when such glass is used in building materials like bricks and blocks.

PRODUCTION:

EERA
European Electronics Recyclers Association

GRAPHIC DESIGN:
graphication.com

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REFERENCES:

- **Directive 2012/19/EU of the European Parliament and of the Council** of 4 July 2012 on waste electrical and electronic equipment (WEEE).
- **Directive 2008/98/EC on waste and European list of wastes** - commission decision 2000/532/EC.
- **Cenelec EN 50625 series** European Standards for Waste Electrical and Electronic Equipment - WEEE.
- **ISO 17294-2 standard on Water quality** - Application of inductively coupled plasma mass spectrometry (ICP-MS) Part 2: Determination of selected elements including uranium isotopes
- **European Commission** ec.europa.eu/environment/waste/weee/standards_en.html
- **EERA** www.eera-recyclers.com